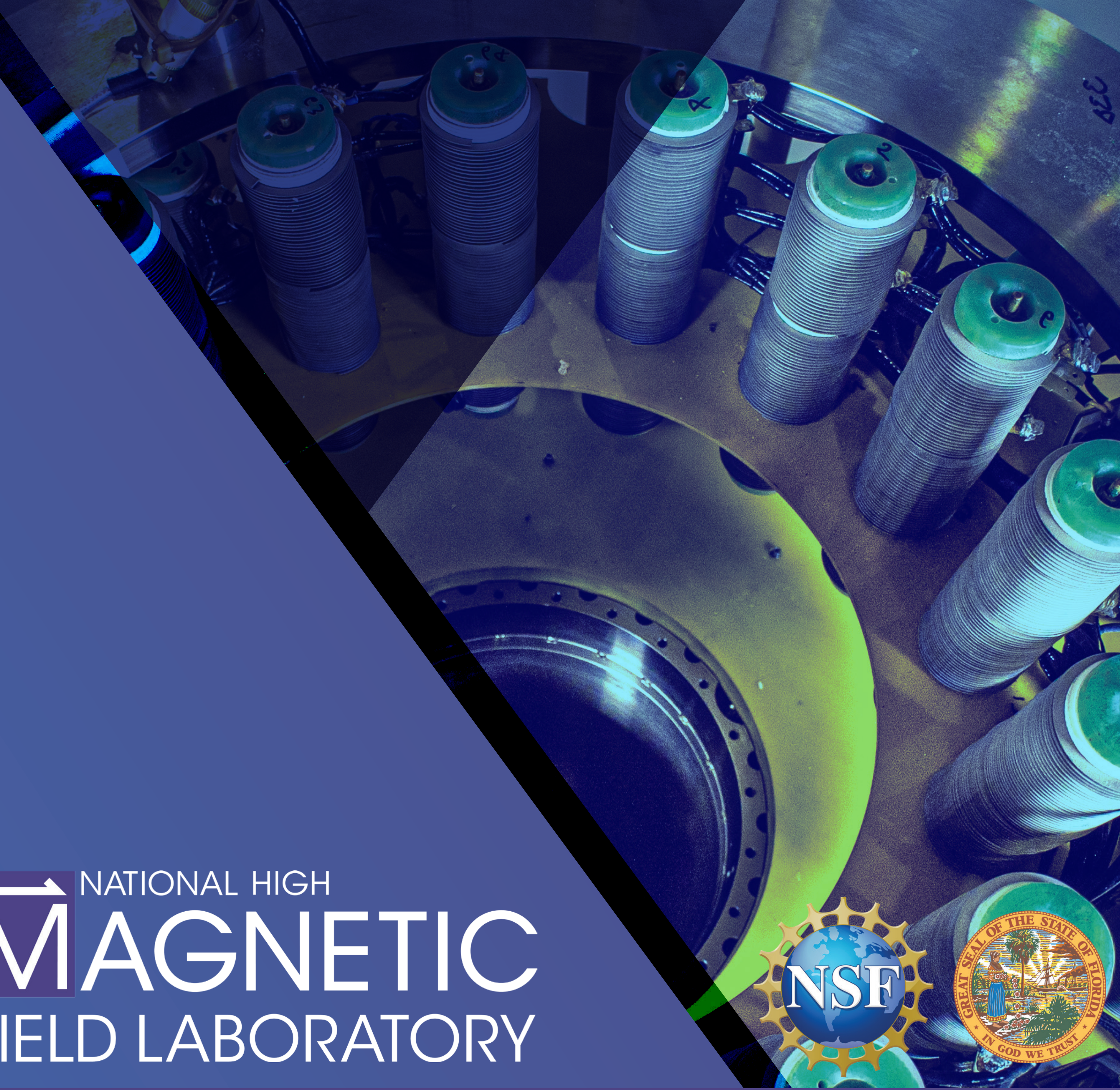

NATIONAL HIGH MAGNETIC FIELD LABORATORY

# 2024 ANNUAL REPORT

NationalMagLab.org

1800 E. Paul Dirac Dr. | Tallahassee, FL 32310

# 2024 Annual Report

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# 2024 DIRECTOR'S EXECUTIVE SUMMARY

This year featured the launch of the first new director of the National High Magnetic Field Laboratory (MagLab) in 20 years when Dr. Kathleen Amm joined the lab in May. Under her new leadership, the lab launched organization-wide values and a refreshed organizational structure and leadership team, all while continuing to facilitate exciting research for users and dynamic magnet technology developments.

## THE NSF-FUNDED MAGLAB USER PROGRAM

The MagLab continued to serve scientists access to the world's highest magnetic field research environments in 2024. About 1,550 researchers, students and technicians conducted experiments across the lab in 2024, using our powerful magnets to advance society's understanding of new materials, energy solutions, the environment, and the science that underlies life.

The National MagLab's user community included researchers from 265 universities, government labs or companies using the facility to investigate interdisciplinary questions that span the scientific spectrum – from physics to biology, chemistry to engineering. Of the 372 principal investigators in 2024, about 23% were new to the MagLab user facility that they accessed to conduct their research. About 51% of the lab's 2024 user community were students and postdocs.

National MagLab users remained exceptionally positive about their user experience in 2024. A user survey conducted in June shows their overwhelming satisfaction:

- 94% external users are satisfied with the performance of the facilities and equipment
- 98% external users are satisfied with the assistance provided by technical staff
- 93% external users are satisfied with the proposal process

Across the National MagLab's seven user facilities, enhancements and upgrades were made in 2024 that improved the user experience and experimental environment or maintained the key assets of the lab. Featured enhancements included:

- Variable-speed drives for the DC Field Facility 370kW pump motors were replaced in early August along with the conduit and power cables connecting them to the switchgear and the pump motors. In addition to the new variable-speed drives, a set of four disconnects were added between the switchgear and the variable-speed drives to enable servicing of individual drive cabinets without having to lockout the power to multiple drives at the switchgear.
- Work began to replace the FSU-located 31-year-old, 500kW emergency generator with a new, natural gas generator that will offer better maintenance, reliability, and run time.
- Completed installation of sixth magnet cooling water pump. This new pump has a 670kW motor and can output 7,570L/min at 33Bar, now giving the lab two magnet cooling water loops equivalent in terms of flow rate, pressure, and cooling power capabilities.
- The DC Field Facility Electronics Shop has continued installing new resistive magnet protection systems (RMPS II), now available in Cells 8, 9 & 12.
- All of the machining, testing, and sub-assembly work has been completed on the new rotor for the 1.4-gigawatt LANL motor generator with final assembly work scheduled to begin in early 2025.
- Updates were made to the generator's vibration monitoring system, including the installation of new temperature and flow sensors, valve replacements, and testing of the generator protection and transformers.
- All hardware and power infrastructure required for the operation of a new 85T all-capacitor bank-driven duplex magnet complete.
- An Alpha-Omega built 30kV-1.2 MJ capacitor bank was commissioned to 10kV and was delivered to the Pulsed Field Facility late in 2024.
- The entire open-loop part of the generator cooling system, including the tanks, pumps, cooling towers, associated foundations, pipes and control systems have all been replaced.
- A $^{2}$H cryo-coil (and related room-temperature coils) were developed at AMRIS to enable metabolic flux measurements in tandem with proton MRI/S measurements on the 11.1T instrument through funding from a UCGP grant.
- A new 3.2mm e-free MAS probe constructed by the MagLab is available to the user program on the 800MHz 63mm system, further enhancing the solid-state NMR capabilities along with a cutting-edge Bruker iProbe 4 HRMAS, which allows for fully automated calibration and shimming, reducing sample setup complexity.
- Continued updates to the AMRIS acquisition and processing software have greatly improved AI-based processing of NMR data and allow for more automated batch processing.
- EMR received delivery of two new superconducting magnet systems - 16T and 9T for the Transmission and HiPER spectrometers, respectively. The 9T required additional parts that were

fabricated in-house and installed in Summer 2024. The 16T needed to be sent back to the factory with return to the facility expected in Spring 2025.

- Following installation of EMR's 9T magnet on the HiPER spectrometer, modifications were made to the cylindrical corrugated waveguide probe. The enhanced spectrometer was brought back into service in December 2024.
- A Bluefors automated "dry" dilution refrigeration system with a 14T superconducting magnet was opened for user experiments in High B/T in January 2024, helping to achieve electron temperatures that are dramatically lower than can be achieved elsewhere.
- The 21T FT-ICR magnet system was upgraded with an Eclipse tribrid commercial front end, providing improved sensitivity, precursor ion selection, and speed all while offering unprecedented flexibility for tandem mass spectrometry experiments and enabling data acquisition within the FT-ICR, orbitrap, and linear RF ion trap simultaneously.
- Low flow liquid chromatography separation, which reduces ionization suppression, was coupled with the 21T FT-ICR instrument to improve untargeted PFAS quantification in complex mixtures.
- A novel MALDI imaging source was acquired for ICR facility in 2024.
- Developed a new approach to achieve the excitation bandwidth needed for $^{13}C$ NMR at 900MHz without reducing sensitivity. This method can be readily implemented by NMR users.
- New 850MHz NMR magnet and console was installed in January 2024.

## USER RESEARCH

More than 334 articles appeared in peer-reviewed scientific and engineering journals in many in significant journals like *Science, Nature, Physical Review Letters, Energy & Fuels, Analytical Chemistry,* and the *Proceedings of the National Academy of Sciences*. A complete database of user publications can be found at https://nationalmaglab.org/research/publications-all/peer-reviewed-publications. Key discoveries from 2024 included:

- DC Field Facility users measured the Fermi surface of bulk crystalline $SrTa_2S_5$ to understand unique superconducting behaviors inside and between the material's layers. Measurements showed that a unique mismatch between its layers affects the material's electronic states, leading to surprising behaviors in electron mobility, quantum oscillations, and superconductivity.
- At ultra-low temperatures in the 32T all-superconducting magnet, MagLab users fully mapped out the Fermi surface of $UTe_2$, learning more about how electrons behave outside of the superconducting state(s) of this unique material.
- Scientists at the PFF developed a new way to measure capacitance that isolates different sources of electrical charge while working within the short pulses of a powerful magnet system. Using this method, they studied a nickel-based material and discovered a sharp peak in capacitance around 25T, matching a small change in magnetization. This suggests that while the overall magnetization shifts only slightly at high fields, the material's magnetic structure changes significantly affecting its ability to link electricity and magnetism.
- Using the 65T short-pulse and 75T duplex magnets at the Pulsed Field Facility, researchers discovered a surprising effect in certain insulating materials. Normally, in metals, high magnetic fields push electronic states in a specific way, leading to unique quantum behaviors. However, in a special type of insulator (YbB12), the opposite happens—electronic states shift in the reverse direction. This "reverse quantum limit" challenges conventional understanding and suggests that strongly interacting insulators could be a new platform for discovering exotic electronic behaviors.
- AMRIS users explored how the African spiny mouse (Acomys cahirinus), a rodent known for its ability to heal damaged tissue, recovers from a stroke. Unlike previous findings in spinal cord repair, MRI scans showed the mice didn't regrow brain tissue. Instead, they recovered quickly by using other parts of their brain to compensate for the damage.
- AMRIS researchers discovered a new DNA structure can be created by adding a synthetic nucleotide to the DNA sequence. This new structure forms a compact fold that could have significant implications for the use of DNA in chemical sensors and information storage.
- An EMR study reports the first example of a europium single-molecule magnet – a molecule that can retain alignment of its 'North' and 'South' poles at low temperatures. Combined magnetic, high-field EPR and theoretical studies shed light on the importance of the rare Eu2+ oxidation state and the quasi-linear molecular geometry for achieving these properties.
- In its 2+ state, the lutetium ion (LuII) has one unpaired electron that makes it magnetic. Earlier MagLab research showed that LuII can be placed in special molecules that protect this electron from interference, creating a more stable molecular spin qubit—a key component for future quantum technologies. A new EMR study finds that the same approach works for other elements like Praseodymium (PrII), which has a similar electron setup.

- In a series of experiments using High B/T's new Bay 1 Instrument, researchers explored aspects of one-dimensional electron conduction for electron temperatures evolving to below 7mK. Two distinct drag-inducing mechanisms within a single multi-channel quantum wire were identified.
- The 21T FT-ICR MS instrument enabled the molecular characterization of atmospheric hazes - like that on Saturn's moon, Titan - and water vapor to better understand the evolution of biological molecules in exoplanet atmospheres. MagLab users observed chemical reaction products between photochemical haze and water vapor, which reveals the capacity to generate organic molecules needed for life.
- Combining new data with an existing MagLab dataset, researchers characterized the millions of unique chemicals found in our waterways, including both natural compounds formed by the decomposition of plant matter and man-made toxic pollutants.
- Rhodium (Rh) is one of the most costly and scarce platinum group elements, however, it is of great importance in many technologies including catalytic converters, electronics, and medical devices. Ultra-high magnetic field instruments and new NMR methodology at the MagLab unlocked access to perform 103Rh solid-state nuclear magnetic resonance, a technique that can study the molecular structures of Rh-containing materials.
- Users developed a method using $^{71}$Ga solid-state NMR spectroscopy with the world's highest-field magnet (at the MagLab) to study the number of oxygen ions around each gallium atom in electrolyte materials.
- Using high-field nuclear magnetic resonance (NMR) at the MagLab, researchers discovered that adding atomic-level defects to a material called amorphous aluminosilicate (AAS) enhances its ability to accelerate chemical reactions. By creating oxygen atom gaps, the acidic strength of AAS is boosted, improving its effectiveness for industrial applications. This advancement may lead to more efficient, eco-friendly production of chemicals and pharmaceuticals.

More 2024 science highlights can be found online at https://nationalmaglab.org/research/science-highlights/?type=year&value=2024 as well as information on our in-house research efforts in condensed matter physics, cryogenics, geochemistry and biology/chemistry.

## MAGNET-MAKING MILESTONES

Magnet technology is a critical component of the MagLab, advanced in the lab's Applied Superconductivity Center (ASC) and the Magnet Science and Technology (MS&T) division. ASC is focused on developing superconducting materials and magnet technologies, from initial materials research to feasibility validations, while MS&T works to develop and maintain high-field magnet systems. Key achievements and technical research highlights during 2024 include -

- Bi-2212 Conductor Development, Coils & Mechanical Properties: Significant improvements in the performance and reproducibility of Bi-2212 superconducting wires, including the development of new wire architectures and fabrication processes.
  - Research focused on improving the quality and performance of Bi-2212 superconducting wires, addressing issues like filament "sausaging" and enhancing critical current density.
  - A 17.9T total magnetic field was achieved in an all superconducting magnet that contained a large coil of Bi-2212 ($Bi_2Sr_2Ca_1Cu_2O_{8+x}$), a high temperature superconductor (HTS) with promising commercial applications. The Bi-2212 coil generated 5.9T in a 12T background field.
  - Studies on the mechanical properties of Bi-2212 winding packs, including stress-strain behavior and the impact of different reinforcement materials.
  - Advancements were made in the in the Over-Pressure Heat Treatment (OPHT) process and furnace development to improve the quality and performance of superconducting coils. In 2024, the lab received and installed a new heater insert with thicker insulation (furnace ID now 153mm) and started recommissioning of the furnace.

- Characterization Tools: Development of advanced characterization tools to link processing methods with material performance, aiding in identifying and addressing performance shortfalls.
- High-Strength Materials: Development of high-strength, high-conductivity materials for pulsed and DC resistive magnets, enhancing the durability and performance of these systems.
  - MagLab researchers studied the strain-hardening behavior of high-strength copper silver sheets by comparing overall and local stress-strain curves. They found that while both longitudinal and transverse samples showed overall softening, regions with highly strained slip bands displayed significant local strain-hardening in transverse samples and moderate strain-softening in longitudinal ones. This difference in localized plasticity caused the conductors to show overall anisotropic behavior.

- Resistive Magnet Operations: Successful operation and maintenance of the suite of resistive magnets in the DC Field Facility including the world-record high fields produced by the 45T Hybrid, the 36T, 1ppm Series-Connected Hybrid and the 41.5T all-resistive magnets, ensuring continued high performance and reliability.
- Pulsed Magnets: Fabrication of large, pulsed coils for the LANL 60T Controlled Wave (CW) and 100T multi-shot magnets; development of the high-strength, high-conductivity materials required for pulsed and DC resistive magnets and completion of the winding and subsequent vacuum pressure impregnation (VPI) processes for the 60T Controlled Waveform (CW) coil 7.

- REBCO Characterizations & Testing: Development of characterization techniques for REBCO conductors, crucial for high-field magnet applications, and collaborations to enhance conductor supply chains.
    - REBCO coils were tested under combined loads of cyclic axial pressure and electro-magnetic loads. The results of the tests show that coils can survive cyclic pressure of 80MPa with tapes deformed up to an angle of 10°. Additionally, it has been determined that coils in hoop compression with strains beyond -0.4% can buckle.
    - A coil made from over 1 km of ReBCO tape was successfully operated at its predicted critical current (Ic), as determined by detailed tape performance measurements. ReBCO is a high-temperature superconductor (HTS) made in tape form, just a few millimeters wide and about 0.1 mm thick, with only 1 micron of superconducting material. The name ReBCO comes from its chemical composition: Rare earth – Barium – Copper Oxide. These tapes can be used to create coils that generate ultra-high magnetic fields.
    - Developed methods to measure their superconducting wires' Ic values at a 20T magnetic field and 20K temperature, conditions that are required for fusion energy applications. We redesigned a variable-temperature probe to measure Ic(B,T) in the MagLab's small-bore 31T magnets. We also used a Scanning Electron Microscope to check for defects and measure the thickness of the superconductor, with precise cuts made by an ion beam.
    - Testing and development of high-field coils, such as the "Little Big Coil" series, to push the boundaries of magnet performance. Tested new Little Big Coils using laser-slit edges, thicker REBCO, and pulsed-laser-deposition (PLD) conductors made for compact superconducting fusion magnets.
- 40T All-Superconducting Magnet: In 2024, MS&T made important progress on the all-superconducting 40T magnet design and developmental coil testing, including the development of high-temperature superconducting (HTS) insert test coils. During 2024, 8529 meters of REBCO conductor were procured and tested, and subjected to rigorous Quality Control (QC) tests for the 40T project – that's a length of conductor twice as long as the Daytona Speedway (or nearly as tall as Mt. Everest).

Some key magnet development work at the MagLab this year featured partnerships with other agencies or industry collaborators:

- MS&T is working with a commercial partner, Cryomagnetics, through an STTR collaboration. The goal of this partnership is to develop the technology for a commercially available 25T all-superconducting magnet using a low-temperature superconducting outsert and a high-temperature superconducting insert designed and built by MS&T. A novel vacuum pressure impregnation (VPI) process was developed to eliminate the deleterious effects sometimes associated with REBCO tape combined with the VPI process. The HTS insert coils being built and tested in MS&T should be delivered to Cryomagnetics by the second quarter of 2025.
- With the assistance of funds from the DOE-INFUSE program, MagLab facilities were deployed to characterize new R&D tapes from SuperPower. HM conductors were grown with even larger fractions of Zr doping, 20% and 25%, where transport data measured up to 31T. The results show how additions of pinning continue to improve the critical current. The characterizations were important to qualify this manufacturer for privately funded fusion activities, where scaling methods reported previously indicated that the new HM conductors achieve a current density of over 900A/mm$^2$ at 20T and 20K, well above the company's specification of 750A/mm$^2$.
- Through two SBIR phase-I awards and a university-lab collaborative grant from DOE ARDAP, the reproducibility of good powder by Engi-Mat was improved in 2024. Multiple new Bi-2212 billets were produced in 2024 with aims to improve the wire performance and reproducibility.
- A proposal for a Large Bore Resistive Magnet (LBRM) capable of generating a direct current (DC) magnetic field of 22.5 Tesla within a 195mm room-temperature bore has been submitted to the NSF Major Research Instrumentation program. This initiative will position the NHMFL to lead advancements in high-field magnet technology, crucial for pushing the frontiers of condensed

matter science, nuclear magnetic resonance (NMR), and other high-field applications. No existing magnet worldwide offers the capabilities planned for the LBRM.
- An NIH-R01 grant to demonstrate technology for a NMR 28T superconducting magnet (hybrid LTS/HTS) with high homogeneity started in 2024. Bi-2212 round wire coils are being explored to achieve the desired performance.

## EDUCATING STUDENTS & THE PUBLIC TO BROADEN PARTICIPATION

Work to broaden participation in and appreciation of STEM continued in 2024 at the MagLab.

At the K-12 level, 1,609 students from 37 schools came to the MagLab for an educational fieldtrip. Summer Camps were held for 41 middle-school aged students and 92% of all campers reported that they learned more about how to achieve a career in STEM. A yearlong High School Externship program focused on students with STEM career interests and paired 19 Tallahassee high schoolers with a mentor at the MagLab to work on a STEM project. Another five high school aged students participated in a partnership STEM enrichment program with Godby High School, a local Title I school. After completion, 100% said they were interested in pursuing a career in materials science and that participation in the program increased their interest in studying materials science in college. MagLab Monthly Science Night at the Library events reached 680 people in 2024 with fun topics and hands-on science for pre-school and elementary aged students (and their families). Survey data showed 87% of the kid participants rating Science Night 5 out of 5 stars and nearly all agreeing that “science is fun” after the conclusion of a Science Night event. More than 90% of responding parents said their children learned something from the Science Night they attended and more than 92% said they also learned something, demonstrating that this primarily K-5 event offers a dynamic way to reach audiences of all ages.

More than 80 teachers applied for the 2024 Research Experiences for Teachers (RET) program and ten teachers were selected. This year’s cohort consisted of three elementary teachers, three middle school and four high school teachers. They represent five different states (Alabama, Arkansas, Florida, Maryland, and Virginia) and all teach at Title I schools. 100% of 2024 RET participants indicated that participating in the program increased their ability to guide students through open-ended science experiments and that, after participating in the program, they were more confident in providing examples of current STEM research into their STEM teaching.

Undergraduate students are welcomed to the lab during the spring and summer semester for research experiences and specialized partner programs. The MagLab’s Research Experiences for Undergrads (REU) program hosted 13 undergraduates from across the country for a 10-week program to learn research skills and explore MagLab-related research career options. All REU participants reported that the experience increased or reaffirmed their positive perception of STEM careers. For seven weeks during the Spring 2024 semester, the MagLab also hosted a cohort of 10 FAMU undergraduates in the Magnetic Momentum Scholars (MMS) program. The goal of the MMS program is to expose FAMU students to STEM careers at the MagLab through tours, professional development sessions, and shadowing experiences. At the end of the program, 100% of participants said they had a substantial or fair amount of knowledge about careers in STEM research.

In 2024, MagLab staff gave 136 lectures, talks and presentations to organizations around the country and the world both. In addition, eight science workshops/conferences were hosted in 2024 reaching more than 400 people, including a Solid State NMR Spectroscopy Summer School, Festschrift for Chief Scientist Laura Greene, and a workshop on composite superconductors. MagLab Open House hosted 8,500 people who came to **channel their inner child and explore the science of toys.** Survey data shows that about half of 2024 Open House visitors had never been to the lab before the event and that about 90% agreed or strongly agreed that the event helped them better understand the science at the MagLab and how it benefits our community.

## SECURING A HEALTHY, SAFE, POSITIVE & PRODUCTIVE LAB ENVIRONMENT

The MagLab continued to work in partnership with its host institutions to protect users, employees, visitors and the community. Strategic safety investments were made in 2024 including $70,000 toward safety-related equipment, supplies, security measures, training, and ongoing education. Notable investments included personal protective equipment, lockout/tagout supplies for verifying hazardous energy sources, security upgrades, and various monitoring devices. Safety highlights from 2024 included:

- Implementation of monthly lab inspections conducted by MagLab safety personnel, along with monthly lab inspection worksheets completed by the lab manager or principal investigator (PI). As a result of these improvements, FSU Lab Safety personnel reported being impressed by the MagLab’s outstanding safety improvement, with very few infractions observed. The MagLab has now become a standard marker for lab safety.
- Using Artificial Intelligence (AI) through a Moneta Near-Miss Reporting App to identify leading indicators of potential safety incidents before they occur, enable proactive hazard identification, enhance safety culture, reduce workplace injuries, and promote data-driven decision-making. The

app allows individuals to report near misses directly from their phones, with the option to include pictures and report anonymously.

User safety also continues to remain a priority. Before coming to the lab, users are assigned online training specific to the experiment they are conducting and the hazards associated with each facility. When they arrive on-site, they receive additional hands-on training as needed and work with on-site user support staff to complete their experiments safely. In 2024, 99% of external users satisfied or very satisfied with overall safety at the MagLab.

This year, the MagLab also launched organization-wide values. These core lab values - Safety, Excellence, Leadership, Collaboration, and Impact - articulate what our organization cares about and remind all MagLab staff, scientists, and users/visitors how they can personally contribute to creating a positive and productive lab where everyone feels respected.

## LOOKING AHEAD

New instrumentation and training are planned for 2024 that seeks to expand the lab's scientific and technological capabilities:

- At the PFF, all of the machining, testing, and sub-assembly work has been completed for the new rotor, and the final assembly work is scheduled to begin in early 2025.
- All hardware and power infrastructure required for the operation of the 85T Duplex magnet is now complete. The control software required to operate this system is expected to be complete in the first half of 2025 and the magnet commissioning and testing is anticipated to occur thereafter.
- The DCFF Electronics Shop will continue installing two additional second-generation resistive magnet protection systems (RMPS II) in 2025.
- At AMRIS, a second HyperSense DNP associated with the 7T system will be available in spring 2025, and a portable NVision parahydrogen polarizer will be available in fall 2025 and usable with all imaging systems. An additional Hypersense dissolution DNP polarizer will be installed in spring 2025, providing access for DNP experiments on the 7T MRI system.
- With the large Over Pressure Heat Treatment furnace moving into full commissioning, the smaller OPHT furnace will be refurbished in 2025 with a new heater system.
- The new Little Big Coils tested in 2024 that used recent laser-slit, thicker REBCO, and PLD conductors will be investigated further in 2025. Produced by another manufacturer, these coils have a thinner substrate, presumably leading to more flexibility and a higher friction coefficient. Based on these characteristics, MagLab staff will work to reach 50T in 2025.
- An arbitrary waveform generation capability will be delivered in EMR later in 2025. Combined with installation of a new multiplier chain, this will provide 300mW of pulsed power at 263GHz, an order of magnitude increase in power relative to the current 240GHz chain. Not only does this provide a new frequency in the pulsed arsenal of the EMR facility, it will give rise to a factor of ~3 improvement in time resolution, as well as enhancements in sensitivity to EMR Users.
- The new $2.14M X-/Q-band spectrometer will come online in the EMR Facility in early 2025.
- A 1.3mm HXY low-temperature (100 K) DNP MAS probe (#65) was completed in December 2024, and MagLab staff are working to expand the number of tuning configurations throughout 2025.
- During 2025, the NMR Technology Group will be designing and building two new probes: a 1.3mm HX(Y) MAS probe and 5.0mm static (or 3.2mm HX MAS) low-E NMR probe.
- A new 600#3 platform will be launched in 2025, using a magnet and console obtained from University of Central Florida.

# NATIONAL MAGLAB

# AT A GLANCE

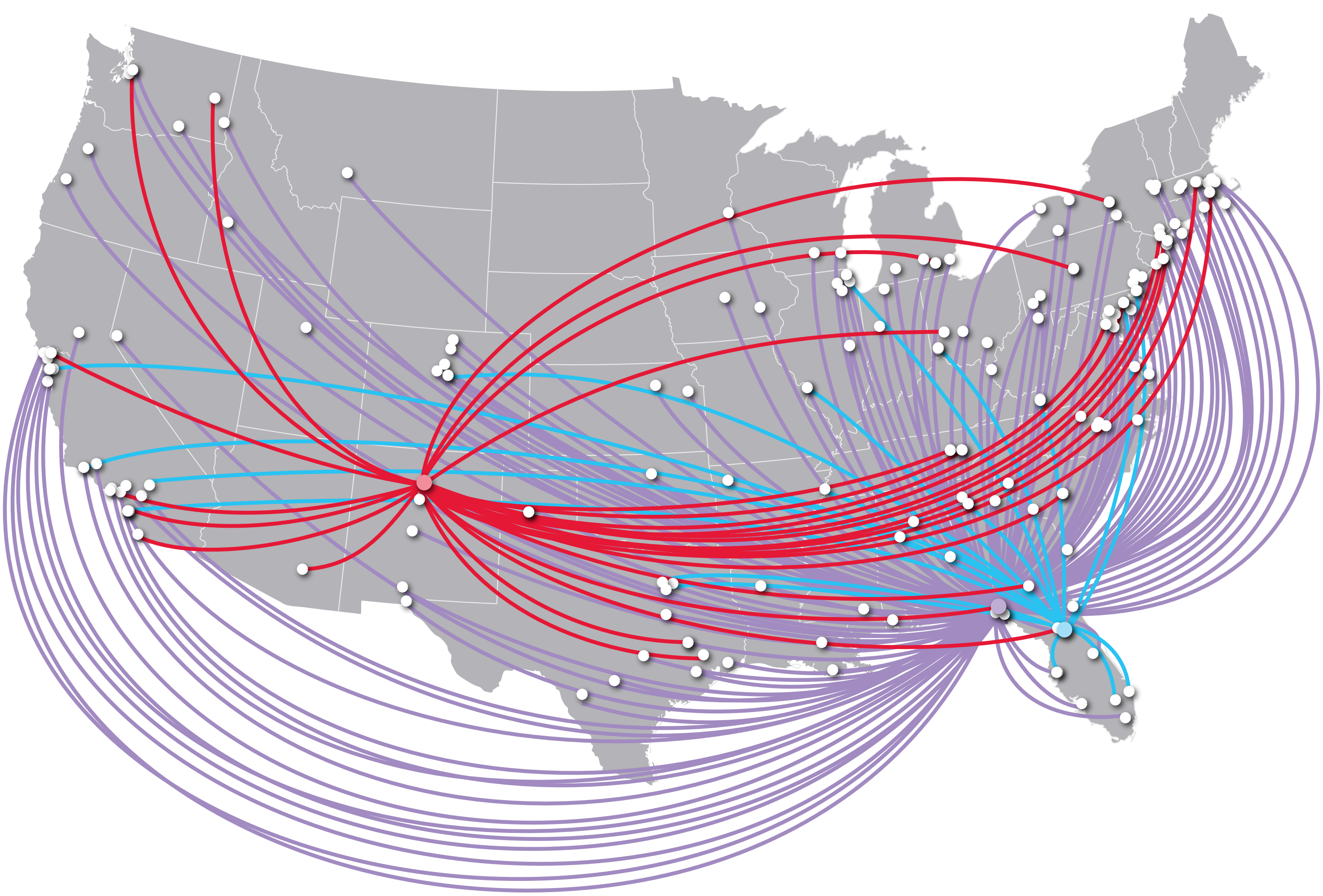

Florida State University • University of Florida • Los Alamos National Laboratory

Supported by the National Science Foundation and the State of Florida

# A NATIONAL RESOURCE

Seeking the most powerful magnetic fields on Earth, scientists and engineers from around the world conduct their experiments at the National MagLab. In 2023, our **1,559** users represented **265** universities, government labs and private companies worldwide.

**81%** UNIVERSITIES **13%** GOVERNMENT LABS **6%** INDUSTRY





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# 2024 LAB STATS

**USERS:**

1,554

**PERCENTAGE OF USERS WHO WERE NEW:**

21%

**ARTICLES PUBLISHED IN PEER-REVIEWED JOURNALS:**

334

**TALKS, LECTURES AND PRESENTATIONS GIVEN TO ORGANIZATIONS AROUND THE COUNTRY & WORLD:**

136

**MAGLAB WORLD RECORDS:**

17


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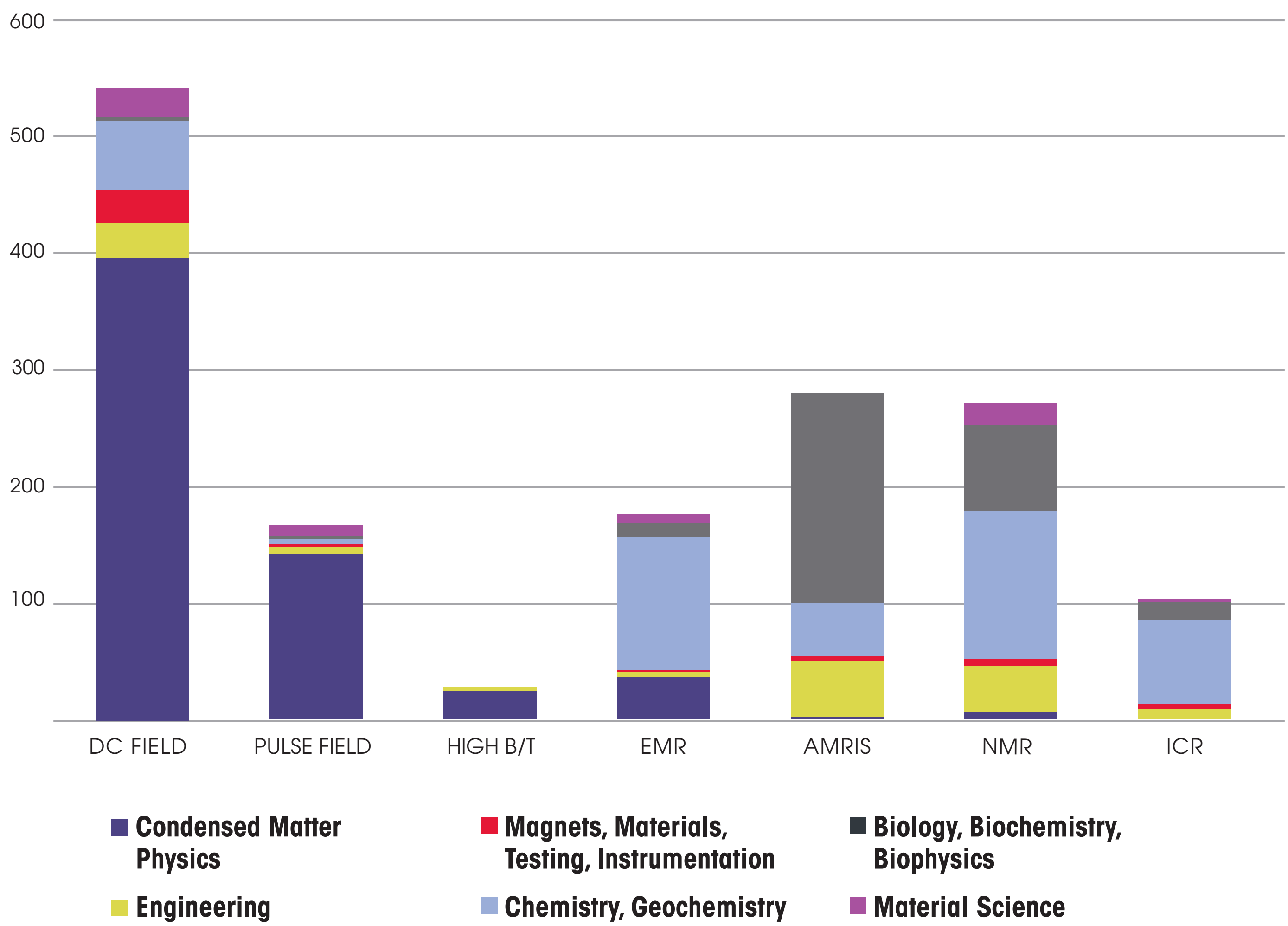
# WHO OUR USERS ARE

High magnetic fields are a powerful research tool across many disciplines leading to groundbreaking discoveries that impact your life. The lab comprises 7 distinct user facilities that offer our researchers a wide range of research capabilities:

- **DC Field**
  Steady, continuous magnetic fields up to 45 T
- **Pulsed Field**
  Short, ultra-powerful magnetic fields up to 100 T
- **High B/T**
  Magnetic fields up to 15 T combined with ultra-cold temperatures of 0.4 mK
- **Electron Magnetic Resonance (EMR)**
  Magnetic resonance techniques associated with the electron
- **Nuclear Magnetic Resonance (NMR)**
  Solid & solution state NMR & animal imaging
- **Advanced Magnetic Resonance Imaging & Spectroscopy (AMRIS)**
  High-resolution solution and solid-state, NMR, animal imaging & human imaging
- **Ion Cyclotron Resonance (ICR)**
  Ultra-high resolution and high mass accuracy Fourier transform ion cyclotron resonance (FT-ICR) mass spectrometry

# 2024 USERS BY DISCIPLINE



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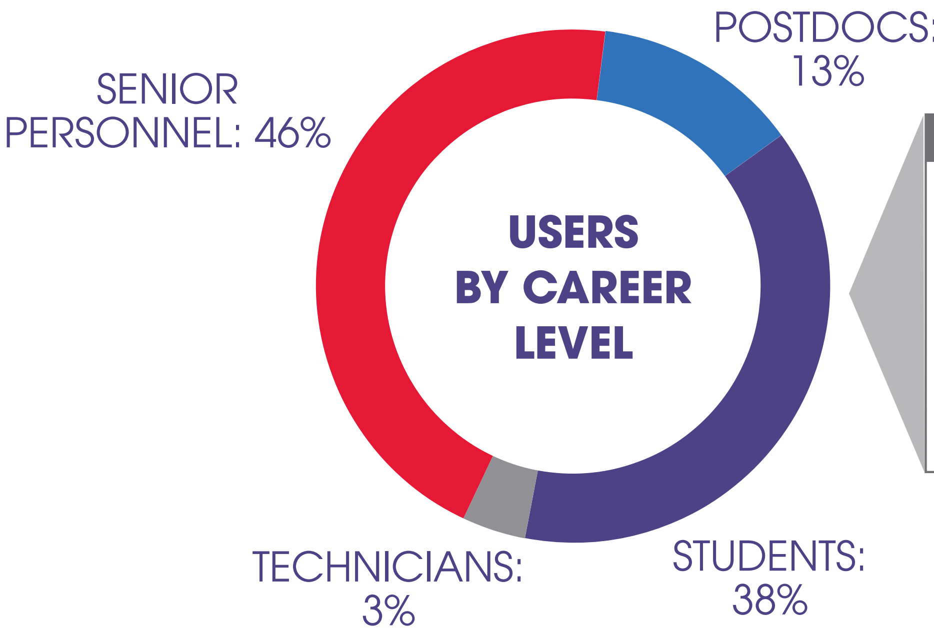


**USERS BY FACILITY**

DC FIELD - **539**
PULSED FIELD - **166**
HIGH B/T - **24**
EMR - **175**
NMR - **270**
AMRIS - **279**
ICR - **101**

# WHAT OUR USERS SAY

**94%** of users were satisfied with performance of the facilities and equipment.

**98%** of users were satisfied with the assistance provided by MagLab technical staff.

**93%** of users were satisfied with the proposal process.

**99%** of users were satisfied or with the overall safety at the MagLab.

Data reflects external users only.

# MAGLAB STAFF

The MagLab employs a skilled workforce of scientists, machinists, engineers, and technichians.

## Total MagLab Staff: **562**


- Senior Personnel: **189**
- Other Professional: **72**
- Support Staff - Technical: **72**
- Support Staff - Secretarial: **14**
- Postdoctoral: **48**
- Graduate Student: **79**
- Undergraduate Student: **88**


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# SPARKING CURIOSITY

Whether in a traditional classroom setting or on our website, within the walls of our lab or in universities around the globe, the National MagLab is committed to sharing our passion for science. We are growing the next generation of scientists and inspiring all individuals about the magic of discovery in high magnetic fields.

1,600+

K-12 students participated in Classroom Outreach or a field trip.

8,500+

visitors of all ages during our annual **5-hour** Open House event

4.1 MILLION

website interactions

88+

Students in long-term mentorship or camp programs

28 THOUSAND+

hours of MagLab video content watched on YouTube.

680

Children and parents attended MagLab Science Night at the Libary.


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# CHAPTERS



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# 1 LABORATORY MANAGEMENT

## 1.1 ORGANIZATION

Florida State University (FSU), the University of Florida (UF), and Los Alamos National Laboratory (LANL) jointly operate the National High Magnetic Field Laboratory (NHMFL or MagLab) for the National Science Foundation (NSF) under a cooperative agreement that establishes the MagLab's goals and objectives. As the signatory of the agreement, FSU is responsible for establishing and maintaining administrative and financial oversight of the MagLab and ensuring that the operations align with the objectives outlined in the cooperative agreement.

After nearly 20 years as the head of the Florida State University-headquartered National High Magnetic Field Laboratory, Greg Boebinger has stepped down to return to the FSU faculty. Researcher and industry leader **Kathleen Amm** became the **new director of the National High Magnetic Field Laboratory** in May. Before joining the lab, she was the director of the Magnet Division at Brookhaven National Laboratory and spent nearly 20 years at GE Global Research, first as a physicist in the electromagnetics and superconductivity lab, before moving into various leadership positions across the organization.

With Kathleen Amm's arrival, the MagLab launched organization-wide values in July 2024 to build cooperation, collaboration, equity, and cohesion around the lab as it works toward shared purposes. The MagLab core values—*Safety, Excellence, Leadership, Collaboration, and Impact*—are designed around the idea that each person makes a critical contribution to the lab.

Following the release of the organization-wide values, Kathleen Amm proposed an organizational structure change that put people in place to facilitate research, improve efficiencies, and create an environment for science to thrive. **Eric Palm** remains **Deputy Lab Director** with a focus on leading in-house research and new funding; **Tim Murphy** has been elevated to **Deputy Lab Director** focused on operations and synergistic connections within the entire NSF-funded User Program; **Laura Greene** remains the lab's **Chief Scientist,** overseeing science drivers and the discipline-specific chief scientists; an HR Director position and a Finance Director position will be advertised as Debra Booth retires in early 2025; **Alfie Brown** is now the lab's **Environmental Health & Safety Director,** working closely with the FSU-based safety team; **Joanna Long** and **Ross McDonald** remain in the roles of **Associate Lab Director,** representing the three-site partnership of the National MagLab. Professor **Kristina (Kicki) Hakansson** is our new **ICR Facility Director** and has joined the FSU Chemistry & Biochemistry Faculty.

The **MagLab Leadership Team**, composed of senior scientists and administrators, meets monthly to discuss Lab-wide and program-specific issues. Two external committees also provide crucial advice: the **External Advisory Committee** (EAC), which includes representatives from academia, government, and industry, advises on management matters; the **User Committee** (UC) helps develop and use facilities and services for scientists' research. Details of these committees are provided below.

## 1.2 External Advisory Committee

The External Advisory Committee (EAC) is made up of representatives from academia, government, and industry. This committee offers advice on matters critical to the successful management of the lab.

**External Advisory Committee Chair**

- Stuart Brown—UC-Los Angeles (Chair)

**User Committee Chair (ex officio member of EAC)**

- Franklin Leach—University of Georgia

**Biology and Chemistry Subcommittee**

- R. David Britt—UC-Davis
- Wei Chen—University of Minnesota
- Robert Griffin—MIT
- Songi Han—UC-Santa Barbara (Vice Chair)
- Yining Huang—Western University
- Tatyana Polenova—University of Delaware
- Marek Pruski—Ames Lab
- Susan Richardson—University of South Carolina
- Vicki Wysocki—Ohio State University

**Condensed Matter Subcommittee**

- Christoph Boehme—University of Utah
- Cory Dean—City College of New York
- Ian Fisher—Stanford University
- Chris Hammel—The Ohio State University

- Ni Ni—University of California, Los Angeles
- Nai-Chang Yeh—California Institute of Technology

**Magnet Technology and Materials Subcommittee**

- Luca Bottura—CERN (Vice Chair)
- Jeff Parrell—Bruker OST LLC

**Science Management**

- Jonathan Bagger—American Physical Society
- Joel Brock—Cornell University
- Roger Falcone—University of California, Berkeley
- Michael Norman—Argonne National Laboratory
- Bruce P. Strauss—U.S. Department of Energy (Vice Chair)
- Alan Tennant—University of Tennessee Knoxville

## 1.3 USER COMMITTEE

The MagLab's User Committee represents the MagLab's broad, multidisciplinary user community and advises the Lab's leadership on all issues affecting users of our facilities. The User Committee is elected from the user base of the MagLab, and each facility has a subcommittee elected by its users to represent their interests. DC Field and High B/T facilities have a single, combined subcommittee representing the two user facilities. Likewise, the NMR facilities at UF and FSU have a single, combined subcommittee. Pulsed Field, ICR, and EMR facilities have their subcommittees. Each subcommittee then elects members to represent it on the User Executive Committee. This User Executive Committee elects a chair and two vice chairs. The DC Field/High B/T Advisory Committee, the Pulsed Field Advisory Subcommittee, the EMR Advisory Subcommittee, the NMR/MRI Advisory Committee, and the representative from the ICR Advisory Committee met in Gainesville, FL from November 19 to 21, 2024 **(Figure 1.3.1)**, to discuss the state of the MagLab and provide feedback to the NSF and MagLab management. The 2024 User Advisory Committee Report has been made available on our User Committee - MagLab website.

**DC Field/High B/T Advisory Subcommittee**

- Nat Fortune—Smith College*
- Jia (Leo) Li—Brown University
- Johannes Pollanen—Michigan State University
- Daniel Rhodes—University of Wisconsin – Madison
- Sufei Shi—Rensselaer Polytechnic Institute
- Raivo Stern—National Institute of Chemical Physics & Biophysics, Estonia*
- Fazel Tafti—Boston College
- Sanfeng Wu—Princeton University
- Sergei Zvyagin— Dresden High Magnetic Field Laboratory, Germany

**EMR Advisory Subcommittee**

- Alina Bienko—University of Wrocław, Poland
- Selvan Demir—Michigan State University*
- Effie Kisgeropoulos—National Renewable Energy Laboratory
- Muralee Murugesu—University of Ottawa, Canada
- Troy Stich—Wake Forest University
- Joshua Telser—Roosevelt University

**ICR Advisory Subcommittee**

- Caroline DeHart— Frederick National Laboratory for Cancer Research
- Facundo Fernández—Georgia Institute of Technology
- Ryan Julian—University of California, Riverside
- Franklin Leach—University of Georgia*
- Mike Senko—Thermo Fisher Scientific
- Caitlin Tressler—Johns Hopkins University School of Medicine
- Robert Young—New Mexico State University

**NMR/MRI Advisory Subcommittee**

- Vipin Agarwal—Tata Institute of Fundamental Research, India
- Claudia Avalos—New York University
- Galia Debelouchina—University of California San Diego*
- Shella Keilholz—Emory University/Georgia Tech*
- Danielle Laurencin—National Center for Scientific Research, France
- Lothar Schad—University Heidelberg
- Sonia Waiczies—Max Delbrück Center for Molecular Medicine in the Helmholtz Association, Germany
- Tuo Wang—Louisiana State University
- Jun Xu—National Centre for Magnetic Resonance in Wuhan

**Pulsed Field Advisory Subcommittee**

- Joseph G. Checkelsky—Massachusetts Institute of Technology
- Michihiro Hirata—Los Alamos National Laboratory
- Rongyin Jin—University of South Carolina
- Minhyea Lee—University of Colorado Boulder
- Brad Ramshaw—Cornell University (Vice Chair) *
- Sheng Ran— Washington University St. Louis

*Note: * Are members of the User Executive Committee*

***Figure 1.3.1.*** *Participants of the 2024 User Committee meeting in Gainesville, FL*

## 1.4 PERSONNEL

As of January 5, 2025, the MagLab employs **562** individuals across its three sites. These personnel are funded by the NSF core grant, the State of Florida, and individual investigator awards, as well as a variety of home institutions and other sources. A list of MagLab personnel by department is presented in **Appendix I**.

**Principal Investigators**

- Kathleen Amm (PI)—Director/Professor
- Joanna Long (Co-PI)—Program Director, AMRIS, UF
- Kristina (Kicki) Hakansson (Co-PI)— Program Director, ICR, FSU
- Eric Palm (Co-PI)—Deputy Lab Director
- Ross McDonald (Co-PI)—Program Director, PFF, LANL

**User Facility Directors**

- Advanced Magnetic Resonance Imaging and Spectroscopy Facility (UF) —Joanna Long
- DC Field Facility (FSU)—Tim Murphy
- Electron Magnetic Resonance Facility (FSU)— Stephen Hill
- High B/T Facility (UF)—Mark Meisel
- Ion Cyclotron Resonance Facility (FSU)—Kristina (Kicki) Hakansson
- Nuclear Magnetic Resonance (FSU)—Robert Schurko
- Pulsed Field Facility (LANL)—Ross McDonald

Of our **562** employees, senior personnel represent the largest group at 34%, followed by undergraduate students at 16%, graduate students at 14%, other professional and technical support staff at 13%, postdocs at 8%, and administrative support staff at 2%. The total distribution appears in **Figure 1.4.1.**

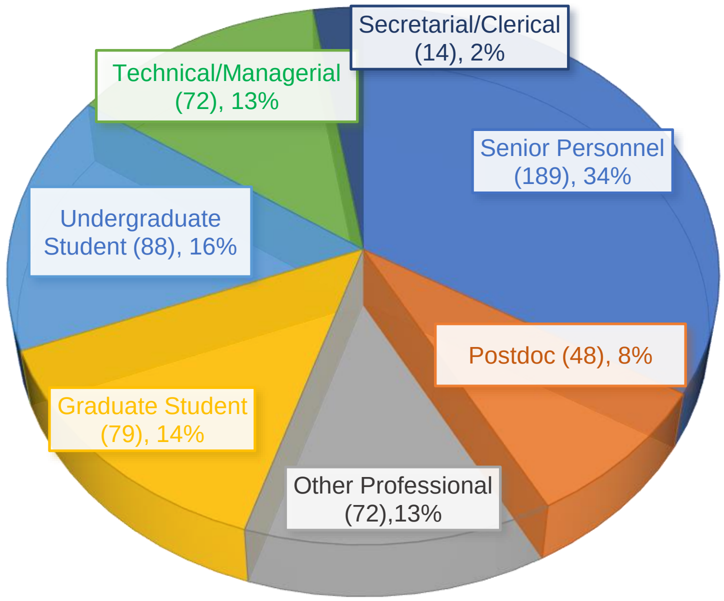



***Figure 1.4.1.*** *MagLab Position Distribution (as of January 5, 2025).*

## 1.5 SAFETY

At the MagLab, a primary focus of all activities is ensuring a safe and educational environment for employees, users, visitors, and contractors. The Environmental, Health, and Safety (EH&S) team works closely with management, researchers, staff, users, and both public and private organizations to proactively address and minimize hazards in industrial, laboratory, and office settings. The MagLab Safety Department is closely integrated with Florida State University's Central EH&S Department, which enhances the support of the lab's safety programs. Key areas of collaboration include Chemical Safety, Laboratory Safety, Biological Safety, Radiation Safety, Industrial Hygiene and Occupational Safety, Fire Safety, Environmental Compliance, and Building Code Compliance.


The MagLab incorporates its Integrated Safety Management Program (ISM) to weave safety, health requirements, and safety controls into daily work activities, ensuring the protection of the entire MagLab Community. The lab is committed to nurturing a strong and sustainable Safety Culture. Some of the key practices that support this commitment include:

a. Safety is considered a core value and an investment, not an expense.
b. Management plays an active role in promoting and driving our Safety Culture.
c. The MagLab Director hosts Quarterly Safety Meetings to address lab-wide safety issues and initiatives.
d. The MagLab Director and Safety Director regularly conduct walk-throughs of lab areas to engage with researchers, staff, and users while observing ongoing work.
e. All new employees receive safety training, including a New Employee ISM Training that focuses on the Lab's ISM process. Training encourages a strong safety mindset, fostering an interest in safety and familiarizing employees with the Lab's core values. Employees are further introduced to policies on Stop Work, near-miss/no-fault self-reporting, and accident reporting.

**Investments In Safety**

Our commitment to safety is reflected in our strategic investments in safety equipment, materials, and the active involvement of both management and employees. These efforts ensure that resources are used effectively to protect MagLab personnel, property, and the environment. In 2024, the MagLab allocated $70,000 toward safety-related equipment, supplies, security measures, training, and ongoing education. Notable investments included personal protective equipment, lockout/tagout supplies for verifying hazardous energy sources, security upgrades, and various monitoring devices.

**Safety Support and Coordination with Institutional Safety Teams**
Safety at the MagLab is supported by a dedicated on-site team in collaboration with the Florida State University (FSU) Environmental, Health, and Safety Department, University of Florida (UF), Environmental, Health, and Safety and Los Alamos National Laboratory (LANL), Environment, Safety, Health, and Quality. Together, these teams deliver comprehensive, integrated safety support for all MagLab activities. Inspections of areas such as the Machine Shop, Biosafety, Laboratory, Laser, and Radiation facilities were conducted with participation from both EH&S teams. Additionally, the teams have joined forces to provide safety training across various departments.

**Committees**
Safety committees play a crucial role in the MagLab's ISM process. These committees regularly meet to discuss safety concerns, address issues, and conduct program reviews.

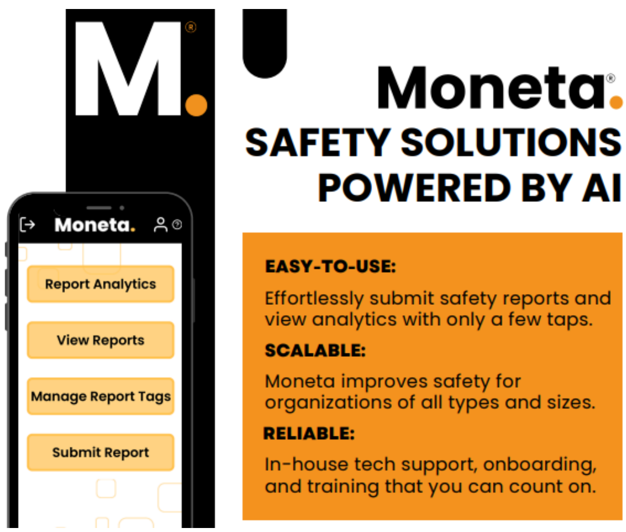
The following is a list of the MagLab's safety committees:

- Directors Monthly Safety Committee (includes representatives from UF and LANL Facilities)
- Safety Concerns Committee
- Lock/Tag Verification Committee
- Cryogen Safety Committee
- Laser Safety Committee
- Electrical Safety Committee

Committee members also form subcommittees as needed to address specific safety concerns.

**Safety Highlights**
The MagLab Safety Department has implemented monthly lab inspections conducted by MagLab safety personnel, along with monthly lab inspection worksheets completed by the lab manager or principal investigator (PI). As a result of these improvements, FSU Lab Safety personnel reported being impressed by the MagLab's outstanding safety improvement, with few infractions observed. The MagLab is now a standard marker for lab safety.

Additionally, safety efforts have expanded to explore the use of Artificial Intelligence (AI) to identify leading indicators of potential safety incidents before they occur. This initiative is supported by the use of the Moneta near-miss reporting app. Moneta enables proactive hazard identification, enhances safety culture, reduces workplace injuries, and promotes data-driven decision-making. The app allows individuals to report near misses directly from their phones, with the option to include pictures and report anonymously. App users are also notified through the app when their report has been reviewed, commented on, and/or resolved.




**User Facility Safety**
The MagLab's User facilities (DC Field, Pulsed Field, High B/T, NMR, AMRIS, EMR, and ICR) provide support to both internal and external users. To prepare for their visits, users are assigned a combination of online and in-person training modules tailored to the specific experiments they will conduct and the associated hazards of the facilities they will be working in. This training is typically coordinated several weeks in advance for external users. Users must complete all required training before being authorized to begin their work. Upon arrival, users receive hands-on training specific to each facility and have the opportunity to discuss any safety concerns with user support. During their time at the facility, users are paired with in-house scientists or technicians who provide support to meet both technical and safety needs. For non-routine or particularly hazardous activities, trained and experienced facility personnel are responsible for completing these tasks to minimize risk to users.

## 1.6 BUDGET

The National High Magnetic Field Laboratory is primarily funded by the National Science Foundation. Other operating funds are provided through the participating institutions: The Florida State University, the University of Florida, and the Los Alamos National Laboratory. Additionally, faculty and staff have been very successful in securing individual research funding for specific areas of research from a wide variety of sources, including federal, State, and private sectors.

The National Science Foundation Division/Directorate approved the National High Magnetic Field Laboratory's facilities award for 2023-2027 on December 12, 2022. For the Calendar Year 2024, NSF provided an operating budget of $38,566,495.

**Table 1.6.1** represents the budget allocation and percentage of the total budget to each department/division of the National High Magnetic Field Laboratory. **Table 1.6.2** summarizes the MagLab's budget position as of December 31, 2024.

***Table 1.6.1.*** *NSF Budget by MagLab Departments/Divisions*

| Division/Program | CY 2024 Total Funding ($) | Budget (%) |
|---|---|---|
| Operations/Safety | 2,895,253 | 7.51% |
| DC Field Facility/Facilities | 8,237,430 | 21.36% |
| Magnet Science & Technology | 4,987,121 | 12.93% |
| NMR | 1,220,888 | 3.17% |
| ICR | 2,149,095 | 5.57% |
| EMR | 910,581 | 2.36% |
| CIRL and REU | 586,888 | 1.52% |
| ASC | 1,938,354 | 5.03% |
| Electricity & Gases | 4,439,131 | 11.51% |
| LANL | 8,964,918 | 23.25% |
| UF High B/T | 455,883 | 1.18% |
| UF - AMRIS | 808,698 | 2.10% |
| Diversity | 5,868 | 0.02% |
| User Collaboration Grants Program | 720,000 | 1.87% |
| FAIR Data | 246,388 | 0.64% |
| Supplements | - | 0.00% |
| **Total Operations** | **38,566,496** | **100.0%** |

***Table 1.6.2.*** *NSF Budget & Expenses – Calendar Year 2024*

| Expense Classification | Budget ($) | Expenses and Encumbered ($) | Balance ($) |
|---|---|---|---|
| Salaries and Fringe | 11,532,970 | 14,298,925 | (2,765,955) |
| Equipment | 984,681 | 1,090,832 | (106,151) |
| Travel | 210,023 | 120,877 | 89,146 |
| Participant Support | 153,112 | 139,338 | 13,774 |
| Direct Expense | 3,351,815 | 2,210,479 | 1,141,336 |
| Subawards | 10,457,542 | 13,950,403 | (3,492,861) |
| Other Direct Costs | 3,045,888 | 2,782,278 | 263,610 |
| Subtotal | 29,736,031 | 34,593,131 | (4,857,100) |
| Indirect Cost | 8,830,464 | 7,186,345 | 1,644,119 |
| **Total Direct and Indirect Cost** | **38,566,495** | **41,779,477** | **(3,212,982)** |

**Notes:**
Per the Cooperative Agreement, DMR 2128556, the CY 2024 funded budget is $38,566,495.
Negative values are attributed to the following:

- Salaries/Wages/Benefits have a negative unobligated balance due to Increment 1 of 2025 being encumbered in December 2024.
- Equipment encumbrances include purchases that have a lengthy lead time from the time the order is placed until receipt of the goods.
- Subawards have a negative unobligated balance due to Increment 1 of 2025 being encumbered in December 2024.
- Travel is not encumbered within the University system and credit card purchases are not included in unliquidated obligations.
- Indirect costs are not encumbered and not charged until expenses have posted.

## 1.7 MAGLAB COST RECOVERY REPORT

Seldom does the NHMFL incur costs due to resources used for companies doing proprietary research. On occasion, companies will need access to the unique equipment at the NHMFL, and they will contract for the use of said equipment. The NHMFL has established procedures to accumulate and report costs continuously and consistently for all such contracts based upon an agreed upon schedule of fees and costs to cover the use of such equipment that involves proprietary research.

In 2024, the MagLab received no income for the use of NSF-funded equipment during the period of performance of our federal award.

## 1.8 INDUSTRIAL PARTNERSHIPS AND COLLABORATION

The MagLab collaborated with dozens of companies, national/international labs, universities, and community groups in 2024.

### INDUSTRY

**Advanced Conductor Technologies, Boulder, CO:** The Applied Superconductivity Center and the Magnet Science and Technology Division of the MagLab are collaborating with Advanced Conductor Technologies on the development and testing of Conductor on round Core (CORC®) cables, using multi-layer spiraling tapes around a core, for magnet applications. Danko van der Laan, Director of the company and associated with NIST/University of Colorado Boulder, is developing compact cables based on REBCO-coated conductors, a high-temperature superconductor. The ongoing collaboration on measurements of HTS cables at large diameter and high magnetic fields (160 mm and 12 T at ASC) continues to set new benchmarks for peak current, current density, bend radius, and ramp rates. *(MagLab contact: Ulf Trociewitz, ASC).*

**Advanced Conductor Technologies, Boulder, CO:** The Magnet Science and Technology Division of the MagLab collaborated with Advanced Conductor Technologies on the characterization of critical current as a function of uniaxial tensile strain in self-field at liquid nitrogen temperature. *(MagLab contact: Jun Lu, MS&T)*

**Advanced Superconducting Materials (ASM), Lexington, KY:** The Applied Superconductivity Center is collaborating with ASM under a Phase-I Small Business Technology Transfer award on the development of a photo-acoustic measurement device. *(MagLab contacts: Daniel Davis, Ulf Trociewitz, ASC)*

**ATI Specialty Metals and Products, Albany, OR:** The Applied Superconductivity Center is collaborating with ATI metals in the development of new Nb alloys for $Nb_3Sn$ superconducting wire fabrication. The new alloys exhibit improved properties at high fields and could be used for accelerator magnets in facilities like the Future Circular Collider (FCC) under consideration by CERN. *(MagLab contacts: David C. Larbalestier, Chiara Tarantini, Peter Lee, ASC)*

**Bridge12 Technologies Inc., Framingham, MA:** Bridge12 is a small business specializing in the design and manufacturing of active and passive high-frequency microwave components. The EMR and NMR division is collaborating with Bridge12 on novel designs of high-frequency microwave sources for EPR and DNP. *(MagLab contacts: Stephen Hill, EMR and Thierry Dubroca, NMR)*

**Bruker Biospin Corp., Billerica, MA:** The EMR and NMR groups have entered into a collaborative effort with Bruker Biospin regarding the Dynamic Nuclear Polarization (DNP) program. In particular, the effort aims at improving Bruker's recently acquired products (395GHz gyrotron, 600MHz/14.1T DNP probe) beyond their normal commercial uses by making technical modifications as well as developing new instrumentation. The modifications allow the DNP instruments to be more user program friendly without voiding the warranty. *(MagLab contacts: Stephen Hill, EMR, Frederic Mentink, NMR, Peter Gork'ov, NMR, Thierry Dubroca, NMR)*

**Bruker Biospin Corp., Billerica, MA:** Investigators from MagLab facilities at UF and FSU collaborate with technical staff at Bruker on NIH-funded projects to develop improved superconductive cryogenic probes for solution NMR. *(MagLab contacts: William Brey, NMR; Matthew Merritt, AMRIS)*

**Bruker OST, Carteret, NJ:** Bruker OST is manufacturing accelerator quality $Nb_3Sn$ strands based on the restacked-rod process that provides the production conductor for the High-Luminosity Upgrade of the Large Hadron Collider at CERN. The Applied Superconductivity Center oversees conductor production on behalf of the upgrade project, and ASC and the Magnet Science and Technology divisions perform quality verification utilizing the electromagnetic testing facilities at the MagLab. *(MagLab contacts: Lance Cooley, ASC; Jun Lu, MS&T)*

**Bruker-OST, Carteret, NJ:** Extensive collaborations exist between ASC and BOST on both $Nb_3Sn$ and Bi-2212 conductor development, aided by direct support of R&D on these materials from DOE-High Energy Physics to ASC PIs, DOE-Accelerator R&D and Production to Lawrence Berkeley National Laboratory (LBNL) and ASC PIs, and to BOST through the Conductor Development Program (now called Conductor Procurement and R&D Program) managed by ASC in partnership with LBNL. Through these collaborations, BOST has been able to develop the most advanced $Nb_3Sn$ and Bi-2212 conductors produced. *(MagLab contacts: Lance Cooley, David C. Larbalestier, Eric Hellstrom, Daniel Davis, Chiara Tarantini, Jianyi Jiang, ASC)*

**Bruker Scientific LLC, Billerica, MA**: A 2-way NDA is in place to exchange confidential Information for the purposes of discussing a contemplated strategic collaboration or other business activities in connection with Bruker's instrumentation systems and services. A collaboration agreement is currently being negotiated. *(MagLab contact: Kristina Hakansson, ICR)*

**Commonwealth Fusion Systems (CFS)** Devens, MA. DC Field Facility collaborates with CFS in the characterization of REBCO superconducting tapes. CFS is an American fusion power company founded in 2018 in Cambridge, Massachusetts after a spin-out from the Massachusetts Institute of Technology (MIT). Its stated goal is to build a small fusion power plant based on the tokamak design. *(MagLab contacts: Jan Jaroszynski, CMS, DCFF user support)*

**Commonwealth Fusion Systems (CFS)** Devens, MA. The Magnet Science and Technology Division of the MagLab collaborates with CFS in the characterization of mechanical properties of structural materials, welds and HTS sub-cables. *(MagLab contacts: Jun Lu, MS&T)*

**Cryomagnetics Inc.:** Extensive collaboration with Cryomagnetics in the area of all superconducting high-field hybrid magnets that make use of HTS coils made with Bi-2212 nested in the high-field area of the magnet. Cryomagnetics is collaborating with the MagLab under a phase-IIa Small Business Technology Transfer award from the Department of Energy. Cryomagnetics has also obtained a license to use magnet technology based on $Bi_2Sr_2CaCu_2O_{8-x}$ superconductors developed at the MagLab. Magnets will use unique high-pressure high-temperature reaction furnaces and other techniques developed in the ASC to reach 25T in magnet systems. ASC’s involvement focuses on the design, construction, and heat treatment of Bi-2212 coils to be supplied to Cryomagnetics and embedded into their LTS magnet systems. *(MagLab contact: Ulf Trociewitz, ASC)*

**Cryomagnetics Inc.:** Cryomagnetics is collaborating with the MagLab on the development of REBCO-based magnets for commercial production under a phase-II Small Business Innovative Research award from the Department of Energy. The MagLab previously developed a 32T all-superconducting magnet using REBCO conductor which we refer to as generation 1 REBCO magnet technology. The MagLab is now working on a second generation of REBCO magnet technology that will employ better stress management and operate at higher current density. For magnets to be built commercially in significant volume, further improvements are required. The collaboration with Cryomagnetics is intended to produce a third generation of technology that has a simpler design and protection process than generations 1 and 2. *(MagLab contacts: Hongyu Bai, MS&T, Mark Bird)*

**Danfoss Turbocor, Tallahassee, FL:** Danfoss Turbocor Inc. is a company specializing in compressors, particularly oil-free compressors. The compressors are specifically designed for the heating, ventilation, air conditioning, and refrigeration (HVACR) industry and need high-performance soft and hard magnet materials. The company and the laboratory have a joint research project on the selection, characterization, and development of permanent magnet materials and structural materials for high-performance and environmentally friendly compressors. *(MagLab contact: Ke Han, MS&T)*

**Engi-Mat Co., Lexington, KY:** Engi-Mat is a small business specializing in manufacturing advanced nanomaterials. MagLab collaborates with Engi-Mat Co on a small business innovation research grant funded by the US Department of Energy and a DOE-Accelerator R&D and Production grant to Lawrence Berkeley National Laboratory (LBNL) and ASC PIs. The goal of this research is to improve the quality and reproducibility of $Bi_2Sr_2CaCu_2O_{8-x}$ powder for superconducting wires. *(MagLab contacts: Jianyi Jiang, Daniel Davis, ASC)*

**GE HealthCare Technologies, Inc., Chicago IL:** The Magnet Science and Technology division is collaborating with GE HealthCare on measurement of coefficient of thermal expansion of epoxy samples at low temperatures. *(MagLab contact: Jun Lu, MS&T)*

**Materion, Newton, MA:** The Applied Superconductivity Center is collaborating with Materion in the development of new Nb alloys for the $Nb_3Sn$ superconducting wire fabrication to be used for accelerator magnets like the Future Circular Collider (FCC) to be built at CERN. *(MagLab contacts: David C. Larbalestier, Chiara Tarantini, ASC)*

**Mevion Medical Systems, Littleton, MA:** Mevion is a pioneer in the development of proton radiation therapy systems for the non-invasive treatment of cancer. The center of the system is the proton accelerator that utilizes low-temperature superconductors. The MagLab provides engineering support to Mevion by assisting in the qualification testing of full-scale high-current superconductors in background fields at low temperatures. The tests require the MagLab's unique test facility designed for tests of large conductors in a 12T split solenoid superconducting magnet system and the unique variable temperature – variable strain apparatus in ASC. *(MagLab contacts: Todd Adkins, MS&T, Najib Cheggour, ASC)*

**Nikon, Melville, NY:** The MagLab maintains close ties with Nikon on the development of an educational and technical support microscopy website, including the latest innovations in digital-imaging technology. As part of the collaboration, the MagLab is field-testing new Nikon equipment and developing new methods of fluorescence microscopy. *(MagLab contact: Eric Clark, Optical Microscopy)*

**Olympus Corp., Tokyo, Japan:** Investigators at the MagLab have been involved in collaboration with engineers at Olympus to develop and test new optical microscopy systems for education and research. In addition to pacing the microscope prototypes through basic protocols, the Optical Microscopy group is developing technical support and educational websites as part of the partnership. *(MagLab contact: Eric Clark, Optical Microscopy)*

**Oxford Instruments NanoScience (OINS), UK:** The ASC has a collaboration with OINS on the development of high-field insert magnets made with Bi-2212 wire for use in 30+T NMR as well as 25T class compact research magnet systems. Particularly for NMR magnets, Bi-2212 conductor promises several significant advantages that will be exploited here. *(MagLab contact: David Larbalestier, Ulf Trociewitz, ASC)*

**Oxford Instruments NanoScience (OINS), UK** has obtained a license to use magnet technology based on $Bi_2Sr_2CaCu_2O_{8-x}$ superconductors developed at the MagLab. Magnets will use unique high-pressure high-temperature reaction furnaces and other techniques developed in the ASC. OINS aims to produce advanced magnets for laboratory research and NMR systems. *(MagLab contacts: David Larbalestier, Ulf Trociewitz, Lance Cooley, ASC)*

**Phoenix NMR, LLC, Loveland, CO:** Phoenix NMR used the NMR Dynamic Nuclear Polarization facility to test a commercial DNP probe. Additionally, the MagLab's NMR instrumentation program and Phoenix NMR collaborate on the development of stators for magic angle spinning NMR. *(MagLab contacts: Fred Mentink, Peter Gor'kov, NMR)*

**SuperPower Inc., Schenectady, NY:** The Applied Superconductivity Center and the Magnet Science and Technology division of the MagLab are collaborating with SuperPower Inc. on the characterization of YBCO-coated conductors. This material has the potential to transform the field of high-field superconducting magnet technology and is in an early stage of commercialization. The MagLab will work to improve our understanding of this product and provide guidance to SuperPower on enhancing the quality of its product. The MagLab has also taken the lead in encouraging a Coated Conductor Round Table of users of coated conductors at which much information about the long-length performance of coated conductors has been shared. *(MagLab contacts: David C. Larbalestier, Dmytro Abraimov, Jan Jaroszynski, ASC)*

**Thomas Keating LtD, UK:** The EMR group has entered into a partnership with Thomas Keating (TK) LtD in the UK as part of its program aimed at developing a new characterization tool, Dynamic Nuclear Polarization Nuclear Magnetic Resonance (DNP - NMR) at high fields (14.1T / 600MHz). TK draws on tool-making skills to design and develop quasi-optical Terahertz systems and subsystems. *(MagLab contact: Stephen Hill, EMR)*

**ThermoFisher Scientific, Waltham, MA:** The ICR Facility is collaborating with ThermoFisher Scientific and the University of Virginia (Charlottesville, VA) to use advanced control of proton transfer reactions to manipulate ion charge states for improved sensitivity (e.g., for proteomics and other biological applications). Further, this collaboration seeks to couple the latest Thermofisher Scientific mass spectrometry platforms with the Maglab's high field Fourier Transform ion cyclotron resonance (FT-ICR) instruments. (*MagLab contact: Chris Hendrickson, ICR)*

**Virginia Diodes Inc., Charlottesville, VA:** VDI is a technology company specializing in high-frequency microwave sources and detectors. The EMR and NMR divisions collaborate with VDI on the development of microwave sources for high-sensitivity high-field EPR spectroscopy and DNP. These new sources allow the MagLab to stay at the forefront of high-field magnetic resonance instrumentation. The development of high-power solid-state sources for DNP at very high magnetic fields (>30T) is also being planned. *(MagLab contacts: Stephen Hill, EMR, Thierry Dubroca, NMR)*

## NATIONAL OR INTERNATIONAL LABORATORIES AND INSTITUTES

**Brookhaven National Laboratory (BNL), Upton, NY** The division of Magnet Science and Technology is collaborating with Brookhaven National Laboratory on the characterization of NbTi wire for the Electron-Ion Collider (EIC) project. Magnetization, critical current, residual-resistance-ratio (RRR), Cu/non-Cu ratio, filament diameter are tested *(MagLab contact: Jun Lu, MS&T)*

**CHESS (Cornell High Energy Synchrotron Source), Cornell University, Ithaca, NY***:* MagLab scientists and engineers are collaborating with their counterparts at CHESS to support the establishment of the High Magnetic Field (HMF) X-ray beamline that is being constructed at CHESS. In 2023, potential detectors for the HMF beamline underwent fringe magnetic field testing at the MagLab to ensure functionality. Once completed the HMF will greatly increase the range of DC magnetic fields available in the US for several key synchrotron techniques. *(MagLab contact: Tim Murphy, DC Field)*

**EUCARD2 (European Collaboration for Accelerator R&D), Geneva, Switzerland:** EUCARD2 is a European Framework collaboration of about 10 European labs aimed at developing kiloamp high-temperature superconductor cables for future application to a high energy LHC. The European emphasis is on Roebel cables of REBCO-coated conductors, but an equally attractive cable for accelerator purposes is a round wire cable made in the Rutherford style out of Bi-2212 ($Bi_2Sr_2CaCu_2O_{8-x}$). This conductor has been developed at the MagLab under DOE-HEP support in the context of the Bismuth Strand and Cable Collaboration (BSCCo) that unites the MagLab, BNL, FNAL, LBNL, and OST in a team developing this material for accelerator use. The MagLab is now the US point of contact for collaborations between EUCARD2 and the US program. *(MagLab contact: David C. Larbalestier, ASC)*

**Fermi National Accelerator Laboratory (FNAL), Batavia, IL:** Applied Physics and Superconducting Technology Division, Magnet Systems Department of FNAL manages $Nb_3Sn$ wire procurement for LHC high luminosity upgrade, MS&T physical property measurement lab is contracted by FNAL to measure critical current and residual-resistance-ratio of $Nb_3Sn$ wires as a part of the quality verification program. This collaboration started in 2015 and will continue through the fall of 2023. *(MagLab contact: Jun Lu, MS&T)*

**HL-LHC Accelerator Upgrade Project (AUP), Geneva, Switzerland**: The AUP is the US contribution to the High-Luminosity Upgrade of the Large Hadron Collider. All the magnets are $Nb_3Sn$; there is no HTS. AUP will deliver new quadrupole magnets, 20 magnets x 4 coils = 80 coils measuring 4.2m long at 11.4T field and 1.9K, that intensify the focus of the CERN proton beams at the ATLAS and CMS intersection regions, and new crab cavities that rotate the beam slightly and ensure that collisions are head-on even when the focusing magnets are highly converging. These new elements will make physics happen 10 times faster than before (new physics being proportional to luminosity). The Hi-Lumi project in European accounting is around CHF 2.2 billion, AUP cost is $225 million, and MagLab oversees a $25 million component to procure 10 tons (7 tons have been delivered as of Feb 2021) of the highest-performing $Nb_3Sn$ conductor ever made and verify its quality by testing critical current and other properties. The AUP is supported by the DOE Office of Science. The AUP team consists of six US laboratories and two universities: Fermilab, Brookhaven National Laboratory, Lawrence Berkeley National Laboratory, SLAC National Accelerator Laboratory, Thomas Jefferson National Accelerator Facility (all DOE national laboratories), the National High Magnetic Field Laboratory, Old Dominion University and the University of Florida. *(MagLab contacts: Lance Cooley, David C. Larbalestier, ASC)*

**International Electrotechnical Commission (IEC)/ Versailles Project on Advanced Materials and Standards (VAMAS), Japan:** This collaboration is a worldwide round-robin measurement of the critical current of superconducting BSCCO-2223 cable. The participants are a testing lab in Japan, Korea, the US, the UK, France, and China. The materials group in the MagLab's magnet science and technology division is the US participant. The measurement at the MagLab was completed in 2022. The outcome and the final report of the worldwide round-robin effort by VAMAS is expected in 2023. *(MagLab contact: Jun Lu, MS&T)*

**International Thermonuclear Experimental Reactor (ITER), US-ITER Project Office, Oak Ridge National Laboratory (ORNL), Oak Ridge, TN:** The United States is part of an exciting international collaboration to demonstrate the feasibility of an experimental fusion reactor that is under construction in France. MS&T's physical property measurement lab has been preparing $Nb_3Sn$ wire samples as a witness for heat treatment ITER central solenoid modules, coax joints, and bus bars. The MagLab subsequently measures the critical current of these heat treatment witness samples. *(MagLab contact: Jun Lu, MS&T)*

**Japan Proton Accelerator Research Complex (J-PARC), Japan:** The Applied Superconductivity Center (ASC) is collaborating with the Japan Proton Accelerator Research Complex J-PARC to perform neutron-diffraction experiments on RRP® $Nb_3Sn$ wires to find the origin of the strain irreversibility cliff in these conductors and to identify the different phases present in the conductor after heat-treatments. This collaboration also includes Kozo Osamura from the Research Institute for Applied Sciences RIAS (Kyoto, Japan) and Shutaro Machiya from Daido University (Nagoya, Japan). Work from this collaboration will expand to also include other conductors currently being developed such as $Nb_3Sn$ containing additional pinning centers. *(MagLab contacts: Najib Cheggour, ASC)*

**Jefferson Lab, Newport News, VA:** Recently, Nitrogen and Titanium doping have emerged as highly effective methods of improving the quality factor on Nb SRF cavities; the Applied Superconductivity Center is working with scientists at Jefferson Lab to evaluate the interaction between prior cold work and doping treatment of Nb samples and their influence on the superconducting properties. Doping is carried out at Jefferson Lab and superconducting property measurements, including magneto-optical imaging are carried out at the MagLab. *(MagLab contact: Lance Cooley, ASC)*

**Key Laboratory of Electromagnetic Processing of Materials, Northeastern University, Shenyang, China:** The collaboration between Northeastern University and the MagLab is related to the magnetic field impact on the fabrication of high-strength conductors and magnetic materials. Two joint papers have been published between 2019 and 2021. *(MagLab contact: Ke Han, MS&T)*

**Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea:** Professor Hyoungsoon Choi's group at the Korea Institute of Science and Technology (KAIST) has developed a cooperative agreement with Professor Yoonseok Lee and the MagLab's High B/T Facility for the study and development of the design of coolant materials used in nuclear demagnetization refrigerators. The collaboration focuses on the techniques and expertise required to produce high residual resistant ratios for the metallic materials used for the coolants and the associated components. KAIST is a leading center for ultra-low temperature research in Korea. *(MagLab contact: Yoonseok Lee, High B/T)*

**Lawrence Berkeley Laboratory, Accelerator, Berkeley, CA:** The Applied Superconductivity Center is collaborating with the Lawrence Berkeley National Laboratory (LBNL) to test strain properties of high-performance RRP® $Nb_3Sn$ wires to be used in the LBNL Test Facility Dipole Project (TFD). This collaboration will explore the strain sensitivity of a specific $Nb_3Sn$ conductor to help LBNL researchers decide early in the project whether this conductor is suitable for TFD. *(MagLab contact: Najib Cheggour, ASC)*

**Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA:** Division of Accelerator Technology and Applied Physics collaborated with MS&T physical property measurement lab in critical current measurement of $Nb_3Sn$ superconducting wires that are used in the development of the accelerator magnets and the test facility dipole (TFD) magnet, which will be installed at the Fermi National Accelerator Laboratory. This $Nb_3Sn$ wire testing collaboration consists of three projects: A) wire for canted cosine theta (CCT) dipole magnet development; B) wire for electron cyclotron resonance (ECR) source magnet at the facility for rare isotope beam (FRIB) at Michigan State University, and C) the above mentioned TFD magnet *(MagLab contact: Jun Lu, MS&T)*

**Lawrence Berkeley Laboratory, Accelerator, Berkeley, CA:** The Applied Superconductivity Center is collaborating with the Lawrence Berkeley National Laboratory (LBNL) to heat-treat and test accelerator-type model coils (racetrack and CCT) based on Bi-2212 Rutherford cable conductor. *(MagLab contact: Daniel Davis, ASC)*

**Lawrence Livermore National Laboratory, Livermore, CA:** The Applied Superconductivity Center and the Magnet Science and Technology division of the MagLab are collaborating with researchers at Lawrence Livermore National Laboratory to develop cavity resonators and magnets for the Advanced Dark Matter Experiment. Fabrication and microstructural characterization facilities in the ASC are used to investigate $Nb_3Sn$ and other superconducting coatings for use in cavities. Magnet Science and Technology consultation related to very large and high-field detector magnets is ongoing. *(MagLab contact: Lance Cooley, ASC)*

**Los Alamos National Laboratory Community Programs Office, Los Alamos, NM:** CIRL works closely with our counterpart, the Los Alamos National Laboratory Community Programs Office. Over the last year, the MagLab has developed a partnership to share information and resources on our educational activities. The community programs office has a large staff that oversees more than 15 different educational/ community outreach programs including the Bradbury Museum. *(MagLab contact: Carlos R. Villa, CIRL)*

**National Aeronautic and Space Administration, Washington DC:** The MagLab is collaborating with a multi-university NASA University Leadership Institute to research zero-emission aviation. Collaboration members include Florida State University, Georgia Tech, University of Buffalo, University of Kentucky and industrial partners Boeing, Raytheon, and Advanced Magnet Lab. *(MagLab contacts: Wei Guo, CMS and Lance Cooley, ASC)*

**Princeton Plasma Physics Laboratory (PPPL):** The Applied Superconductivity Center and PPPL are collaborating on the R&D of high-field superconducting cable coil for use in nuclear fusion systems. In this context, a particular interest exists for CORC$^{TM}$-type cables made with ReBCO conductors as well as Rutherford-type cables made with Bi-2212 wire. *(MagLab contact: Daniel Davis, ASC)*

**South Florida Water Management District (SFWMD), West Palm Beach, FL:** The collaboration between the SFWMD and the MagLab is related to the investigation of land use and change on food web structure and mercury cycling in the Everglades. Isotopic compositions of the samples collected in this project were analyzed in the Geochemistry Laboratories in the MagLab. *(MagLab contact: Yang Wang, Geochemistry Program)*

**US Magnet Development Program (*MDP*), Berkeley, CA:** The US Magnet Development Program aggressively pursues the development of superconducting accelerator magnets that operate as closely as possible to the fundamental limits of superconducting materials and at the same time minimize or eliminate the need to break in a magnet in a series of steps to achieve its design field strength. MDP looks forward 15-30 years at accelerators that might be built. CERN is already thinking about a Future Circular Collider at 10x the energy of the present LHC, i.e. > 100TeV, in the 2050 timeframe. An important thing about the FCC is that it is constrained by mountains, and to get to 100TeV, the envisioned $Nb_3Sn$ technology, which has a limit at ~16T, must be replaced by or combined with HTS to get to 20T. However, while MDP partners closely with CERN, the technology being developed is generic, and it is important to note that the physics reach of an accelerator scales with the ring diameter and the field strength. MagLab's major developments to date include pioneering Bi-2212 magnet technology and its high-pressure, high-temperature reaction demonstrating several Bi-2212 coils, demonstrating REBCO cables, and leading the national conductor development effort. LBNL serves as the host institution for the MDP organization. *(MagLab contacts: Lance Cooley, David C. Larbalestier, ASC)*

**Woods Hole Oceanographic Institution (WHOI), Falmouth, MA:** The collaboration between WHOI and the MagLab is related to ocean crust formation. WHOI is providing samples and analyses of abyssal peridotites, which are analyzed for Hf, Nd and Osisotopic composition. The MagLab also participates in seagoing expeditions. One has been to the mid-Atlantic Ridge; another is planned to the Marion Rise on the southwest Indian Ridge. Samples collected from these expeditions will be analyzed at both the MagLab and WHOI. *(MagLab contact: Vincent Salters, Geochemistry Program)*

**Woods Hole Oceanographic Institution (WHOI), Falmouth, MA:** The MagLab collaborates with Christopher Reddy and Robert Nelson at WHOI in the characterization of petroleum oil spills at the molecular level, by gas chromatography, x gas chromatography, and FT-ICR mass spectrometry. Although characterization of the 2010 Macondo wellhead oil has been completed, ongoing research focuses on subsequent physical, chemical, and biological changes of spills in the environment, and analysis of future spills. *(MagLab contact: Ryan Rodgers, ICR)*

## UNIVERSITIES

**Cornell University, Ithaca, New York:** The Cornell High Energy Synchrotron Source (CHESS) is building a new beamline for x-ray scattering at high magnetic fields. The MagLab is a partner in this project providing advice on the design of the beamline to accommodate a future magnet using the high-temperature superconductors. (*MagLab contact: Mark Bird*)

**Nagoya University, Nagoya, Japan:** The Applied Superconductivity Center is collaborating with Nagoya University in the investigation of iron-based superconducting thin films to establish their intrinsic properties and determine their potential for applications using electromagnetic characterization techniques also in the high field and expertise available in the MagLab. *(MagLab contact: Chiara Tarantini, ASC)*

**Northwestern University, Evanston, IL:** The Applied Superconductivity Center is collaborating with Prof. Halperin at Northwestern University on the investigation by NMR of $Nb_3Sn$ bulk samples produced at the MagLab. *(MagLab contacts: Chiara Tarantini, David C. Larbalestier, ASC)*

**Osaka City University, Japan:** The EMR group received joint funding with the University of Modena in Italy and Osaka City University in Japan through an International Program sponsored by the Air Force's Asian Office of Aerospace Research and Development (AOARD). This joint program focuses on the quantum properties of molecular magnets. A cooperative agreement between Osaka City University and Florida State University has been established to formalize this collaboration. *(MagLab contact: Stephen Hill, EMR)*

**Radboud University, Nijmegen, The Netherlands:** The MagLab has partnered with the High Magnetic Field Lab in The Netherlands to develop a 45T hybrid magnet using only 24MW of power. The project was funded by the Dutch government in 2006, and in 2012 an agreement was signed for the MagLab to play a leading role in the development of the $Nb_3Sn$ cable-in-conduit superconducting coil for this magnet system. This will be the fourth hybrid outsert to be developed at the MagLab (MagLab 45T, HZB, FSU SCH, Nijmegen), and the Dutch lab will benefit from our extensive experience. When complete, it is expected to be one of three 45T systems worldwide. The MagLab has delivered the CICC coil to Nijmegen. The Nijmegen lab is building the cryostat and resistive coils. *(MagLab contact: Mark D. Bird)*

**Shanghai University, Shanghai, China:** The collaboration between Shanghai University and the MagLab is related to the solidification of metallic materials and the application of machine learning to solidification. They have published two joint papers in 2022. *(MagLab contact: Ke Han, MS&T)*

**St. Andrews University, UK:** The EMR and NMR divisions has an ongoing partnership with St. Andrews University in the UK, involving the development of a high-power (1kW) high-frequency (94GHz) pulsed EPR spectrometer (HiPER) for its user program. *(MagLab contact: Stephen Hill, EMR and Thierry Dubroca, NMR)*

**Tokyo University of Agriculture and Technology, Japan:** The Applied Superconductivity Center is collaborating with TUAT in the investigation of iron-based superconducting bulks and films to establish their intrinsic properties and determine their potential for applications using electromagnetic characterization techniques in the high field and with the expertise available at the MagLab. *(MagLab contact: Chiara Tarantini, ASC)*

**University of Colorado Boulder, Boulder, CO:** The NIST-Boulder electromechanical testing facilities were the primary location for the determination of the strain sensitivity of a wide range of superconducting wires, and these important instruments have been transferred to the Applied Superconductivity Center so that this critical work can be continued. *(MagLab contact: Najib Cheggour, ASC)*

**University of Edinburgh, UK:** The EMR group received funding through a joint program between the National Science Foundation and the Engineering and Physical Sciences Research Council in the UK, enabling an International Collaboration with the Chemistry Department at the University of Edinburgh, Scotland. This joint program involved the development of high-pressure/High-field EPR techniques. *(MagLab contact: Stephen Hill, EMR)*

**University of Modena, Italy:** The EMR group received joint funding with the University of Modena in Italy and Osaka City University in Japan through an International Program sponsored by the Air Force's Asian Office of Aerospace Research and Development (AOARD). This joint program focuses on the quantum properties of molecular magnets. *(MagLab contact: Stephen Hill, EMR)*

**University of Oxford, UK:** The Applied Superconductivity Center is collaborating with the University of Oxford in the investigation of doped $Nb_3Sn$ superconducting wires and Fe-based superconductors (FBS) to determine by atom probe tomography the elemental distribution and possible contaminants (in the FBS) and their effect on the superconducting properties. *(MagLab contact: Chiara Tarantini, ASC)*

**University of Texas, Arlington, TX:** The Applied Superconductivity Center is working with Choong-Un Kim and his research group to understand electrochemical methods to apply refractory metals to copper and copper alloys. Kim's team has unique expertise in preparing non-aqueous methods that ensure very little oxygen is incorporated into the refractory metals, using expertise developed for semiconductor interconnections. The MagLab's microstructural and electromagnetic characterization facilities are used to evaluate the quality of coatings and their properties, including potential use as a superconducting material in a cavity resonator. *(MagLab contact: Lance Cooley, ASC)*

**University of Texas, Austin, TX:** The Applied Superconductivity Center is collaborating with Prof. Eric Taleff in developing novel heat treatment strategies to improve the performance of superconducting RF cavities. *(MagLab contact: Lance Cooley, ASC)*

## COMMUNITY GROUPS AND EDUCATIONAL GROUPS

**American Physical Society - Forum on Outreach and Engaging the Public, College Park, MD:** The Forum's goal is to increase the public's awareness of physics. CIRL works with this group to utilize best practices and engage in international discussions around physics outreach. *(MagLab contact: Roxanne Hughes, CIRL)*

**American Association of Physics Teachers (AAPT), College Park, MD:** AAPT is a professional membership association of scientists dedicated to enhancing the understanding and appreciation of physics through teaching. AAPT was established in 1930 with the fundamental goal of ensuring the "dissemination of knowledge of physics, particularly by way of teaching." It was founded as the first association dedicated to improving physics education. *(MagLab contact: Carlos R. Villa, CIRL)*

**Applied Superconductivity Educational Foundation (ASEF), Potomac, MD:** The mission of the Applied Superconductivity Educational Foundation (ASEF) is to promote exploration, learning, and the exchange of scientific and technical ideas, breakthroughs and accomplishments, and to provide an array of educational and interactive experiences and events. The Applied Superconductivity Educational Foundation (ASEF) engages this vision on a variety of fronts, including the Applied Superconductivity Conference (ASC), the flagship, international conference on applied superconductivity, and ELEVATE, our integrated thrust to promote educational opportunities, professional & leadership development, and outreach between our scientific community and society. Prof. Cooley and Prof. Hellstrom are Board Officers *(MagLab contacts: Lance Cooley, Eric Hellstrom, ASC)*

**Big Bend/Leon Association of Science Teachers (BLAST), Tallahassee, FL:** The Big Bend/Leon Association of Science Teachers (BLAST) is a group that brings together formal and informal science educators to establish lines of communication among all persons involved in science education in the North Florida community and foster a life-long interest in the sciences. They do this by coordinating services most conducive to outstanding science educators, including hosting workshops and presentations that aim to increase the knowledge and skills of science teachers. Additionally, they recognize outstanding achievements in science instruction and provide monetary support for science teacher and student projects. *(MagLab contact: Carlos R. Villa, CIRL)*

**Educational Credit Management Corporation (ECMC) Foundation, Los Angeles, CA:** ECMC Foundation is a national foundation whose North Star goal is to eliminate equity gaps in postsecondary completion by 2040. The Foundation uses a spectrum of funding structures, including strategic grantmaking and program-related investments through Education Innovation Ventures, to invest in both nonprofit and for-profit ventures. In pursuit of system change, the Foundation's grantmaking and investing are concentrated on the three following strategic priorities: removing barriers to postsecondary completion; building the capacity of organizations, institutions and systems; and transforming the postsecondary ecosystem. Kawana Johnson is an alumni fellow. *(MagLab contact: Kawana W. Johnson, CIRL)*

**Florida Afterschool Network, Tallahassee, FL:** The Florida Afterschool Network (FAN) is an organization that is working toward creating and sustaining a statewide infrastructure to establish collaborative public and private partnerships that connect local, state, and national resources supporting afterschool programs that are school-based or school-linked; develop quality afterschool standards that are endorsed and promoted by statewide stakeholders and through Florida Afterschool Network; and promote public awareness and advocate for policy that expands funding, quality improvement initiatives and accessibility of afterschool programs. The Center for Integrating Research & Learning is a member of the advisory council for this organization. *(MagLab contact: Carlos R. Villa, CIRL)*

**Florida A&M University Developmental Research School (FAMU DRS), Tallahassee, FL:** FAMU DRS is the lab school of FAMU, a historically black college and university. The mission of FAMU DRS is to conduct research, demonstrations, and evaluations of the management of teaching and learning. FAMU DRS emphasizes mathematics, science, technology, and foreign languages. The MagLab partnered with FAMU DRS to provide a SciGirls Coding Summer Camp to their students to increase the representation of African American women in computer science. *(MagLab contact: Carlos R. Villa, CIRL)*

**Florida Association of Science Teachers (FAST), Tallahassee, FL:** FAST is a diverse group of teachers, scientists, science educators, science supervisors, curriculum designers, administrators, and educational business partners who have a common goal of improving education for students in the state of Florida. FAST provides a way for all members to keep up with what is happening in education in Florida and across the United States. *(MagLab contact: Carlos R. Villa, CIRL)*

**Florida State University School (FSUS), Tallahassee, FL:** Florida State University Schools (FSUS) is a charter school affiliated with Florida State University, offering a unique K-12 educational experience. As a laboratory school, FSUS integrates academic achievement with educational research and innovation, leveraging FSU's resources to bring cutting-edge practices into the classroom. The school emphasizes a comprehensive curriculum that fosters a love for learning, critical thinking, and creativity, preparing students for both academic success and global challenges. FSUS is a community dedicated to empowering future leaders and making a positive impact on the world. *(MagLab contact: Carlos R. Villa, CIRL)*

**Future Physicists of Florida, Tallahassee, FL:** Future Physicists of Florida is an organization dedicated to recognizing talented middle school math and science students and providing educational guidance to these students to prepare them for careers in physics and engineering. CIRL is a partner in the organization. *(MagLab contact: Carlos R. Villa, CIRL)*

**Inclusive Graduate Education Network (IGEN), College Park, MD:** The MagLab has worked with IGEN to beta test mentor training for mentors at national labs. MagLab staff will be able to participate in the final curriculum to strengthen the quality of mentorship at the MagLab. *(MagLab contact: Kawana Johnson, CIRL)*

**Institute of Electrical and Electronic Engineers (IEEE), Piscataway, NJ:** The MagLab works with the IEEE Council on Superconductivity to award student fellowships for research and travel. The awards are solicited and reviewed through the council for students nearing a Ph.D. degree. *(MagLab contacts: Eric Hellstrom, Lance Cooley, ASC)*

**International Mentoring Association (IMA), Newberry, FL:** This organization is a leading source for best practice solutions and support of mentoring and coaching professionals and their programs. The IMA advances individual and organizational development by promoting the use of mentoring best practices in every organizational setting. CIRL staff benefit from the professional development that this organization provides. *(MagLab contact: Kawana Johnson, CIRL)*

**Leon County Schools, Tallahassee, FL:** CIRL works closely with Leon County Schools (LCS) through our K-12 outreach and our middle school mentorship program. In 2014, CIRL staff worked with Title I elementary school teachers from LCS to develop and facilitate a year-long teacher professional development that culminated in a STEM challenge for students. *(MagLab contact: Carlos R. Villa, CIRL)*

**Lively Technical College, Tallahassee, FL:** Lively Technical College is a vocational school that was established in 1937 to provide individuals with the education and training needed to obtain gainful employment and earn a living. CIRL is working closely with the college to develop a professional development program for skilled technical workers in training to gain exposure to STEM technical careers at the MagLab. *(MagLab contact: Kawana W. Johnson, CIRL)*

**National Girls Collaborative Project, Seattle, WA:** This is a national nonprofit organization that works to improve girls' interest in and access to STEM programs and careers. CIRL has utilized its publications and webinars for best practices in STEM education. CIRL's research has also informed their work. *(MagLab contact: Roxanne Hughes, CIRL)*

**National Postdoc Association, Washington, DC:** The National Postdoc Association (NPA) advocates for postdoctoral scholars at a national level and coordinates an annual meeting of postdoctoral scholars, their mentors, and postdoctoral affairs staff. Florida State University is an affiliate member, so all postdocs at the FSU branch receive complimentary membership to the NPA. Additionally, representatives from the lab attend the annual meeting regularly to stay up to date on the latest issues and initiatives related to postdoctoral affairs. The NPA provides direct support to postdocs through professional development and a virtual career center. (*MagLab contact: Kawana Johnson, CIRL*)

**Supporting Teachers to Encourage the Pursuit of Undergraduate Physics (STEP UP), Miami, FL:** STEP UP is a national community of physics teachers, researchers, and professional societies. They have designed high school physics lessons to empower teachers, create cultural change, and inspire young women to pursue physics in college. It is supported by NSF, APS Physics, AAPT, and FIU. *(MagLab contact: Carlos R. Villa, CIRL)*

**WFSU-TV, Tallahassee, FL:** The Center for Integrating Research & Learning partners with WFSU-TV, the area's public television station, to administer SciGirls. The program includes two summer camps for middle school girls with an interest in science. The collaboration between the MagLab and WFSU-TV has resulted in a successful partnership that has lasted over a decade. *(MagLab contact: Carlos R. Villa, CIRL)*

## SPIN-OFFS OR RESEARCH LABORATORIES AND CORPORATIONS

**Black Fox LLC, Tallahassee, FL:** Black Fox LLC is a spinoff company that builds custom magnetic resonance probes for research institutions. It was formed in 2016. *(MagLab contact: Peter Gor'kov, NMR)*

**Center for Advanced Power Systems (CAPS), Tallahassee, FL:** The Center for Advanced Power Systems (CAPS) is a multidisciplinary research center organized to perform basic and applied research to advance the field of power systems technology. CAPS's emphasis is on application to electric utility, defense, and transportation, as well as developing an education program to train the next generation of power systems engineers. The research focuses on electric power systems modeling and simulation, power electronics and machines, control systems, thermal management, cyber-security for power systems, high-temperature superconductor characterization, and electrical insulation research. *(MagLab contact: Greg Boebinger)*

**Future Fuels Institute, Tallahassee, FL:** The Future Fuels Institute (FFI) was established to enhance the existing Ion Cyclotron Resonance (ICR) Program at the MagLab to deal specifically with bio- and fossil fuels, particularly for heavy oils and synthetic crudes. Supported by sponsoring companies and collaborative entities (instrument companies, universities, and research institutes), the FFI works to develop and advance novel techniques for research applications and industrial problem-solving. Recent research has focused on biofuels and recycling efforts for petroleum-based materials (plastics). The institute also serves as a training center for fuel-related science and technology. It is currently part of an international joint laboratory (iC2MC), funded by TotalEnergies. (*MagLab contact/ Director: Ryan Rodgers, ICR*)

**High-Performance Materials Institute (HPMI), Tallahassee, FL:** The High-Performance Materials Institute (HPMI) is a multidisciplinary research institute for research and education in the field of advanced materials. Currently, HPMI is involved in four primary technology areas: High-Performance Composite and Nanomaterials, Structural Health Monitoring, Multifunctional Nanomaterials Advanced Manufacturing, and Process Modeling. Over the last several years, HPMI has proven a number of technology concepts that have the potential to narrow the gap between research and practical applications of nanotube-based materials. These technologies include magnetic alignment of nanotubes, fabrication of nanotube membranes or bucky papers, production of nanotube composites, modeling of nanotube-epoxy interaction at the molecular level, and characterization of SWNT nanocomposites for mechanical properties, electrical conductivity, thermal management, radiation shielding and EMI attenuation. *(MagLab contact: Greg Boebinger)*

# 2. USER FACILITIES

## 2.1 USER PROGRAM

### PROPOSAL REVIEW PROCESS

Across all seven facilities, proposals for magnet time are submitted online via https://users.magnet.fsu.edu and reviewed in accordance with the MagLab User Proposal Policy. In brief, each user facility has a User Proposal Review Committee (UPRC) comprised of at least seven members, with more external members than internal. UPRC memberships are treated confidentially by the laboratory but are available for review by NSF and MagLab advisory committees. Proposal reviews are conducted in strict confidence and are based on two criteria: (1) the scientific and/or technological merit of the proposed research and (2) the “broader impacts” of the proposed work. They are graded online according to a scale, ranging from “A” (Proposal is high quality and magnet time must be given a high priority) to “C” (Proposal is acceptable and magnet time should be granted at MagLab discretion) to “F” (Proposal has little/no merit and magnet time should not be granted). The Facility Directors merge the UPRC recommendations with the availability and scheduling of specific magnets, experimental instrumentation, and user support scientists and make recommendations for magnet time assignments to the MagLab Director. The MagLab Director is responsible for final decisions on scheduling of magnet time based on these recommendations. All 2024 User Proposals can be found in **Appendix 5**.

### FUNDING OPPORTUNITIES

**Dependent Care Travel Grant**

The MagLab recognizes that caregivers of children and other dependents often shoulder these demands in addition to the challenges of their research careers. For caregivers, travel to the MagLab to conduct experiments or to conferences to disseminate research findings often incurs extra costs for dependent care. Since 2011, the MagLab’s Dependent Care Travel Grant (DCTG) program has offered up to $800 per year for travel expenses for MagLab scientists traveling to conferences or MagLab users traveling to any of the three MagLab facilities. In 2024, the MagLab proudly granted 679.38 to external users through the DCTG Program.

**First-Time User Support**

The NHMFL is charged by the National Science Foundation with developing and maintaining facilities for magnet-related research that are open to all qualified scientists and engineers through a peer-reviewed proposal process. Facilities are generally available to users without cost. To encourage new research activities, first-time users are provided financial support for travel expenses. International users are provided $1,000 of support and domestic users are provided $500 of support for their travel costs. This funding is provided by the State of Florida and is available for Tallahassee user facilities only.

**Visiting Scientist Program (VSP)**

The National High Magnetic Field Laboratory provides researchers from academia, industry, and national laboratories the opportunity to utilize the unique, world-class facilities of the laboratory to conduct magnet-related research. In 2024, the Visiting Scientist Program provided financial support of $22,223 for six research projects on a competitive basis. To apply for support from the Visiting Scientist Program, interested researchers are required to submit an application and a proposal that will be reviewed by appropriate facility directors and scientists at the NHMFL. All requests for support must be submitted online at https://vsp.magnet.fsu.edu/

**User Collaboration Grants Program (UCGP)**

The National Science Foundation charged the National High Magnetic Field Laboratory with developing an internal grants program that utilizes the MagLab facilities to carry out high-quality research at the forefront of science and engineering and advances the facilities and their scientific and technical capabilities. User Collaboration Grants Program, established in 1996, stimulates magnet and facility development and provides intellectual leadership for research in magnetic materials and phenomena.

The Program strongly encourages collaboration between MagLab scientists and external users of MagLab facilities. Projects are also encouraged to drive new or unique research, i.e., serve as seed money to develop initial data leading to external funding of a larger program. Per NSF policies, the MagLab cannot fund clinical studies.

Twenty-two (23) UCGP solicitations have now been completed with a total of 635 pre-proposals being submitted for review. Of the 635 proposals, 341 were selected to advance to the second phase of review and 152 were funded.

***2024 Solicitation and Awards***

The MagLab UCGP has been highly successful as a mechanism for supporting outstanding projects in the various areas of research pursued at the laboratory. It uses a two-stage proposal review process that is handled using a web-based system. The proposal review is done by a combination of internal and external reviewers. Details of the process and review criteria are available on the website https://ucgp.magnet.fsu.edu/Guidance/ReviewCriteriaAndProcess. The most recent solicitation is complete.

Of the 11 pre-proposals received, 8 advanced to the full proposal stage. Some of the full proposals may be selected for funding if budget permits. A breakdown of the review results is presented in **Table 2.1.1.**

***Table 2.1.1.*** *UCGP Proposal Solicitation Results – 2024*

| Research Area | Pre-Proposals Submitted | Pre-Proposals Proceeding to Full Proposal |
|---|---|---|
| Condensed Matter Science | 7 | 4 |
| Biological & Chemical Sciences | 3 | 3 |
| Magnet & Magnet Materials Technology | 1 | 1 |
| **Total** | **11** | **8** |

***Future Solicitations***

Future solicitations will be announced when and if budget considerations permit.

***Results Reporting***

To assess the success of the UCGP, reports were requested in January 2025, on 22 grants issued from the five solicitations which had start dates from 2019 through 2024. At the time of the reporting, some of these grants were in progress, and some had been completed. For this "retrospective" reporting, PIs were asked to include external grants, MagLab facilities enhancements, and publications that were generated by the UCGP. Since UCGP grants are intended to seed new research through high-risk initial study or facility enhancements, principal investigators (PIs) were allowed and encouraged to report results that their UCGP grant had made possible, even if these were obtained after the term of the UCGP grant was complete.

The PIs reported:

- Lab enhancements, which are listed in **Table 2.1.2**.
- At least partial support for 20 high school students, 39 undergraduate researchers, 31 grad students, and 9 postdocs.
- 5 funded external grants, which were seeded by results from UCGP awards. The total dollar value of the external grants was $7.8M.
- 44 publications, many in high-profile journals, including 3 in *JACS*, 1 in *Nature Communications*, 1 in *Nature Catalysis,* 10 in *Physical Review Letters*, and 1 in *Science.*

***Table 2.1.2.*** *Facility Enhancements Reported from the last five UCGP Solicitations*

| Enhancement | Date Available | Users Groups* |
|---|---|---|
| Rapid high-resolution temperature dependence of heat capacity | 06/01/2022 | 9 |
| ARS Cryocooler System for Parahydrogen Enrichment to 99% | 06/01/2021 | 8 |
| High-resolution angle-dependent heat capacity | 12/01/2022 | 8 |
| Lowered electron temperature in dilution fridge > 300mK < 30mK | 06/01/2021 | 7 |
| High-resolution heat capacity < 0.01pJ/K^2 | 06/01/2022 | 6 |
| Magnetometer for Large Magnet Moments with Strong Magnetic Anisotropy | 06/01/2021 | 7 |
| Rapid field sweeping measurement of heat capacity, up to 5T/min | 01/01/2022 | 6 |
| Packed Bed Heterogeneous Catalytic Reactor for Continuous-Flow Hyperpolarization | 05/01/2022 | 5 |
| Batch Catalytic Reactor System with Automated NMR Acquisition | 02/01/2023 | 4 |
| Ultrasonic Spray Injection Reactor System | 06/01/2022 | 4 |
| Online liquid chromatography for environmental applications (metal and organic speciation | 09/01/2022 | 3 |
| Radio Frequency pulse control within HiPER | 02/01/2023 | 2 |
| Low-pass filters for ultra-low electron temperatures | 11/29/2021 | 2 |

| Enhancement | Date Available | Users Groups* |
|---|---|---|
| Diamond anvil cell for pulsed fields | 01/01/2022 | 1 |
| Ability to measure and separate different components of heat capacity using frequency dependence | 01/01/2023 | 1 |
| Ability to measure spin-lattice relaxation rate using heat capacity | 01/01/2023 | 1 |
| Magneto-Raman spectroscopy at temperatures down to 2K and high pressures up to 20GPa | 03/01/2022 | 1 |
| 10W solid state amplifier for magnetic resonance, integrated into system | 11/01/2024 | 1 |
| Replace 9T wide bore magnet for EPR | 11/01/2024 | 1 |
| Upgrade of EPR control software with more user options | 11/01/2024 | 1 |
| Trace-metal free LC system that can operate at low flow rates | 09/01/2022 | 1 |
| Ultimate3000 LC system, with low flow rate capability | 09/01/2022 | 1 |
| Continuous-flow polarization for metabolites | 06/01/2024 | 1 |

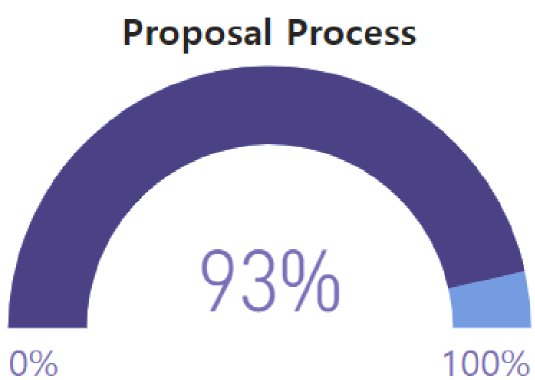
** Number of external users (PIs or private companies only) reported to have used the enhancement.*

## ANNUAL USER PROGRAM SURVEY

The MagLab conducted its annual user survey between June 3, 2024, and June 30, 2024. This survey is vital for guiding the MagLab in setting priorities and planning for the future, as it helps all seven facilities respond to user needs and improve their services and infrastructure. The survey was distributed to all MagLab User Principal Investigators (PIs) and their collaborators who received magnet time between June 1, 2023, and May 31, 2024, including PIs who sent samples for experiments conducted by laboratory staff scientists.

This year's survey reached a total of 1,036 eligible users, comprising 807 (78%) external users and 229 (22%) internal users from FSU, UF, and LANL. We received responses from 151 external users, representing 18.7% of the external user group and 14.6% of the total eligible users. From our internal user group, we received 43 responses, which account for 18.8% of the internal users and 4.2% of the total eligible users. Overall, we obtained feedback from 194 external and internal users, resulting in an 18.7% response rate from all eligible users.

All user responses were treated as confidential. **Figures 2.1.1-2.1.3** exclude internal responses. Breakdowns by facilities can be found at [User Satisfaction - MagLab](User Satisfaction - MagLab).



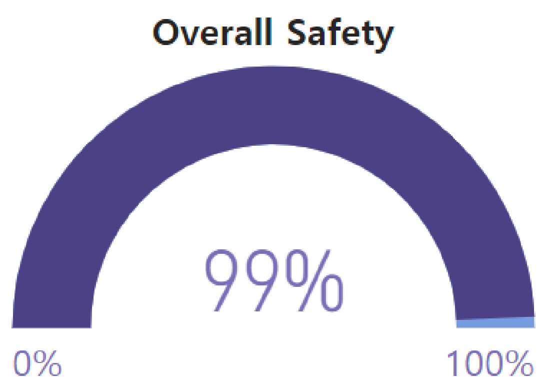




***Figure 2.1.1. Links.*** *93% of external users were satisfied or very satisfied with the proposal process (e.g., submission, review).* ***Right.*** *99% of external users were satisfied or very satisfied with the overall safety at the MagLab.*

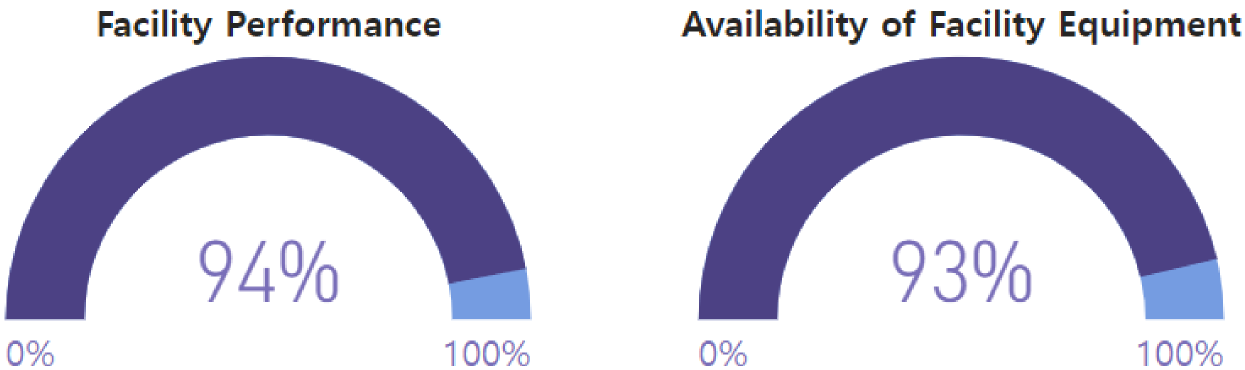



***Figure 2.1.2. Left.*** *94% of external users were satisfied or very satisfied with the performance of the facilities and equipment.* ***Right****: 93% of external users were satisfied or very satisfied with the availability of the facilities and equipment.*

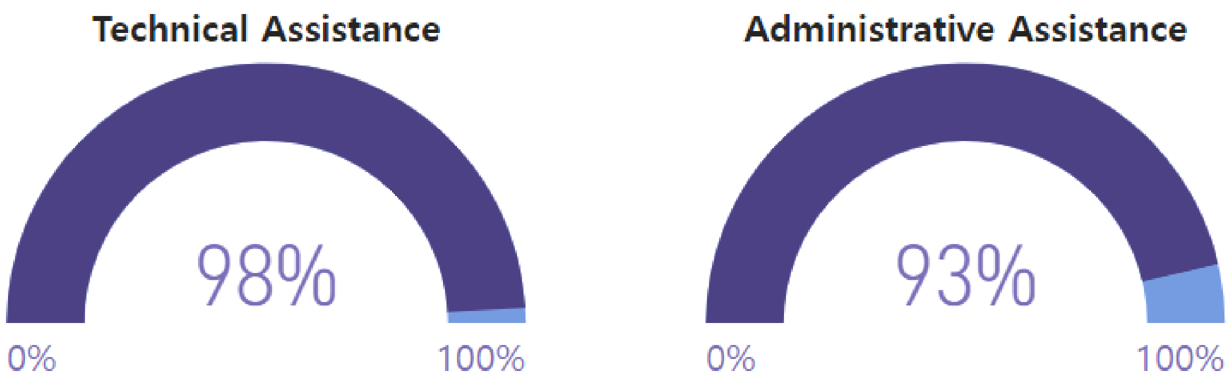



***Figure 2.1.3. Left.*** *98% of external users were satisfied or very satisfied with the assistance provided by MagLab facilities technical staff.* ***Right.*** *93% of external users were satisfied or very satisfied with the assistance provided by MagLab facilities administrative staff.*

## 2.2 AMRIS FACILITY

The AMRIS Facility at the University of Florida supports nuclear magnetic resonance spectroscopy (NMR) and magnetic resonance imaging (MRI) studies of chemical compounds in a range of contexts including micro-samples, biomolecular systems, tissues, small animals, large animals, and humans. We also offer state-of-the-art imaging of humans, animals, and plants, including functional imaging, flow measurements, neuroimaging, cardiac imaging, and modalities enabled by hyperpolarization. We also support studies in materials research, which depend upon ultra-high spatial resolution MRI. AMRIS supports fourteen systems with different magnetic fields and configurations as requested by users for magnetic resonance experiments. The AMRIS staff includes 15 professional staff members to assist users, maintain instrumentation, build new coils and probes, and help with administration.

### OPERATION OF A WORLD-LEADING HIGH-MAGNETIC-FIELD USER PROGRAM

**Unique Aspects of Instrumentation Capability**

AMRIS Magnetic Resonance instruments **(Table 2.2.1)** offer users unique capabilities particularly focused on applications in chemistry and biology: the 750MHz wide bore provides outstanding high-field imaging for excised tissues and small animals as well as diffusion measurements with gradient strengths up to 30T/m; the 11.1T horizontal MRI has a large 400mm bore size and gradient strengths up to 1T/m; our solution NMR instruments have state-of-the-art cryoprobes for natural products, structural biology, metabolomics, and metabolic flux measurements in perfused organs; two dissolution DNP polarizers are available for *in vivo* measurements of metabolic flux; a Xenon polarizer is available for lung imaging. Four spectrometers are now equipped with state-of-the-art Bruker NEO hardware, which supports multichannel transmit and receive experiments. These systems support a broad range of science, including natural product identification, membrane protein structure determination, cardiac studies in animals and humans, and the correlation of neural structures with brain function and chemistry**.** We note that due to decreased funding from the NSF for NMR/MRI user support, our 3.0T MRI/S scanners, 7.0T 200mm MRI/S scanner purchased with an NIH grant in 2022, one 600MHz NMR system, and 500MHz NMR system no longer receive support from the MagLab user program and will no longer be included in annual reporting. These instruments are available on a fee-for-service basis and will continue to be independently administered by the AMRIS Facility. Despite this, the AMRIS NSF-funded user program offers a world-unique combination of ultra-high field MRI and NMR magnets for a wide range of applications as seen in the table below.

***Table 2.2.1.*** *AMRIS Facility NMR and MRI Systems that are available through the MagLab User Program.*

| $^1$H Frequency | Field (T), Bore (mm) | Homogeneity | Measurements |
|---|---|---|---|
| 800MHz | 18.8, 63 | 1ppb | Solution/solid-state NMR and HR-MAS |
| 800MHz | 18.8, 54 | 1ppb | Solution NMR (Cryoprobe) |
| 750MHz | 17.6, 89 | 1ppb | Solution/solid-state NMR and MRI/S |
| 600MHz | 14.1, 51 | 1ppb | NMR, micro imaging, hyperpolarization (10mm Cryoprobe) |
| 600MHz | 14.1, 89 | 1ppb | Solution/ solid-state NMR and hyperpolarization |
| 600MHz | 14.1, 51 | 1ppb | Solution NMR (Micro Cryoprobe) |
| 470MHz | 11.1, 400 | 0.1ppm | DNP, MRI, and NMR of animals |
| 143MHz | 3.35, 52 | 1ppm | DNP polarization |

### CARRYING OUT IN-HOUSE RESEARCH AND SCIENTIFIC INSTRUMENTATION DEVELOPMENT IN SUPPORT OF THE USER PROGRAM

**Facility Developments and Enhancements**

A $^2$H cryocoil (and related room-temperature coils) are being developed to enable metabolic flux measurements in tandem with proton MRI/S measurements on the 11.1T instrument through funding from a UCGP grant. All of our vertical bore systems can be operated remotely with users sending samples to AMRIS staff. A new 3.2mm e-free MAS probe constructed by the MagLab is available to the user program on the 800MHz 63mm system, further enhancing the solid-state NMR capabilities. A cutting-edge Bruker iProbe 4 HRMAS was also made available for this system, which allows for fully automated calibration and shimming reducing sample setup complexity. These probes complement existing 1.3 - 4mm MAS probes, including a 1.9mm HFXY probe. Continued updates to the acquisition and processing software have greatly improved AI-based processing of NMR data and allow for more automated batch processing. A second HyperSense DNP associated with the 7T system will be available in spring 2025, and a portable NVision parahydrogen polarizer will be available in fall 2025 and usable with all imaging systems.

## Major Research Activities and Discoveries

Many of our users take advantage of remote access for data collection. Outstanding staff scientists provide on-site support for users who choose to send samples and remotely control the spectrometers to collect data. This is working well for structural biology experiments, high-resolution *ex vivo* MRI measurements, and diffusion studies of materials. The majority of users onsite are conducting *in vivo* studies that require their presence. Local graduate students and postdoctoral fellows continue to develop DNP hyperpolarization and *in vivo* spectroscopy techniques for metabolic studies. AMRIS facility users reported 28 peer-reviewed publications and 8 theses and dissertations during 2024 from magnet time provided through the NSF user program. Two highlights from the publications and graduate research projects are listed below. We note that beginning in 2023, these publications are only for instruments that receive some of their support from the NSF user program; an additional two dozen publications were reported from our magnet systems available on a fee-for-service basis.

### *A folding motif formed with an expanded genetic alphabet*

*Bang Wang[1,2], James R. Rocca[1], Shuichi Hoshika[3], Cen Chen[3], Zunyi Yang[3], Reza Esmaeeli[1], Jianguo Wang[4], Xiaoshu Pan[1], Jianrong Lu[1], Kevin K. Wang[1], Y. Charles Cao[1], Weihong Tan[1,2], Steven A. Benner2,*
*1. University of Florida; 2. Hangzhou Institute of Medicine; 3. Foundation for Applied Molecular Evolution; 4. Inner Mongolia University*
***Funding:*** *K. M. Amm (NSF DMR-2128556); S. A. Benner (NIH GM128186 and GM141391); W. Tan (National Natural Science Foundation of China T2188102, Science and Technology Major Project of Hunan Province T2188102)*
***Citation:*** *Wang, B., Rocca, J.R., Hoshika, S. et al. A folding motif formed with an expanded genetic alphabet. Nat. Chem. (2024). https://doi.org/10.1038/s41557-024-01552-7*

This study explores how adding synthetic nucleotides to DNA not only increases its information density but also diversifies its three-dimensional structures. Specifically, the research introduces an additional nucleotide (dZ) to a DNA strand, forming a stable unimolecular structure called the folded Z-motif (fZ-motif), which has potential applications in binding and catalysis due to its compact and unique formation **(Figure 2.2.1)**.

Researchers used several analytical methods, including spectroscopy, gel electrophoresis, and NMR, to characterize the fZ-motif. The DNA strands containing the dZ nucleotide demonstrated a stable structure over a specific pH range (8-9), indicating the formation of six reverse skinny dZ:dZ- base pairs. The experiments highlighted the capability of the MagLab facilities, which were essential for the precise spectroscopic and NMR analyses that confirmed the unique structural properties of the fZ-motif. The discovery of the fZ-motif advances the field of synthetic biology by demonstrating a new type of DNA folding enabled by an expanded genetic alphabet. This finding opens the door to potential applications in nanotechnology and molecular biology, including the development of new DNA-based sensors and nanomachines that respond to environmental changes.

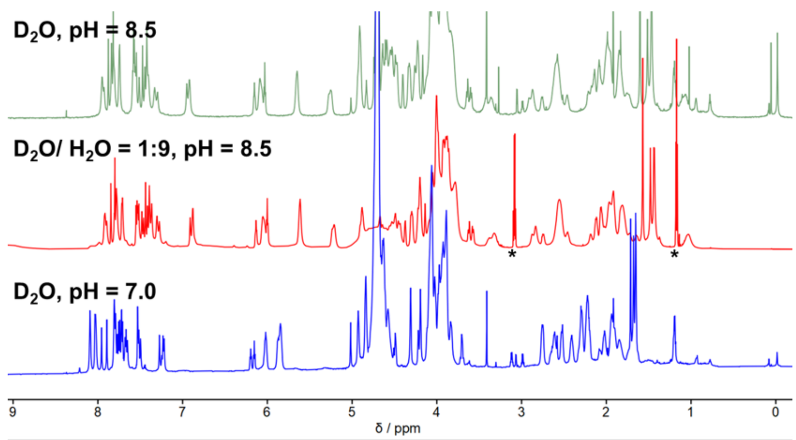
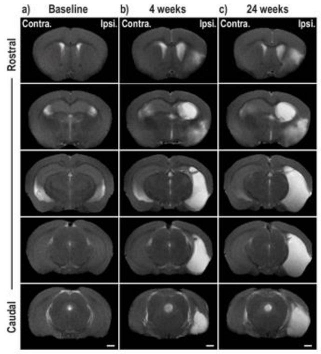


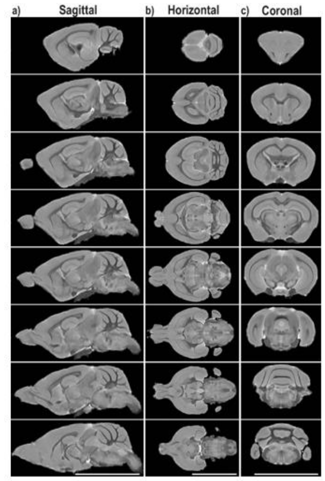

*Figure 2.2.1: Characterization of the fZ-motif formed by DNA containing dZ using [1]H NMR spectroscopy. A 2 mM solution of the ZZZ oligonucleotide was examined by NMR at 18.8T using aqueous buffers with varying pH and [1]H / [2]H isotope ratios to characterize hydrogen exchange, a reporter on the stability of different hydrogen bonding patterns in DNA.*

### *Stroke-induced neuroplasticity in spiny mice in the absence of tissue regeneration*

*Benjamin M. Kidd[1], Justin A. Varholick[1], Dana M. Tuyn[1], Pradip K. Kamat[1], Zachary D. Simon[1], Lei Liu[1], Mackenzie P. Mekler[1], Marjory Pompilus[1], Jodi L. Bubenik[1], Mackenzie L. Davenport[1], Helmut A. Carter[1], Matteo M. Grudny[1], W. Brad Barbazuk[1], Sylvain Doré[1], Marcelo Febo[1], Eduardo Candelario-Jalil[1], Malcolm Maden[1], & Maurice S. Swanson,*
*1. University of Florida*
***Funding:*** *M. S. Swanson (NIH P50 NS048843), K. M. Amm (NSF DMR-2128556); G. Boebinger (NSF DMR-1644779); A. S. Edison (NIH S10 RR025671)*
***Citation:*** *Kidd, B.M., Varholick, J.A., Tuyn, D.M. et al. Stroke-induced neuroplasticity in spiny mice in the absence of tissue regeneration. npj Regen Med 9, 41 (2024). https://doi.org/10.1038/s41536-024-00386-8*

African spiny mice (*Acomys cahirinus*) have the unique ability among mammals to regenerate skin, muscle, and even spinal cord tissue with little to no scarring. Here, researchers investigated the effects of transient ischemia in this species, finding that the rodents failed to regenerate impacted brain regions yet showed rapid behavioral recovery post-stroke. Their recovery can be attributed to undamaged regions of the brain dramatically increasing their interconnectivity to compensate for damaged tissue.



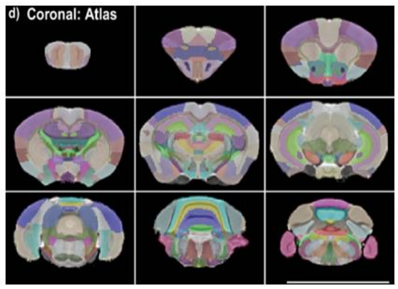




***Figure:** Anatomical MRI of representative Acomys brains (**top left**) at baseline (**a**), 4 wpi (**b**), and 24 wpi (**c**). White areas indicate an absence of brain tissue. Like in humans and other rodents, the damaged area increases in size over time.*

*After the other phases of the study were completed, high-resolution ex vivo (post-mortem) MRI was conducted on eight of the rodents. This raw data (**right**) was used to construct a detailed, three-dimensional structural "atlas" of the Acomys brain (**bottom left**). This anatomical reference allowed the study team to more accurately interpret the previously collected functional MRI data and will continue to be useful in future research on Acomys subjects.*

After obtaining baseline behavioral and fMRI data, ischemic stroke was induced in adult male Acomys. The rodents' behavior was monitored for 24 weeks post injury (wpi), and magnetic resonance imaging (MRI) was periodically conducted to assess the changing structure and function of the brain post-injury. MRI visualization and quantification showed that, like in humans, the damaged area increased in size over time post-injury. However, spiny mice demonstrated an unusually rapid behavioral recovery (i.e. minimal neurological deficit scores and behavior similar to baseline). To explain this recovery in the absence of tissue regeneration, resting-state functional MRI (rsfMRI) was used to analyze the rodents' connectome, or the map of functional connections in the brain. Unlike humans or traditional rodent models, *Acomys* demonstrated no significant changes in the whole brain connectome from baseline to 4 wpi. Increased connection and activity in intact brain regions, especially contralaterally to the injury, evidently allows *Acomys* to compensate for the damaged tissue.

The fact that no global changes to connectome were observed after stroke (unlike in human, rat, and mouse subjects) suggests an improved method of compensation in Acomys. Further studies into this neuroplasticity response in both the Acomys brain and possibly in the spinal cord could ultimately lead to a better understanding of how the mammalian brain develops and can be remodeled and ultimately impact treatment regimens for severe CNS injuries.

## MAINTAINING FACILITY AND DEVELOPMENT OF NEW MAGNET SYSTEM INCLUDING OPERATION SCHEDULE AND SHUTDOWNS

### Facility Plans and Directions

Despite the ongoing challenging budgetary climate, our users have consistently and successfully pursued federal funding to support their research programs. This support extends to assisting the AMRIS facility in writing proposals to upgrade instrumentation. The successful partnership between the MagLab user program and individual investigator research grants provides constant scientific motivation for our technology development. One capability of particular focus is enhancing our cryocooled NMR probes and MRI coils to greatly increase sensitivity. To this end, we are supporting the maintenance of conventional NMR cryoprobes as well as HTS NMR cryoprobes developed through our NIH-funded technology center for NMR probe development, the development of an $^{2}$H MRI/S cryocoil for our 11.1T MRI/S scanner through a UCGP, and the initiation of a construction project for a new 3 mm HTS cryoprobe. The new 3mm HTS cryoprobe, along with our commercial 1.7mm Micro-Cryoprobe, will cover a large range of solution volumes from 30 to 180 microliters for natural product and metabolomic-type samples. We are also boosting Low-E MAS probe capabilities at 800MHz with the construction of 1.6- and 3.2-mm probes for recently added NMR systems. The 800MHz 3.2mm probe is now available for users. The latest generation Bruker HRMAS iProbe is also now available for users and has greatly improved usability for faster sample changing with automated magic-angle adjustment and upgraded gradient and RF coil design for better signal-to-noise and pulse sequence performance to further improve fresh tissue NMR; microwave tissue preservation capabilities were also added at UF. An additional Hypersense dissolution DNP polarizer will be installed in spring 2025, providing access for DNP experiments on the 7T MRI system. As we recover helium, costs for using these systems remain low, allowing us to continue to support technological developments. An NSF MRI proposal was submitted this year to upgrade our aging helium recovery capabilities. A (new to this facility) 800MHz is planned for installation in the location of the retired 4.7T MR system. It will support MAS experiments using specially constructed Low-E MAS probes, and reuse much of the retired 750MHz console.

**Facility Operation Schedule**

The AMRIS facility operates all year, except during the last week of December when the University of Florida is open only for essential operations.  Vertical instruments for ex vivo samples are scheduled 24/7, including holidays and weekends. Horizontal instruments operate primarily 8-10 hours/day, 5 days/week due to the difficulty in running animal or human studies overnight, except the 11.1T scanner which operates 7 days a week due to oversubscription. During 2024, the AMRIS Facility was in full operation, with demand continuing to increase post-COVID.

## CONDUCTING EDUCATION AND OUTREACH ACTIVITIES

Eli Wolf coordinated the outreach efforts on behalf of both the AMRIS and High B/T MagLab Facilities at the University of Florida, in Gainesville, FL. Over the year, we focused primarily on facility tours, particularly for undergraduates and K -12 students and teachers. Our work with UF's Center for Precollegiate Education (CPET) is ongoing and has continued to be successful. We also hosted the annual RF Coil Workshop to interact with undergraduate and graduate scientists, whom we encourage to submit their proposals for system usage as needed to achieve their research goals.

The total number of people directly contacted through in-person outreach efforts by the AMRIS and HBT Facility personnel: 135 students and teachers in grades K-12; 99 college undergrad and graduate students and postdocs visiting the Gainesville facilities for a seminar, tour, or workshop; and approximately 138 scientists of various levels either visiting the AMRIS facility or attending professional conferences where the MagLab was promoted by AMRIS or HBT staff.

## 2.3 DC FIELD FACILITY

The DC Field Facility in Tallahassee serves a large and multi-faceted user community by providing continuously variable magnetic fields in a range and quality unmatched anywhere in the world. The DC Field user community is made up of undergraduate students, graduate students, post docs and senior investigators from around the country and the world. State-of-the-art instrumentation is developed and coupled to these magnets through the efforts of our expert scientific and technical staff. The users of the DC Field Facility are supported throughout their visit by the scientific, technical and administrative staff to ensure that their magnet time is as productive as possible. The interaction between the NHMFL scientific and technical staff with the students, post docs and senior investigators who come to the DC Field Facility to perform their research results in a continuous mix of scientific ideas and advanced techniques that are passed both to and from users.

### OPERATION OF A WORLD-LEADING HIGH-MAGNETIC-FIELD USER PROGRAM

**Unique Aspects of Instrumentation Capability**

***Table 2.3.1.*** *DC Field Magnets*

| FLORIDA-BITTER and HYBRID MAGNETS | | |
|---|---|---|
| **Field, Bore, (Homogeneity)** | **Power (MW)** | **Supported Research** |
| **45T**, 32mm, (25ppm/mm)<br>**41.5T**, 32mm, (25ppm/mm)<br>**36T**, 40mm, (1ppm/mm)[2]<br>**35T**, 32mm (x2)<br>**31T**, 32mm to 50mm[1] (x2)<br>**25T**, 32mm bore (with optical access ports)[3] | 30.4<br>32<br>14<br>19.2<br>18.4<br>27 | Magneto-optics – ultra-violet through far infrared; Magnetization; Specific heat; Transport – DC to microwaves; Magnetostriction; High Pressure; Temperatures from 30mK to 1500K; Dependence of optical and transport properties on field, orientation, etc.; Materials processing; Wire, cable, and coil testing. NMR, EMR, and sub/millimeter wave spectroscopy. |
| **SUPERCONDUCTING MAGNETS** | | |
| **Field (T), Bore (mm)** | **Sample Temperature** | **Supported Research** |
| **32T,** 34mm<br>**18/20T**, 52mm<br>**18/20T**, 52mm<br>**17.5T**, 47mm<br>**16T**, 47mm[4]<br>**10T**, 34mm[3]<br>**9T**, 25mm[4]<br>**7T,** 7mm[4] | 14mK – 300K<br>20mK – 1K<br>0.3K – 300K<br>4K – 300K<br>2.0K – 325K<br>0.3K – 300K<br>2.0K – 325K<br>2.0K – 325K | Magneto-optics – ultra-violet through far infrared, Magnetization, Specific heat, Transport – DC to microwaves, Magnetostriction; High pressure, Temperatures from 20mK to 300K, Dependence of optical and transport properties on field, orientation, etc. Low to medium resolution NMR, EMR, and sub/millimeter wave spectroscopy. |

1. A coil for modulating the magnetic field and a coil for superimposing a gradient on the center portion of the main field are wound on 32mm bore tubes.
2. Higher homogeneity magnet for magnetic resonance measurements.
3. Optical ports at the field center with 4 ports each 11.4° vertical x 45° horizontal taken off of a 5mm sample space.
4. Quantum Design PPMS and MPMS user “on-ramp” magnet systems.

**Table 2.3.1.** lists the magnets in the DC Field Facility. The MagLab leads the world in available continuous magnetic field strength, number of high-field DC magnets available to users, and accessibility for scientific research. The 45T hybrid magnet, commissioned in 1999, is one of only two 45T magnets, the second of which came online in 2022 at the Chinese High Field Facility. The 41.5T resistive magnet provides users with magnetic fields approaching that of hybrid magnets but with more user-friendly operational characteristics. The 36T Series Connected hybrid magnet features two configurations: 40mm bore, with 1ppm homogeneity for chem/bio-NMR experiments, and a 48mm bore with 20ppm homogeneity for condensed matter physics experiments in a top-loading cryogenic system. The 35T, 32mm bore and 31T,

50mm bore workhorse resistive magnets are coupled to top-loading cryogenic systems that have impressive technical and scientific performance, flexibility, and ease of use and continue to produce significant amounts of discovery science. The 25T Split-Helix magnet is the highest field direct optical access / scattering magnet in the world. With 4 optical ports located at field center each having an 11.4° vertical x 45° horizontal taken off of a 5mm opening, the ability to perform ultrafast, time-resolved, and x-ray scattering experiments is now a reality at high magnetic fields.

## CARRYING OUT IN-HOUSE RESEARCH AND SCIENTIFIC INSTRUMENTATION DEVELOPMENT IN SUPPORT OF THE USER PROGRAM

### Facility Developments and Enhancements

#### *Installation Of Four 370kw Magnet Cooling Water Pump Variable-Speed Drives*

The DCFF employs six magnet cooling water pumps connected to two independent cooling loops each with a cooling power of 36MW. Each cooling loop is served by two 370kW pumps and one 630kW (670kW) pump which provide for flexible operational configurations and redundancy. As the main focus of a 3-month shutdown over the summer, the variable-speed drives for the 370kW pump motors were replaced as part of our asset management program (**Figure 2.3.1**). This was a large project involving a team of electrical contractors and MagLab personnel working in tandem. The existing variable speed drives were removed along with the conduit and power cables connecting them to the switchgear and the pump motors. New conduit and power cables were then installed and run. In addition to the new variable-speed drives, a set of four disconnects were added between the switchgear and the variable-speed drives to enable servicing of individual drive cabinets without having to lockout the power to multiple drives at the switchgear. The new variable-speed drives were commissioned and tested in early August and have been serving users since then.

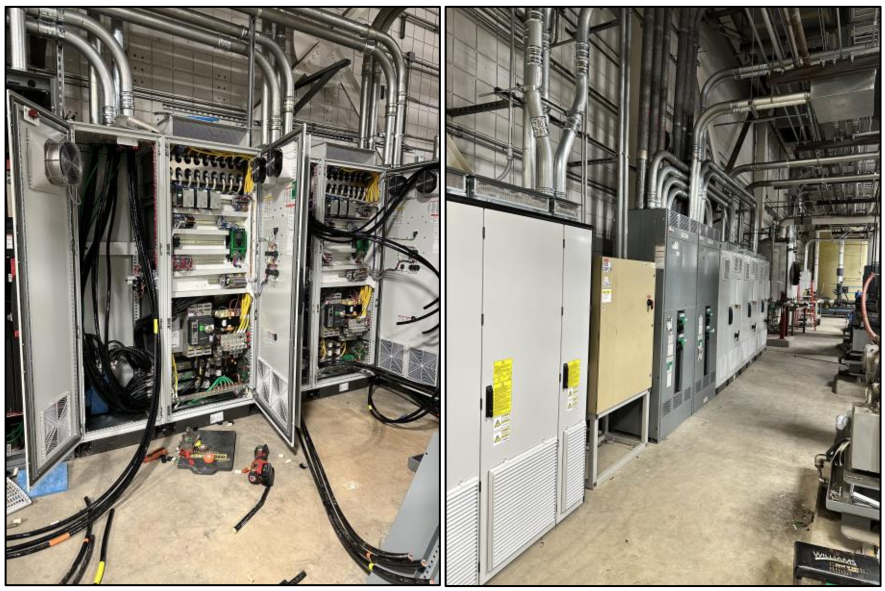


***Figure 2.3.1.*** *New 370kW variable-speed drives during the installation process (left) and after commissioning (right)*

#### *Replacement of the Laboratory 500kw Emergency Generator*

Beginning in August 2024, a project to replace the 31-year-old, 500kW emergency generator serving the entire Tallahassee site got underway. The new generator **(Figure 2.3.2)** is fueled by natural gas rather than the diesel fuel used by the original generator, which is advantageous from the perspectives of maintenance, reliability, and run time. The diesel generator had a full-load run time of ~3 days before requiring refueling and in the aftermath of a major weather event, it is not always possible to get fuel deliveries due to roads being blocked and disruptions to the infrastructure which supply the fuel. The natural gas supply to the new generator comes from an underground distribution system making it much less susceptible to disruption from storms and allowing the generator to operate continuously following a weather event.

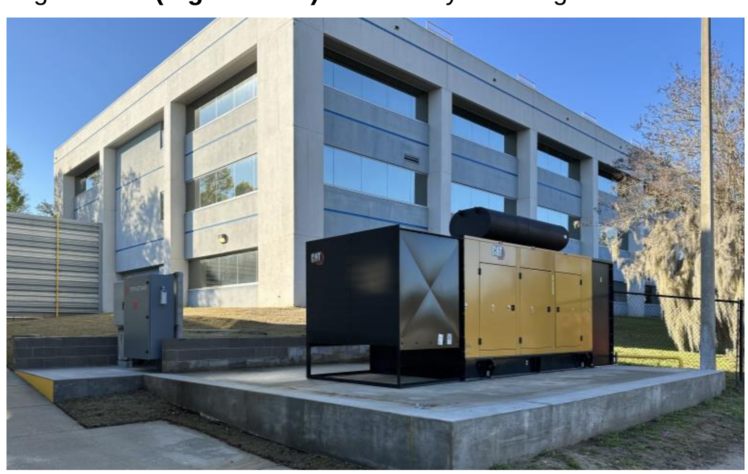


***Figure 2.3.2.*** *New 500kW Emergency Generator*

### *Completion of the Installation Process for the 6th Magnet Cooling Water Pump*

During our 3-month 2024 summer shutdown, we completed the installation process for our sixth magnet cooling water pump (MCP1F). We had previously set the pump in place on its concrete pad in fall 2023 and during the 2024 summer shutdown all of the plumbing was connected, pressure tested & insulated, the variable-speed drive was set in place and installed, and all of the conduit, electrical services and instrumentation run. MCP1F has a 670kW motor and can output 7,570L/min at 33Bar. The addition of this pump to our lineup makes our two magnet cooling water loops equivalent in terms of flow rate, pressure, and cooling power capabilities. Each cooling loop now features two 370kW pumps plus either the older 630kW or the new 670kW pump. It also provides redundancy for the operation of our 30MW and 32MW magnets if one of the large magnet cooling water pumps needs to be taken offline for service or repair **(Figure 2.3.3)**.

***Figure 2.3.3.*** *Magnet cooling water pump MCP1F shown during the connection of electrical services from the variable speed drive.*

### Major Research Activities and Discoveries

DC Field Facility users from MIT utilized an array of measurement techniques on bulk crystalline SrTa2S5. The results of these measurements provided evidence that a spatially modulated incommensurability between the layers of Sr3TaS5 and H-TaS2 serves as a perturbation to the materials' electronic states providing surprising results in how the electrons behave as observed in electron mobility, quantum oscillations, and superconductivity. In layered SrTa2S5 such conditions are realized due to the difference in periodic structures of Sr3TaS5 and H-TaS2 **(Figure 2.3.4a)**. These layers are formed as the material crystallizes from the molten base materials as the mixture is cooled in a furnace. The resulting modulation between the layers is ~4.4nm in length which is quite long compared to the interatomic spacing in the crystal. Investigating the properties of SrTa2S5 revealed intriguing superconducting behavior which suggests that the first superconducting state forms at T*~2.3K and is confined within the layers **(Figure 2.3.4b)** due to the intralayer pairing of the electrons. Further cooling reveals a second, bulk superconducting state at Tc=1.49K due to interlayer electron pairing **(Figure 2.3.4c)**.

To better understand why superconductivity behaves this way in SrTa2S5 measurements of the Fermi surface via quantum oscillations (QO) in resistance and magnetization were performed at the MagLab **(Figure 2.3.4d)**. The QO measurements revealed a complex superposition of frequencies from both the Fermi surface and oscillations resulting from the spatial odulation of the incommensurate interface between layers **(Figure 2.3.4e)**. The data paints a remarkable picture of electron mobility and coherent electron states in SrTa2S5 considering the low mobility and lack of QO in Sr3TaS5 & H-TaS2 when measured individually. This work was published in the journal Nature.

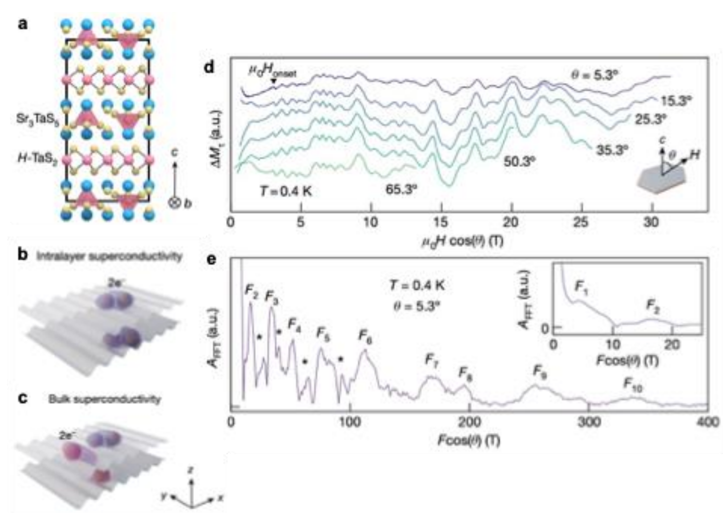



***Figure 2.3.4 a)*** *Crystal structure of SrTa2S5,* ***b)*** *Illustration of intralayer electronic pairing,* ***c)*** *Illustration of interlayer electronic pairing,* ***d)*** *M vs. H traces to 31T showing quantum oscillations,* ***e)*** *Fast Fourier transform of the 5.3 deg. trace in d) showing component frequencies as well as the frequencies due to the modulated structure.*

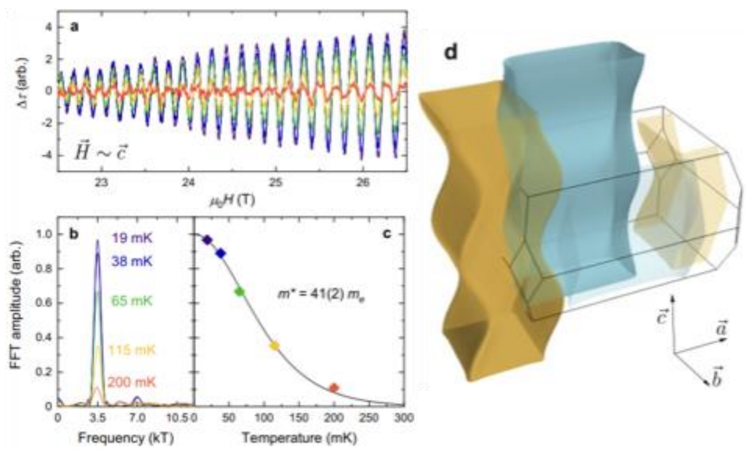



***Figure 2.3.5 a)*** *Quantum oscillations in the magnetic torque of UTe2. Oscillation colors correspond to the temperature of the measurement, as labeled in panel* ***b)****. The amplitude of the quantum oscillations is plotted versus temperature in panel* ***c)****, showing a rapid decrease in oscillation strength as the sample is warmed from 19mK to 200mK. This indicates an effective mass of 41 times the free electron mass, due to the extremely strong electron-electron interactions present in UTe2.* ***d)*** *Fermi surface of UTe2. Unlike numerous other heavy fermion superconductors, UTe2 has a very simple Fermi surface, consisting of just these two cylinders (colored orange and blue). This simplicity is very encouraging that accurate theoretical models of the exotic superconductivity of UTe2 may soon be attained.*

A multi-institution user collaboration involving researchers from the University of Cambridge, Charles University, The Japanese Atomic Energy Agency, and the NHMFL performed magnetization measurements on the anomalous, heavy fermion superconductor UTe2 at low temperatures and high magnetic fields with the goal of mapping out the Fermi surface of this material in the 32T all-superconducting magnet. The spin-triplet superconductor UTe2 burst into the condensed matter research space several years ago by exhibiting a wealth of exotic physical phenomena, including a pair-density wave ground state and up to three distinct pressure- and field-induced superconducting phases. The key to understanding the underlying physical mechanisms of these exotic phenomena lies in attaining a detailed understanding of the normal state electronic properties. Magnetic quantum oscillation measurements are a direct probe of a material's Fermi surface and effective quasiparticle masses but are challenging to perform as they require high magnetic field strengths and low temperatures to resolve the oscillations.

The angular dependence of the quantum oscillations with respect to magnetic field tilt angle displayed a remarkably simple Fermi surface geometry, consisting of just two cylindrical sheets – in stark contrast to many other heavy fermion superconductors that typically have multiple complicated Fermi surface sections **(Figure 2.3.5)**. This simplicity is promising for refining the theoretical understanding of the microscopic mechanism(s) underpinning the spin-triplet superconductivity. Gaining a detailed understanding of the Fermi surface properties is key to building an accurate theoretical description of the numerous exotic physical phenomena exhibited by UTe2.

## MAINTAINING FACILITY AND DEVELOPMENT OF NEW MAGNET SYSTEM INCLUDING OPERATION SCHEDULE AND SHUTDOS

### Facility Plans and Directions

#### *Installation of Second-Generation Resistive Magnet Protection Systems*

The DCFF Electronics Shop has continued the process of installing the second-generation resistive magnet protection systems (RMPS II). These systems continuously monitor a number of water-cooled magnet characteristics (voltage, current, water temperature, coil temperature, water pressure, etc.), and if any of the monitored quantities exceed the predetermined limits the computer sends a signal to the power supplies to shut down, protecting the magnet and ancillary equipment. The RMPS II software runs on a field programmable gate array (FPGA) computer which allows it to acquire data and take action at high speeds. The RMPS II systems have now been installed in Cells 8, 9 & 12 and we plan to install two more systems in 2025. This project is being done in phases to minimize the impact on the user schedule and maximize the availability of our electronics shop personnel.

#### *Facility Condition Assessment of the DC Field Facility & Asset Management Plan*

In 2023, the MagLab partnered with the Aerospace Corporation to develop a detailed facility condition assessment (FCA) of the MagLab user facilities, and this report was delivered to the MagLab and the NSF in March 2024. The report made several recommendations that were categorized according to risk priority, consequence, the likelihood of occurrence, etc. Using the FCA as the foundation, we have developed the first version of a formal asset management plan (AMP) which takes the findings & information from the FCA to build replacement schedules for critical equipment as well as mitigation plans to reduce risk to the facility during equipment lifecycles. Much of this work had already been done but it lacked the formalism necessary for the NSF to develop long-term projections of funding needs beyond standard operations and maintenance of the DCFF. The AMP will continue to be developed and refined so that it can grow and serve as an effective tool for the MagLab and the NSF.

### Facility Operation Schedule

At the heart of the DC Field Facility are the four 14MW, low-noise, DC power supplies. Each 20MW or 28MW resistive magnet requires two power supplies to run, the 45T hybrid and the 41.5T resistive magnets each require three power supplies and the 36T Series Connected Hybrid requires one power supply. Thus, the DC Field Facility operates in the following manner: in a given week there can be four resistive magnets + six superconducting magnets operating or the 45T hybrid/41.5T resistive, series connected hybrid, two resistive magnets and five superconducting magnets. The water-cooled DC resistive and hybrid magnets operated for 31 weeks in 2024 with 12 weeks of shutdown in the summer to allow for the installation of new variable-speed drives for the 370kW magnet cooling water pumps and the installation of the new 670kW magnet cooling water pump. There was a second 5-week regular maintenance shutdown from mid-November through December 22nd and a two-week shutdown period for the university-mandated holiday break from December 23, 2024, to January 6, 2025. An additional two weeks of magnet operations were lost due to storms that impacted the Tallahassee area. The six superconducting magnets operated for 46 weeks out of the year with staggered maintenance periods as required. As with the water-cooled magnets, two weeks of superconducting magnet operations were lost due to the impact of storms. The daily operation schedule for the resistive and hybrid magnets is as follows: 7 hours/day on Monday and 21 hours/day Tuesday-Friday. The superconducting magnets operate 24 hours/day, 7 days/week.

## CONDUCTING EDUCATION AND OUTREACH ACTIVITIES

The DC Field Facility operated in a mostly normal manner in 2024 as evidenced by the number of users who came to the facility for magnet time. We hosted a booth at the 2024 Minneapolis March Meeting trade show where we introduced the MagLab to potential new users as well as communicated with a large number of current MagLab users.

**Appendix A** shows the DC Field Facility attracted 27 new PIs in 2024. This is in addition to the 35 new PIs reported last year (2023) and 24 reported in 2022.

The Annual DC Field Facility MagLab User Summer School was scheduled for the week of May 13, 2024. Unfortunately, nature had other plans because on the morning of Friday, May 10 the Tallahassee area and the MagLab were hit with three tornadoes **(Figure 2.3.6)**, one of them passing directly over the DC Field Facility. The resulting damage to the MagLab and the areas near the lab created a level of risk that was evaluated as being too high for the User Summer School to begin the following Monday.

***Figure 2.3.6.*** *Some of the damage from the tornado that struck the DC Field Facility on May 10, 2024.*

## 2.4 EMR FACILITY

Electron Magnetic Resonance (EMR) covers a variety of magnetic resonance techniques associated with the electron. The most widely employed is Electron Paramagnetic/Spin Resonance (EPR/ESR), which can be performed on anything that contains unpaired electron spins. EPR/ESR has thus proven to be an indispensable tool in a large range of applications in physics, materials science, chemistry, and biology, including studies of impurity states, molecular clusters, and molecular magnets; antiferromagnetic/ ferromagnetic compounds in bulk, as well as thin films and nanoparticles; natural or induced radicals, optically excited paramagnetic states, electron spin-based quantum information devices; transition-metal based catalysts; and structural and dynamical studies of metalloproteins, spin-labeled proteins, and other complex bio-molecules and their synthetic models.

### OPERATION OF A WORLD-LEADING HIGH-MAGNETIC-FIELD USER PROGRAM

**Unique Aspects of Instrumentation Capability**

The EMR facility at the NHMFL offers users several home-built, high-field, and multi-high-frequency instruments covering the continuous frequency range from 9GHz to > 1THz. Several transmission probes are available for continuous-wave (CW) measurements, which are compatible with a range of magnets at the Lab, including the highest field 45T hybrid. Some of the probes can be configured with resonant cavities, providing enhanced sensitivity as well as options for *in situ* rotation of single-crystal samples in the magnetic field and the simultaneous application of pressure. Quasi-optical (QO) reflection spectrometers are available in combination with high-resolution 12.5T and 16T superconducting magnet systems; a simple QO spectrometer has also been developed for use in the resistive and hybrid magnets (up to 45T). EMR staff members can assist users in the DC field facility using broadband tunable homodyne and heterodyne spectrometers as well. Moreover, frequency coverage up to ~180THz (6,000cm 1) is now possible through collaboration with staff in the DC field facility using broadband Fourier transform infrared spectrometers to acquire EPR spectra in the frequency domain – so-called far-infrared magneto-spectroscopy (FIRMS). Finally, operation in the high-resolution 36T Series Connected Hybrid (SCH) magnet is another recent addition to the EMR user program.

In addition to CW capabilities, the MagLab EMR group boasts the highest frequency pulsed EPR spectrometer in the world, operating at 120, 240, 336GHz, and now 316 and 395GHz with ~100ns time resolution. A high-power (1kW) quasi-optical 94GHz spectrometer (HiPER) with 1ns time resolution (1GHz instantaneous bandwidth) is also available. Meanwhile, a state-of-the-art Bruker Elexsys 680 operating at the X- (9.7GHz) and Q- (34GHz) bands with ENDOR and optical excitation capabilities has been delivered to the EMR facility at the end of 2024. This unique combination of CW and pulsed instruments may be used for a wide range of advanced EPR applications, as well as a number of other spectroscopies, including optical conductivity, electron cyclotron resonance and Dynamic Nuclear Polarization (DNP).

Finally, the EMR group collaborates with the NMR program in developing instrumentation for high-field DNP-enhanced NMR studies of solids and solution samples at fields up to 14.1T. The centerpiece of this installation is a quasioptical EPR spectrometer based on a 395GHz high-power CW gyrotron source.

**Major Research Activities and Discoveries**

25 peer-reviewed journal articles were reported by EMR users during the past year, as well as 11 PhD theses. The quality of publications was again high, including articles in the following journals: Nature Communications (1); J. Am. Chem. Soc. (3); Chem. Sci. (3); Phys. Rev. (2); Angew. Chem. (2); Inorg. Chem. and Dalton Trans. (5); J. Mag. Res. and Appl. Mag. Res. (2); as well as other ACS (4) and Royal Society (2) journals. Projects in the facility spanned a range of disciplines, from fundamental physics studies of spin dynamics in a triangular lattice Jeff = ½ antiferromagnet (Phys. Rev. B), to research on molecular magnets and spin qubits (Nature Communications, Chemical Science J. Am. Chem. Soc.), to coordination chemistry studies of titanium catalysts (Angew. Chem. and J. Am. Chem. Soc.); users also published several applications-oriented papers focused, e.g., on development of magnetic refrigerants (J. Mater. Chem. A) and dynamic nuclear polarization agents (J. Phys. Chem. A, Phys. Chem. Chem. Phys. and J. Phys. Chem. Lett.). The total number (25) of publications is comparable to recent years (25 in 2022 and 26 in 2021), and up from 20 in 2023.

The EMR Program continued major efforts in support of major center-type research initiatives and international collaborations involving multiple universities. These include: the four-year, $12M DOE funded Energy Frontier Research Center for Molecular Magnetic Quantum Materials (M2QM) based at the University of Florida, with partners at the University of Central Florida, Florida State University, UTEP, Caltech and Los Alamos National Laboratory; an NSF-funded trilateral international collaboration entitled "Molecular Magnetoelectric Materials" involving FSU (Stephen Hill, funded by the US NSF), University College Dublin in Ireland (Professor Grace Morgan, an EMR user, funded by the Science Foundation Ireland), and Queens University Belfast in Northern Ireland (Professor Steven Bell, funded by the Department of the Economy in Northern Ireland); a collaborative project together with researchers at Lawrence Berkeley National Lab and UC Berkeley, which focuses on "Molecular f-Element Qubits with

Controllable Quantum Coherence and Entanglement"; and an international collaboration funded by the Office of Naval Research—Global, linking the MagLab with Osaka Metropolitan University in Japan and the University of Modena and Reggio Emilia in Italy.

We report two 2024 scientific highlights in the next section of this report. The highlighted work, published in Nature Communications and the Journal of the American Chemical Society, involves users from the following institutions: the University of Ottawa, Canada, the University of Oulu, Finland, the University of Bordeaux and Paul Pascal Research Center, France; Lawrence Berkeley National Lab and the University of California, Irvine.

**Slow Relaxation of the Magnetization in a Quasi-Linear Europium(II) Molecule:** Molecules that can retain their magnetic state (magnetization alignment) below a characteristic blocking temperature – so-called Single-Molecule Magnets (SMMs) – have attracted significant attention due to their potential use in molecular-scale data storage applications. SMM properties typically arise from the combination of a large magnetic moment subjected to a uniaxial anisotropy, thus creating an energy barrier separating "up" and "down" magnetization states. Strong spin-orbit coupling (SOC) in the 4f shell can lead to large moments and significant magnetic anisotropy for certain molecular geometries, resulting in some of the best performing SMMs. However, until now, no europium (Eu) SMMs had been reported. This is because trivalent Eu3+ (4f6), with spin & orbital moments S = 3 & L = 3, respectively, has no net moment, i.e., J = L – S = 0; meanwhile divalent Eu2+ (4f7) has no first-order orbital moment (L = 0, S = 7/2), leading to an approximately spherical 8S7/2 electronic configuration.

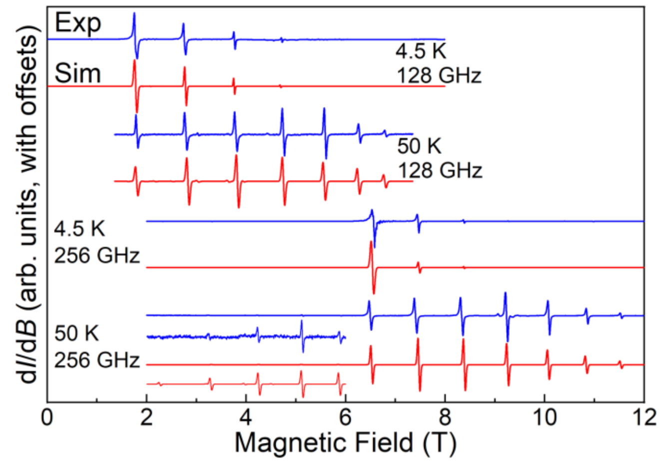



***Figure 2.4.1.*** *(Blue) Powder EPR spectra recorded in derivative mode (dI/dB, I is the microwave intensity transmitted through the sample, B is the applied field) at the indicated frequencies and temperatures; simulations are shown in red, and spectra are offset for clarity. An expanded view of the 256GHz, 50K spectrum highlights weakly allowed low-field transitions; the inset depicts the* $Eu^{2+}$ *molecule.*

In this work, optimization of the crystal field acting on a Eu2+ ion residing in a quasi-linear molecular geometry gives rise to the first europium SMM. This is attributed to a sizeable 2nd-order orbital contribution to the magnetic ground state, resulting in appreciable anisotropy. High-field EPR is the method of choice for characterizing this anisotropy. In particular, measurements at several frequencies, spanning a wide magnetic field range **(Figure 2.4.1)**, are essential for constraining the multiple Hamiltonian parameters describing the effective spin S = 7/2 ground state. The EPR results are supported by electronic structure calculations, highlighting the importance of 2nd order SOC and the linear geometry in achieving non-negligible uniaxial anisotropy.

The divalent oxidation state is rare for molecular lanthanide complexes. Meanwhile, achieving a linear N–Eu–N coordination geometry (**Figure 2.4.1** inset) is synthetically challenging, underscoring the importance of this work in shining a light on factors that give rise to SMM behavior for the otherwise isotropic 4f7 electronic configuration.

***Citation:*** *D. Errulat, K. L. M. Harriman, D. A. Gálico, E. V. Salerno, J. van Tol, A. Mansikkamäki, M. Rouzières, S. Hill, R. Clérac and M. Murugesu, Slow Magnetic Relaxation in a Europium(II) Complex, Nature Communications 15, 3010 (2024);* [https://doi.org/10.1038/s41467-024-46196-w](https://doi.org/10.1038/s41467-024-46196-w)

**High-Field EPR Identification of a Spin Clock Transition in the** $[Cp'_3Pr^{II}]^-$ **Qubit with a** $4f^25d^1$ **Configuration**: Recent work on molecular spin qubits has demonstrated significant enhancements in coherence through the engineering of so-called clock transitions, or optimal operating points at which the quantum spin dynamics become desensitized to magnetic noise. Notably, previous EPR studies conducted at the MagLab for a lutetium(II) molecule with a filled f-shell and a lone unpaired electron occupying a mixed 5d/6s orbital revealed a colossal electron-nuclear hyperfine interaction, giving rise to a massive 9 gigahertz clock transition with associated long spin coherence times [Nat. Chem. 14, 392 (2022)].

The present investigation sought to explore whether large hyperfine clock transitions are possible in other lanthanide (Ln) ions with partially filled f-shells. The strategy relies on the fact that reduction of certain $Ln^{III}$ ($4f^n$ configuration) ions to $Ln^{II}$ results in the extra electron occupying a mixed 5d/6s orbital, giving rise to a $4f^n(5d/6s)^1$ configuration. The trick then is to identify $Ln^{III}$ ions with non-magnetic singlet ground states, requiring an even f-electron count, e.g., Pr$^{III}$ with a 4f$^2$ configuration. Achieving a singlet ground state then boils down to molecular design. Finally, reducing to PrII results in a 4f$^2$(5d/6s)$^1$ configuration with an effective two-level spin-½ ground state.

Residual exchange coupling between the lone 5d/6s electron and the anisotropic 4f$^2$ spin-orbital moment, along with a colossal electron-nuclear hyperfine interaction, gives rise to an EPR spectrum that is impossible to interpret at low fields. However, in the high-field limit, the different components (x, y, and z) of the spectrum are well resolved and easily interpretable, yielding a unique set of Zeeman ($g_i$) and hyperfine ($A_i$, i=x,y,z) parameters (see **Figure 3.4.2**). In turn, this enabled identification of a low-field clock transition and demonstration of appreciably enhanced spin coherence for this prototype molecular lanthanide spin qubit.

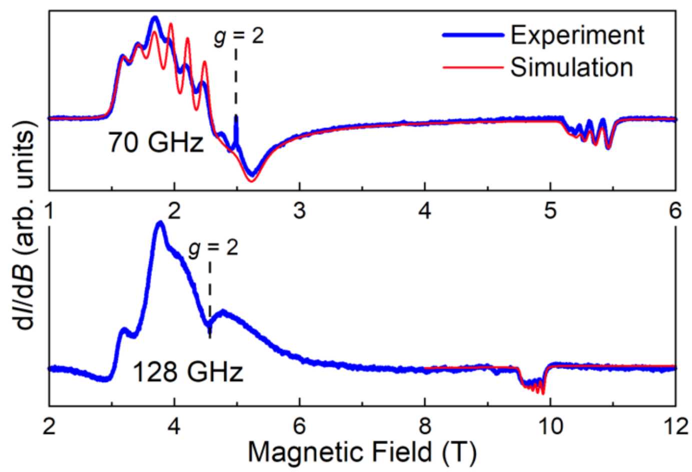



***Figure 3.4.2.*** *Multi-frequency, high-field EPR spectra of the [K(crypt)]$^+$[Cp′$_3$Pr$^{II}$]$^-$ complex, which has an effective spin-½ ground state. Different components of the Landé g-tensor are well-resolved at the highest frequency. Spectral simulations then allow determination of the g- and A-tensor components.*

**Citation:** P. W. Smith, J. Hrubý, W. Evans, S. Hill, S. G. Minasian, Identification of an X-band Clock Transition in Cp′3Pr– Enabled by a 4f25d1 Configuration, J. Am. Chem. Soc. 146, 5781 – 5785 (2024); https://doi.org/10.1021/jacs.3c12725

## CARRYING OUT IN-HOUSE RESEARCH AND SCIENTIFIC INSTRUMENTATION DEVELOPMENT IN SUPPORT OF THE USER PROGRAM

### Facility Developments and Enhancements

The most significant enhancements to the EMR program in 2024 were the deliveries of a second new superconducting magnet system to replace the ageing one on the high-power pulsed EPR spectrometer, HiPER (the first 16T replacement magnet for the transmission spectrometer was delivered at the end of 2023), and the commercial state-of-the-art Bruker X-/Q-band (9/24GHz) pulsed EPR spectrometer with many advanced features such as in situ optical and nuclear excitation for double resonance investigations. All of these enhancements have been requested for many years by the EMR user community and formalized in the annual reports of the EMR user sub-committee. The magnets were purchased from the MagLab core budget, whereas the Bruker spectrometer was funded through a completely separate NSF Major Research Instrumentation award (CHE-2320338). The Bruker spectrometer was delivered toward the end of 2024 and, at the time of writing of this report, the installation has been partially completed so that the instrument is now available to users; the arbitrary waveform generation capability will be delivered later in 2025. Detailed discussion of this new capability will be included in next year's annual report.

Installation of the two new magnet systems (16T and 9T for the Transmission and HiPER spectrometers, respectively) has been more challenging. The magnets themselves work as specified by the vendor, Oxford Instruments (OI). However, the helium boil-off initially exceeded specifications by more than a factor of two in both systems. After extensive troubleshooting conducted during multiple visits by OI engineers, the problem was attributed to a design flaw, requiring a significant modification to the bottom plate of the inner vacuum chambers of both magnets. The new parts were fabricated in-house and installed in June/July 2024. The repair succeeded for the 9T HiPER magnet but not for the 16T transmission spectrometer magnet. Consequently, integration of the 9T HiPER magnet, described below, proceeded in the latter half of 2024. After multiple additional visits by OI engineers, the problem with the 16T magnet was isolated to the variable temperature insert (VTI), which was sent back to the factory in the UK. At the time of writing this report, the problem has finally been traced to a small leak, and we are anticipating a return to the facility in March/April 2025. In the meantime, the transmission spectrometer limped along using the very old 15/17T warm-bore magnet for most of 2024, although its continual deterioration resulted in several quenches and considerable downtime. In spite of these challenges, the instrument saw near-normal user activity for most of the year.

Installation of the 9T magnet on the HiPER spectrometer required modifications to the cylindrical corrugated waveguide probe, which were delayed until the problems with the magnet were resolved. The existing magnet was then decommissioned, and the new magnet was precisely positioned relative to the spectrometer while the probe modifications were completed. The enhanced spectrometer was brought back into service in December 2024, with the first user experiments carried out by Danna Freedman's group from MIT. The new magnet/cryostat system offers many advantages over the older magnet, in addition to overall operational reliability. In particular, the older magnet experienced several failures that compromised performance: the overall field was limited to 4.5T, well below the original rating of 8T, and the magnet sweep profile experienced very significant and unpredictable hysteresis, greatly complicating studies of narrow-line spin systems. In addition, the standalone variable helium flow cryostat associated with the older warm-bore magnet suffered significant stability issues, particularly at lower temperatures, with an ultimate base temperature of around 8K. Moreover, the cryostat suffered frequent ice blockages and problems with the thermometry, causing significant disruptions to user operations. The new flow cryostat shares the same helium bath as the magnet, offering greatly improved low-temperature stability down to ~2K.

In addition to the aforementioned major facility enhancements, new hire Tomas Orlando also received support through the MagLab User Collaboration Grants Program (UCGP) and a Florida State University internal funding program to undertake critical enhancements/upgrades to the 12.5T pulsed heterodyne spectrometer. These plans include integrating an Arbitrary Waveform Generator (AWG) capability and installation of a new multiplier chain providing 300mW of pulsed power at 263GHz, an order of magnitude increase in power relative to the current 240GHz chain. Not only does this provide a new frequency in the pulsed arsenal of the EMR facility, it will give rise to a factor of ~3 improvement in time resolution, as well as enhancements in sensitivity. Much of the equipment has already been delivered, and the new capabilities are expected to become available to users in 2025.

In terms of staffing, two new postdocs joined the EMR group during 2024. Kavipriya Thangavel joined as the new HiPER postdoc in January 2024, having completed a PhD in the joint doctoral program between the University of Cardiff in the UK and the University of Leipzig in Germany. Meanwhile, the Florida State University Quantum Science and Engineering (QSE) initiative (https://quantum.fsu.edu) provided support for the hiring of an additional postdoc, Sabastian Atwood, who received his PhD in the group of EMR user Christoph Boehm at the University of Utah. Together with EMR Director Hill, Sabastian has obtained additional support from the QSE initiative to develop a tunable pulsed EPR spectrometer based on a qubit controller purchased from the company QBlox Quantum. At the time of writing, the controller has been delivered, and we hope to report outcomes from this new facility enhancement in next year's report.

## MAINTAINING FACILITY AND DEVELOPMENT OF NEW MAGNET SYSTEM INCLUDING OPERATION SCHEDULE AND SHUTDOWNS

### Facility Plans and Directions

The main new facility plans/directions center around the major new infrastructure that will come online during 2025. This includes the new commercial Bruker E680 spectrometer operating at X- (9GHz) and Q- (34GHz) bands, the 9T HiPER magnet, and the 16T transmission spectrometer magnet. These enhancements will bring many new capabilities and improve overall operational reliability on two workhorse spectrometers (HiPER and Transmission). In terms of new capabilities, a standalone tunable laser system was included with the Bruker spectrometer acquisition: 410 – 2500nm, 40mJ at 10Hz repetition rate. This optical excitation capability is also compatible with many of the high-field instruments within the EMR program, thus opening a completely new experimental dimension to our users, for photophysical, photochemical, energy, and quantum science applications. The EMR Users Sub-Committee has been asking for such a capability for many years. The laser system is now operational, and we are starting to see users take advantage of this highly sought-after capability. The Bruker spectrometer also adds another quasi-high-frequency pulsed capability at 34 GHz to the EMR arsenal, for which there is clear demand for many key applications of interest to our users. Meanwhile, the upgrade converts the spectrometer to a modern digital console, including integration of a SpinJet Arbitrary Waveform Generator. As well as the addition of the Q-band capability, the new system will include pulsed ENDOR and high-power amplifiers at X- (600W solid state), Q-band (TWT 300W), and for ENDOR (500W) – all new capabilities.

As mentioned elsewhere in this report, upgrades to the 12.5T heterodyne pulsed EPR spectrometer will provide a new operating frequency (263GHz), improved time resolution due to increased microwave power, and, most importantly, integrate a modern AWG-driven pulse shaping capability. The increased power and ability to precisely shape pulses will allow for wider excitation bandwidths without introducing artifacts that can be problematic with conventional on/off pulses. In turn, this gives rise to further enhancements in sensitivity, beyond those due simply to the increased operational field and microwave power. In addition, the AWG capability permits more advanced pump-probe experiments such as electron-electron double-resonance detected NMR.

Also mentioned previously in this report, a very wideband pulsed instrument is currently under development that leverages a single qubit controller acquired from the company QBlox Quantum (Delft, Netherlands). These devices are manufactured for use with real quantum computing devices, enabling programmable operation of quantum processors in the DC to 18.5GHz range. This development responds to a national need identified in a recent National Academies report (https://doi.org/10.17226/26850) – that of a widely tunable pulsed EPR spectrometer to characterize new quantum systems that operate optimally at frequencies not reachable with commercial spectrometers. We plan to integrate this new capability with an existing split-pair 7T superconducting magnet system. A future frequency doubling capability will further extend the wideband coverage of this instrument.

Finally, the EMR program seeks to leverage the FSU-funded Quantum Science and Engineering (QSE) Initiative in various ways. We have already received funding for a postdoc and for the QBlox qubit controller through this initiative. Meanwhile, the Director and members of the research faculty have made significant contributions toward recruitment of new QSE faculty hires with research interests that match those of the EMR program. At the same time, the EMR Director is leading an effort together with a team of FSU QSE faculty to develop an Integrated Research Group focused on development of molecular spin qubits that will be part of an NSF Materials Science and Engineering Research Center (MRSEC) proposal submission later this year. This is part of a wider, longer-term effort to secure major center-type funding at FSU in areas that enhance activities at the MagLab and, particularly, the EMR program.

**Facility Operation Schedule**

With the exception of the commercial Bruker spectrometer (see below), overall user operations in the EMR program maintained pre-pandemic levels in 2024, i.e., the numbers of users, PIs, and proposals were all comparable to rates in 2018 and 2019. The workhorse Transmission Spectrometer operated for a total of 265 days during 2024, up slightly from 2023 (261 days). This operation schedule is quite remarkable considering significant operational disruptions at different points during the year. As noted elsewhere in this report, the transmission spectrometer continued operating with the ageing 15/17T magnet due to delays in the commissioning of the replacement 16T system. In total, 57 days were lost to disruptions caused by four magnet quenches throughout the year (the last of which proved to be terminal), meaning that the instrument was in use for most or all of the remaining working days, as well as many weekend days as well. Indeed, the instrument is oversubscribed, and the 2024 usage was ultimately limited by instrument downtime. During the coming year, we anticipate resolution to these disruptions with the final integration of the new Oxford Instruments 16T magnet system into the transmission spectrometer. At the time of writing, user experiments are being conducted on a 15/17T magnet system in the EMR Director's own lab.

The 12.5T heterodyne quasi-optical spectrometer logged 165 days of usage, down from 198 days in 2023. This instrument requires more intensive staff support, which is the reason the numbers are consistently lower than the 15/17T system, which can be operated by local students and users without supervision. Meanwhile, a total of 223 days were logged in 2024 on the high-power pulsed 94 GHz EPR spectrometer, HiPER, essentially identical to the 222 days reported in 2023 and only marginally below pre-pandemic levels. These numbers are again quite remarkable given that about three months or 90 days were lost during the switch to the new 9T magnet system, which required significant modifications to the corrugated waveguide probe. Consequently, the 223 days of usage represents most of the available weekdays during the year and many weekend days as well. It should be noted that 40 days were devoted to testing, maintenance and methods development on HiPER. This is quite typical of a normal year due to the significant methods development associated with this unique, cutting-edge spectrometer. Significant in-house methods development was included in the plan when integrating HiPER into user operations, as much of the cost of the instrument was covered by funding sources separate from the MagLab core.

The one exception to the return to normal operations in 2024 was the commercial Bruker E680 spectrometer, which logged only 98 days. This because the pulsed capability failed in late 2021. The instrument continued to operate in CW mode for a short time but was packed up and shipped to Bruker at the end of January 2022. It was eventually shipped back to Tallahassee in early 2023. However, Bruker was unable to fix the problem – hence, it has operated only in CW mode ever since then. It should be noted that, according to Bruker, this instrument has surpassed its serviceable lifetime of 25 years. Hence, the 98 days in 2024 reflect mostly local user operations (50 days). As noted elsewhere in this report, the new $2.14M X-/Q-band spectrometer came online early in 2025.

As a whole, the four instruments offered by the EMR User Program were oversubscribed by 198.3% in 2024, i.e., 1,489 days were requested, and 751 total days allocated. Note that the 751 days is up slightly from 743 in 2023. The oversubscription rate is up significantly from recent years (20% in 2022, 84% in 2023), reflecting both increased demand on the EMR facility and operational disruptions due to aging infrastructure (aging magnets and end-of-life Bruker spectrometer). The oversubscription rate in terms of experiment submissions was 114.5%. Therefore, one sees that the facility continues to provide access to most users who apply for time. However, the number of magnet days that the facility is able to offer is limited by instrument and staff availability.

## CONDUCTING EDUCATION AND OUTREACH ACTIVITIES

The total number of proposals that received magnet time during 2024 was 57, the same number as in 2022 and 2023. The number of PIs receiving magnet time was 53 (one fewer than 2023), of which 17 PIs were first-time users of the EMR facility, again meaning that one-third of our users were new to the program in 2024. Meanwhile, the EMR program assisted 175 individual researchers in 2024, up from 172 in 2023, also up from 161 prior to the pandemic in 2019. Of these, 62 were first-time users in 2024, another record for the facility. Only 44 users were present on-site, well below the 88 who were on-site prior to the pandemic in 2019. This is the third year in a row where these numbers are down, reflecting a concerning trend in more users sending samples as opposed to traveling to Tallahassee to participate in on-site measurements; as a percentage, 55% of users were on-site in 2019, compared to just 25% in 2024. There are some additional mitigating circumstances that account for this low number. Chiefly among these were the changes in rules for badging on-site users and reliability issues associated with magnet switchovers in two of the workhorse spectrometers. The latter resulted in significant instrument downtime, limiting scheduling of on-site users. The EMR staff made up for this by running experiments for users sending samples at every opportunity when systems were operational. Obviously, this mode of operation places significant strain on the already stretched EMR Research Faculty and is unsustainable. It is anticipated that the instrument reliability issue will be resolved quickly in 2025. However, new rules increasing the barriers to participation of users in on-site experiments represent a significant problem. Current EMR staffing levels cannot continue taking on a larger and larger proportion of the experiments for users sending samples.

Members of the group continued their aggressive efforts to advertise the facility and recruit new users at regional, national, and international conferences and workshops around the globe. As an example, the EMR Director gave 10 invited presentations at conferences and 5 departmental seminars during 2024, both in the US and in Europe. The EMR group also had a strong presence at the Rocky Mountain Conference (RMC) on Magnetic Resonance, for which the EMR Director served as the Vice Chair, and the Southeastern Magnetic Resonance Conference (SEMRC); meanwhile, the EMR Director organized and co-chaired a special symposium focused on EPR at the International Conference on Coordination Chemistry. All of these events are frequented by existing users, providing excellent opportunities to showcase their outstanding work and to recruit new users.

Members of the EMR group served on the organizing committees for the following events in 2024: the International Conference on Molecule-based Magnets (ICMM), to be held in Bordeaux, France, in 2025; the Rocky Mountain Conference EPR Symposium, which was held in August in Copper Mountain, CO; the 4th Magnetism in North America (MAGNA) conference that will be held at Florida State University, in February, 2025; and the International Symposium on Crystalline Organic Magnets and Ferromagnets (ISCOM), held in September in Anchorage, Alaska. The EMR Director and former EMR graduate student, Samuel Greer, also organized an Invited Symposium on “Electron Paramagnetic Resonance: a Powerful Tool for Studies of Metal Coordination”, which was held at the 2024 International Conference on Coordination Chemistry, held in July in Fort Collins, CO. Several EMR users were invited to present at this Symposium, and many more EMR users attended given that the event took place in Colorado immediately prior to the Rocky Mountain Conference. Finally, together with chemistry professor Mike Shatruk, the EMR Director organized the 3rd annual three-day Symposium focused on Quantum Science and Engineering (now titled the Dirac Quantum Discussions) at Florida State University in April 2024. This event will be repeated once again in February 2025, featuring mostly outside speakers.

Lastly, the EMR Director devoted considerable time and effort to writing a popular article entitled “Making Qubits from Magnetic Molecules”, which will appear in the American Physical Society monthly magazine Physics Today in March 2025: https://pubs.aip.org/physicstoday/online/43992.

# 2.5 HIGH B/T FACILITY

## OPERATION OF A WORLD-LEADING HIGH-MAGNETIC-FIELD USER PROGRAM

### Unique Aspects of Instrumentation Capability

The High B/T Facility, located on the University of Florida campus, offers users a safe and welcoming atmosphere for performing research in high magnetic fields (up to 16T) and at ultralow temperatures (down to 0.5mK) with an ultra-quiet electromagnetic interference (EMI) environment. The Microkelvin Laboratory, the core of the High B/T Facility, is a separate, specially designed and built building with Tempest-quality shielded rooms to specifically afford access to the extremes of ultralow temperatures and high magnetic fields. Two demagnetization cryostats, one employing a $PrN_5$ + Cu refrigeration stage, known as Bay 3, the other equipped with a pure Cu stage, known as Bay 2, provide access to the ultralow temperature environments by using high magnetic fields of 8T to adiabatically cool the experimental regions. In other words, the high magnetic fields provide the means of refrigeration for cooling quantum materials in a steady high magnetic field applied to the sample region. In January 2024, a Bluefors automated “dry” dilution refrigeration system operating at temperatures below 10mK was opened for user science with sample magnetic fields of 14T provided by a superconducting magnet. The introduction of a “dry” system to the inventory of unique instruments is a step in providing users with sustainable access to extreme environments needed to probe quantum materials while also equipping junior researchers with technical skills that are important for workforces in Florida and the nation. The combination of high magnetic fields with samples cooled to ultralow temperatures in an electromagnetically quiet environment provides users with access to parameter space that they cannot achieve in their home institutions and is also not available in other MagLab facilities. Briefly stated, the High B/T Facility provides users with opportunities to explore quantum matter, devices, and phenomena with unique, specialized probes, cells, and cryostats made in-house by staff in our facility and in our cryogenics, instrument design-fabrication, and electronics shops. The resulting enhanced understanding of quantum materials will guide the development of devices operating near ambient conditions.

## CARRYING OUT IN-HOUSE RESEARCH AND SCIENTIFIC INSTRUMENTATION DEVELOPMENT IN SUPPORT OF THE USER PROGRAM

### Facility Developments and Enhancements

Mentioned previously, a Bluefors automated “dry” dilution refrigeration system with a 14T superconducting magnet was opened for user experiments in January 2024. An important aspect of this and other HBT instruments is the use of experimental cells that employ pure $^3$He immersion of the sample and the leads attached to the experimental platform, ***Figure 2.5.1***. This approach and the presence of steel shielded rooms facilitate our ability to achieve electron temperatures that are dramatically lower than can be achieved elsewhere. In parallel with the operation of the Bay 1 instrument, MagLab faculty scientist Rasul Gazizulin and MagLab postdoctoral associate Nicolas Silva have been designing a copper powder demagnetization stage in collaboration with international colleagues at Lancaster University, UK. The objective for this copper powder demagnetization stage is to provide users with a platform operating down to 1mK.

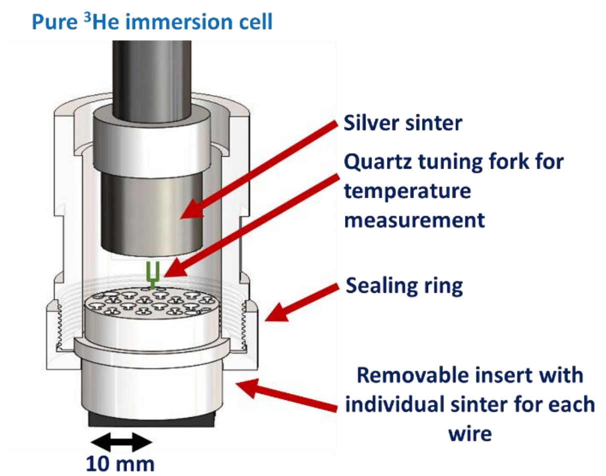



***Figure 2.5.1.*** *Pure $^3$He immersion cell for cooling the sample and the leads, which are also anchored with Ag sinter for thermalization of conduction electrons.*

In 2024, the uninterruptible and clean power infrastructure remained in an inoperative state, which has been in its condition since 2020. This critical infrastructure, which is crucial for realizing the MagLab HBT mission, was externally reviewed by a team commissioned by the NSF. The outcome was the Facilities Condition Assessment (FCA) report listed the absence of the HBT clean-uninterruptible power as one of five Priority One issues recommended for immediate attention. Using UF funds, the HBT leadership initiated a facilities upgrade request to the UF College of Liberal Arts and Sciences (CLAS) which, due to the expected costs, established a project with the UF Planning, Design, and Construction (PDC) office. A UF PD (Project Director) was assigned, and Campbell Spellicy Engineering was contracted for the initial phase of this project. Ultimately, a modern system is needed for robust uninterruptible, and clean power to be available so routine electron temperatures below 10mK can be provided in the quantum materials being studied by users.

In May 2024 after an international faculty search, Sangyun Lee joined the UF Department of Physics as a non-tenure accruing Assistant Scientist faculty member, supported by UF CLAS and assigned duties of meeting the mission of the HBT Facility.

## MAJOR RESEARCH ACTIVITIES AND DISCOVERIES

**Tunable Contributions from Rectification and Momentum-transfer to 1D Coulomb Drag** (Mingyang Zheng*, Rebika Makaju*†, Dominique Laroche, UF Physics; Sadhvikas J. Addamane, Sandia National Laboratories and Center for Integrated Nanotechnologies; Rasul Gazizulin, MagLab HBT and UF Physics; *graduate student, †PhD awarded Dec 2024) In a series of experiments using the new Bay 1 Instrument, aspects of one-dimensional (1D) electron conduction were explored for electron temperatures evolving to below 7mK, ***Figure 2.5.2***. These results are directly related to MagLab UCGP (User Collaboration Grants Program) funding from the previous NSF award (DMR-1644779) and were acutely delayed by the COVID pandemic along with a cold-leak on the Bay 3 Instrument. The low electron temperatures were made possible using the pure $^3$He immersion cell, ***Figure 2.5.1***, and the low level of external electromagnetic interference (EMI) present in the HBT Facility even with its compromised clean-power capabilities. The identification of two distinct drag-inducing mechanisms within a single multi-channel quantum wire was made. References: M. Zheng *et al.*, arXiv:2408.12737 (2024) and arXiv:2410.17569 (2024).

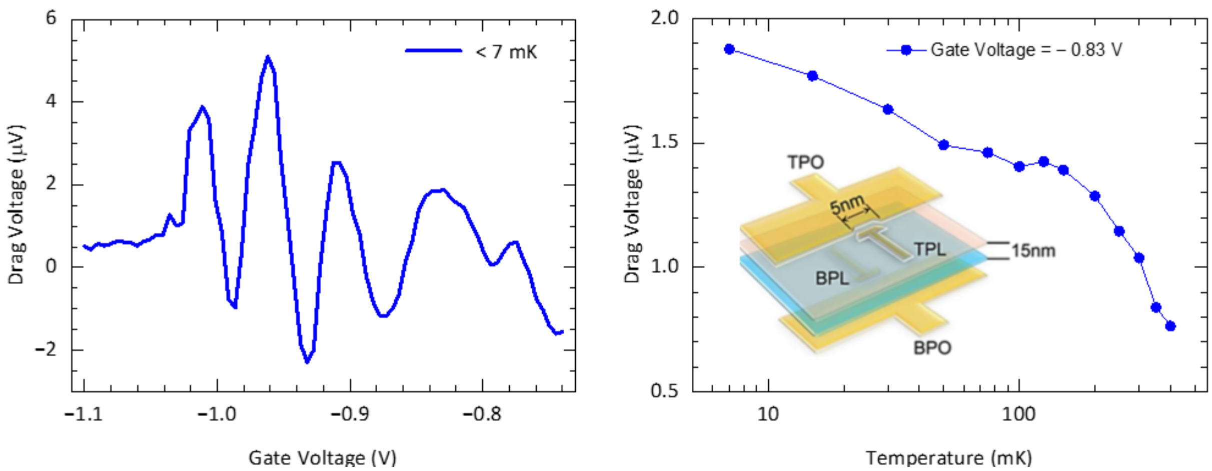



***Figure 2.5.2.*** *Drag voltage vs Gate voltage at < 7mK and (right) Drag voltage vs Temperature for the GaAS/AlGaAs double quantum wire device schematically shown in the inset, M. Zheng et al., arXiv:2408.12737 (2024).*

## MAINTAINING FACILITY AND DEVELOPMENT OF NEW MAGNET SYSTEM INCLUDING OPERATION SCHEDULE AND SHUTDOWNS

### Facility Plans and Access

***Table 2.5.1*** summarizes the present and future capabilities of the High B/T facilities at the University of Florida, which are described in this section. Proposals for magnet time may be submitted at any time, and contact/discussions with staff are recommended prior to submission. Users work with the faculty scientists to mount and tune the experiments on-site. When the experiments begin, a member of the user team remains to assist the staff in performing the instant-to-instant steps, or in some instances, the users consult from off-site locations when the experiments span long periods of time due to the nature of significant relaxation times at the extremes of parameter space.

***Table 2.5.1.*** *The instrumentation available in the MagLab High B/T Facility tabulated, and their unique combination of temperature, magnetic field, and techniques are highlighted. Specialty shielding and filtering of the equipment provides the ultraquiet electromagnetic interference environment.*

| Equipment | Features | Supported Research |
|---|---|---|
| Bay 3: 16T superconducting magnet, 20mm dia. sample space | Temperatures ≥ 1mK, by 8T demag $PrNi_5$ + Cu stage. | Magnetization, quantum transport, torsional oscillator, viscosity, specific heat, dielectric, MEMS |
| Bay 2: 8T superconducting magnet, 32mm dia. sample space | Temperatures ≥ 0.5mK, by 8T demag Cu stage. | NMR, quantum transport, magnetization, heat capacity, pressure cell, thermal transport |

| Equipment | Features | Supported Research |
|---|---|---|
| Bay 1: 14T superconducting magnet, 32mm dia. sample space | Temperatures ≥ 7mk, demag cell in development. | quantum transport, with rotation access planned, novel magnetometry, scanning probes |
| NPB B135 OBT: on-boarding and testing facility, 28mm dia. sample space | NPB B135, ≥ 350mK with access to 9T possible for sample and cell tests before transfer to Bays 1-3. | Exploratory, novel technique development, sample/cell verification prior to use on Bays 1-3 |

**Facility Operation Schedule**

Bays 1 and 2 in the Microkelvin Facility are operational and open to new proposals from users, while a leak in the dilution unit of Bay 3 is being addressed. The High B/T Facility is operational year-round, including during the University of Florida holidays and campus closure during the final week of December. Experiments can continue overnight and through closures when direct supervision of the experiment is not required. Visiting scientists from outside of Florida typically find short-term housing via online agencies when hotel options become prohibitively expensive. There are several times a year when local housing rates are at maximum levels due to sporting events, graduation weekends, and other special events. Users may contact staff to obtain advice on housing and visiting options.

## CONDUCTING EDUCATION AND OUTREACH ACTIVITIES

On short notice, the HBT team provides impromptu tours of the facility throughout the year. After receiving a safety briefing, visitors move through the facility in small groups, typically less than 8 people, and engage in hands-on activities including the rubber band and magnetic-imaging “challenges”. About 40 visitors received a tour in 2024, including an organized tour for the local Women in Science organization and not including the participants of the User Committee Workshop held in November and hosted by the UF MagLab AMRIS and HBT Facilities. Due to his interest and initiative, MagLab postdoctoral associate Nicolas Silva participated in several off-campus, public outreach events where he discussed the properties of magnets and the impact and importance of science. Using the aforementioned “challenges” and answering questions, Nicolas attended the UF Astronomy open observatory event at Rosemary Hill, FL, which attracted over 150 people over a period of six hours in early September and an event organized at the Coral Reef Library in Palmetto Bay, FL, by the Florida International University (FIU) Center for Development, Support, and Success in Engineering and Computing (CDSSEC) where about 80 children and adults were met over approximately four hours. In 2024, the HBT group hosted two REU (Research Experiences for Undergraduates) students, one UF Physics major during the Spring semester and one Georgia Tech student during the summer semester. Additional activities are conducted by Eli Wolf, who is the Research and Outreach Coordinator for the MagLab AMRIS and HBT Facilities, and complete details of their activities are described in the AMRIS Facility and Outreach section of this annual report.

## 2.6. ICR FACILITY

During the first quarter of 2024 the Fourier transform ion cyclotron resonance (ICR) mass spectrometry (MS) program continued to pursue novel applications of FT-ICR mass spectrometry. The associated methods were made available to external users through the NSF National High-Field FT-ICR Mass Spectrometry Facility. The majority of the remainder of the year was dedicated to significant instrumentation upgrades that will benefit all users of our Facility. The Facility features ten staff scientists who support instrumentation, software, biological, petrochemical, and environmental applications, as well as a machinist, technician, and several rotating postdocs who are available to collaborate and/or assist with projects.

### OPERATION OF A WORLD-LEADING HIGH-MAGNETIC-FIELD USER PROGRAM

The ICR Facility provides sample analysis that requires the ultrahigh resolution ($m/\Delta m_{50\%}$ > 1,000,000 at *m/z* 500, where $\Delta m_{50\%}$ is the full mass spectral peak width at half-maximum peak height) and sub-ppm mass accuracy only achievable by high-field FT-ICR MS. The facility's three FT-ICR mass spectrometers feature high magnetic fields (as high as 21T) and are compatible with multiple ionization and fragmentation techniques as well as online separation techniques, including liquid chromatography **(Table 2.6.1).**

***Table 2.6.1.*** *ICR systems at the MagLab in Tallahassee*

| Field (T), Bore (mm) | Homogeneity | Ionization Techniques |
|---|---|---|
| 21, 123 | < 1ppm | ESI, APPI, APCI, MALDI |
| 14.5, 104 | 1ppm | ESI, APPI, APCI, MALDI |
| 9.4, 220 | 1ppm | ESI, APPI |

#### Unique Aspects of Instrumentation Capability

**21T hybrid quadrupole-linear ion trap-orbitrap-FT-ICR mass spectrometer**. In 2015, the ICR facility commissioned the first 21T FT-ICR mass spectrometer. The 21T magnet is the highest field superconducting magnet ever used for FT-ICR and features high spatial homogeneity, high temporal stability, and negligible liquid helium consumption (**Figure 2.6.1**) (*J. Am. Soc. Mass Spectrom.,* **26**, 1626-1632 (2015)). The original implementation (**Figure 2.6.1, Left**) coupled a commercial dual linear ion trap front end with the 21T FT-ICR mass analyzer. This dual linear ion trap features high sensitivity, precise control of trapped ion number, and collisional and electron transfer dissociation. A third linear quadrupole trap offers high ion capacity and ejection efficiency, as well as rf quadrupole ion injection optics for delivering ions to a dynamically harmonized ICR cell.

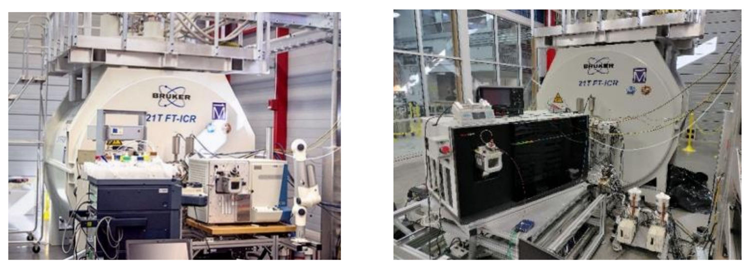



***Figure 2.6.1.*** *The MagLab 21T FT-ICR mass spectrometer. Left: previous dual linear ion trap front end. Right: 2024 Eclipse tribrid front end upgrade.*

In 2024, the dual linear ion trap was replaced with an Eclipse tribrid commercial front end comprising a high transmission quadrupole mass filter, a dual linear ion trap, and an orbitrap mass analyzer (**Figure 2.6.1, Right**). **This configuration represents the first quaternary hybrid mass spectrometer.** This unique instrumentation provides improved sensitivity, precursor ion selection, and speed while offering unprecedented flexibility for tandem mass spectrometry experiments, enabling data acquisition within the FT-ICR, orbitrap, and linear RF ion trap simultaneously. Such parallelization improves duty cycle, an advantage of particular value in hyphenated liquid chromatography experiments.

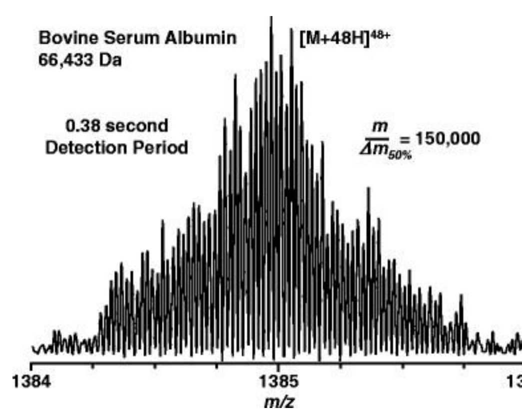



***Figure 2.6.2.*** *Single-scan electrospray FT-ICR mass spectrum of the isolated 48+ charge state of bovine serum albumin following a 0.38 s detection period. Mass resolving power is ~150,000 and the signal-to-noise ratio of the most abundant peak is >150:1. The ion accumulation period was 250 ms and the ion target was 5,000,000.*

Mass resolving power of 150,000 ($m/\Delta m50\%$) is achieved for bovine serum albumin (66kDa) over a 0.38-second detection period (**Figure 2.6.2**) and greater than 2,000,000 resolving power is achieved for a 12 second detection period. Externally calibrated broadband mass measurement accuracy is typically less than 150ppb rms, with resolving power greater than 300,000 at m/z 400 for a 0.76-second detection period. Electron transfer dissociation results in 87% sequence coverage (94% if bonds with adjacent proline residues are ignored since they cannot be cleaved via ETD) for carbonic anhydrase (*J. Am. Soc. Mass Spectrom*. **28**, 1787–1795 (2017)). The instrument is part of the NSF High-Field FT-ICR User Facility and is available free of charge to qualified users, with optimized experimental conditions, including top-down proteomics (*Science*, **375**, 411-418 (2022)), ultrahigh-resolution ion isolation via SWIFT Fourier Transform mass spectrometry (*Anal. Chem.,* **92**, 3213-3219 (2020)), single cell and subcellular MALDI imaging (*Anal. Chem.* **95**, 6089-6988 (2023)), and natural organic mixture analysis (*Nat. Commun.,* **13,** 2153 (2022)).

**14.5T hybrid quadrupole-linear ion trap-orbitrap-FT-ICR mass spectrometer.** An actively-shielded 14.5T, 104 mm bore system offers ultrahigh mass measurement accuracy (<300 parts-per-billion rms error) and a combination of high scan rate and mass resolving power (resolving power >200,000 at m/z 400, at >one scan per second). In 2024, this instrument was also upgraded from a dual linear ion trap to an Eclipse Tribrid front end. The spectrometer features electrospray, atmospheric pressure photoionization (APPI), atmospheric pressure chemical ionization (APCI) sources; linear quadrupole trap for external ion storage, collisional and electron transfer dissociation (CID/HCD+ETD); and automatic gain control (AGC) for accurate and precise control of charge delivered to the ICR cell. The combination of AGC and high magnetic field make sub-ppm mass accuracy routine without the need for an internal calibrant.

**The 9.4T, passively-shielded**, 220 mm bore system offers a unique combination of mass resolving power ($m/\Delta m$ = 8,000,000 at mass 9,000 Da) and dynamic range (>10,000:1), as well as high mass range, mass accuracy, dual-electrospray source for accurate internal mass calibration, efficient tandem mass spectrometry (as high as $MS^8$), and long ion storage period. A redesign to the custom-built mass spectrometer coupled to the 9.4T, 220mm bore superconducting magnet designed around custom vacuum chambers has improved ion optical alignment, minimized distance from the external ion trap to the magnetic field center and facilitated high conductance for effective differential pumping (*J. Am. Soc. Mass Spectrom*. **22**, 1343-1351, (2011)). The length of the transfer optics is 30% shorter than the prior system, for reduced time-of-flight mass discrimination and increased ion transmission and trapping efficiency at the ICR cell (*J. Am. Soc. Mass Spectrom.* **25**, 943-949 (2014)). The ICR cell, electrical vacuum feed through, and cabling have been improved to reduce the detection circuit capacitance (and improve detection sensitivity) twofold (*Rev. Sci. Instrum.,* **85**, 066107 (2014)). The magnet is passively shielded to allow proper function of all equipment and safety for users. The system features external mass selection prior to ion injection for further increase in dynamic range and rapid (~100 ms time scale) MS/MS (*Anal. Chem.*, **75**, 3256-3262 (2003)), with ultrahigh-resolution ion isolation via stored waveform inverse Fourier transform (SWIFT) followed by infrared multiphoton dissociation (IRMPD).

### Major Research Activities and Discoveries by ICR Facility Users

**Complex mixture analysis** benefits from the 21T FT-ICR system through high mass-resolving power, mass accuracy, dynamic range, and fast scan speed that enables resolution and confident elemental formula assignment for tens of thousands of unique species in complex organic mixtures (*Anal. Chem.,* **94,** 11382-11389 (2022)). In 2024, this unique performance was leveraged to perform molecular composition analysis for a variety of highly complex samples from soil and aerosols to coal and pyrolysis oils. Negative ion electrospray ionization (nESI) is particularly suitable for the analysis of acidic natural organic matter. nESI data from the 21T FT-ICR instrument were used to gain insights into the global glacier (*Glob. Biogeochem. Cycles*, **38**, e2024GB008212 (2024)), U.S. wetland (*Glob. Biogeochem. Cycles*, **38**, e2023GB007917 (2024)), permafrost regions (*Limnol. Oceanogr. Lett*., **9**, 563-572 (2024)) and coastline (*J. Geophys. Res. Biogeosciences*, **129**, e2024JG008233

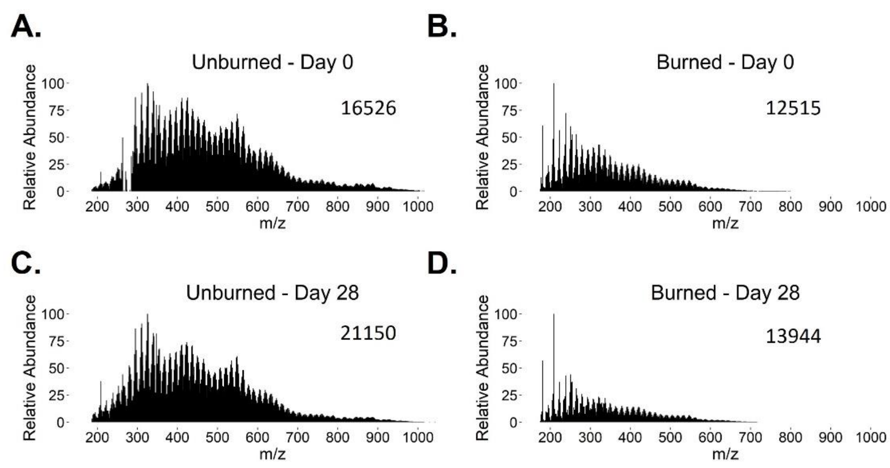



***Figure 2.6.3.*** *FT ICR-MS mass spectra of unburned (A, C) and burned (B, D) soil from negative ion mode electrospray ionization. The number in insets of each spectrum is the total number of observed peaks that were assigned molecular formulas (including heavy isotopes).*

(2024))) carbon cycle as well as exchange with carbonate-associated organic matter (*Commun. Earth Environ.*, **5**, 681 (2024)); to understand chemical and biochemical activities in elevated temperature landfills (*J. Environ. Manage.*, **351**, 119719 (2024)), to predict organic matter compositional changes in Siberian rivers due to a warming climate (*J. Geophys. Res. Biogeosciences*, **129**, e2023JG007797 (2024)) and in a mid-Atlantic, USA coastal plain river system due to storms and anthropogenic factors; to understand impacts of electrokinetic remediation on soil quality (*Water Res.*, **262**, 122094 (2024)), and to explore how dissolved organic matter impacts arsenic release into groundwater (*Org. Geochem.*, **198**, 104886 (2024)). Analytical Chemistry research to support these types of analyses was also performed examining the effects of mineral adsorbent (*Environ. Sci. Technol*. **58**, 2313-2322 (2024)), commercially available sorbent (*Org. Geochem*. **196**, 104846 (2024)), and specialty adsorbents (*Water Res*. **264**, 122130 (2024)) on detected dissolved organic matter composition.

A combination of positive and negative ion mode ESI was used to examine soil organic matter before and after a burn with a focus on identifying links with microbial metabolism after a wildfire (*Environ. Sci. Technol*. **58**, 4167-4180 (2024), **Figure 2.6.3**)). Positive mode ESI was employed to annotate dissolved organic matter metabolomes from a molecular formula library. This work identified 668 significant metabolites released by *P. tricornutum* in response to iron deficiency (*Org. Geochem.*, **197**, 104880 (2024)).

The 21T FT-ICR instrument was also used to analyze the molecular compositions of aerosols from peat burning. Positive and negative mode ESI revealed compositional differences in organic aerosol emitted from Arctic and boreal peat (*Commun. Earth Environ*. **5**, 137 (2024)) whereas APPI revealed information about low molecular weight non-polar species, particularly the temperature-dependent formation of single- vs. multi-core aromatic compounds (*J. Am. Soc. Mass Spectrom*. **35**, 1713-1725 (2024)).

Another application area for 21T FT-ICR MS with APPI, ESI, or a combination of both was the analysis of oils and bio-oils, including characterization of shale crude oil during production of nonbiological drugs (*Anal. Chem*. **96**, 13050-13060 (2024)), pyrolysis oils from polyolefin plastic waste recycling (*Energy Fuels,* **38**, 11148-11160 (2024); *Energy Fuels*, **39**, 1283-1295 (2024)), crude oil degradation pathways after an oil spill (*Energy Fuels,* **38**, 6753-6763 (2024); *Energy Fuels,* **38**, 20462-20469 (2024)), asphaltene deposits that need to be mitigated in crude oil extraction processes (*Energy Fuels,* **38**, 20361-20373 (2024)), accelerated aging effects, which can be detrimental in biofuel production, in water-soluble and water-insoluble fractions from biomass pyrolysis (*Energy Fuels,* **38**, 16473-16489 (2024)), process conditions to form lignocellulose bio-oils with the highest biofuel potential (*Energy Fuels,* **38**, 17697-17705 (2024)), the effect of syringyl content on lignin biocrude yield (*Sust. Energy Fuels*, **8**, 5856-5867 (2024)), and effects of pyrolysis temperature on photooxidation of wheat straw biochar to form potentially toxic byproducts (*Soil Environ. Health*, **2**, 100114 (2024)). APPI was also used for detailed characterization of subbituminous and bituminous coals for carbon fiber production applications (*Energy Fuels*, **38**, 6774-6789 (2024)). Analytical Chemistry research to improve bio-oil analysis included the development of a novel ultrasound-assisted sequential extraction method (*Energy Fuels*, **38**, 17687-17696 (2024)).

**Biological applications** of FT-ICR MS in 2024 included exploration of enzymes expressed under isotopically depleted conditions. Simultaneous depletion of heavy carbon, hydrogen, oxygen, and nitrogen isotopes during the culturing of *E. coli* resulted in faster growth with most proteins exhibiting higher thermal stability and, for enzymes, faster kinetics with potential to improve applications requiring extreme reaction rates (*Angew. Chem*. **63**, e202316488 (2024)).

The 21T FT-ICR instrument was also used to determine the activation status of large, engineered proteins. Cleavage and release of the masking domain is typically monitored by ELISA using immuno-detection of the various unique domain components; however, in this case high resolution mass spectrometry is essential for distinguishing whether the molecule is correctly cleaved at the precisely designed proteolytic activation site **(Figure 2.6.4)**.

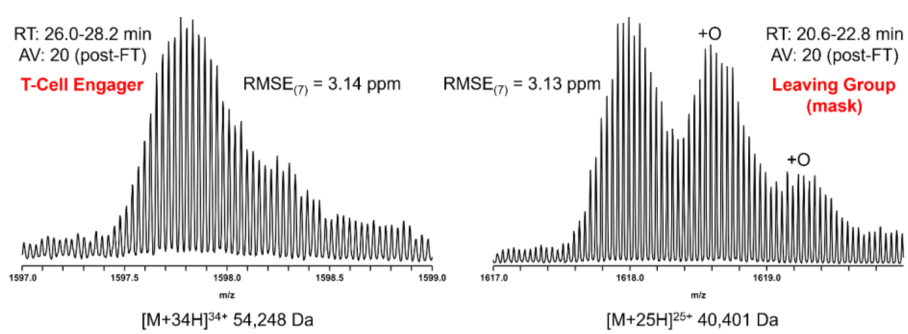



***Figure 2.6.4.*** *21 T FT-ICR MS spectra of pro-form (intact, left) and cleaved (active, right) species of a designer protein. Intact mass measurements match expected values within approximately 3 parts per million, demonstrating that the protein is synthesized correctly.*

## CARRYING OUT IN-HOUSE RESEARCH AND SCIENTIFIC INSTRUMENTATION DEVELOPMENT IN SUPPORT OF THE USER PROGRAM

In the area of **environmental and petrochemical applications**, a major effort in 2024 was an internally funded collaboration (FSU VP for Research) with the FSU Computer Science Department. This work also involves an international partnership through the International – Complex Matrices Molecular Characterization (iC2MC) consortium, based in France, to develop novel AI-based software for automated analysis of complex mixture spectra, such as those from dissolved organic matter and bio-oils.

**Per-and polyfluoroalkyl substances (PFAS)** are a large family of thousands of chemicals, many of which have been identified using nontargeted time-of-flight and Orbitrap mass spectrometry methods. Comprehensive characterization of complex PFAS mixtures is critical to assess their environmental transport, transformation, exposure, and uptake. Because 21T FT-ICR MS offers the highest available mass resolving power and sub-ppm mass errors across a wide molecular weight range, we previously developed a nontargeted 21T FT-ICR MS method to screen for PFAS in an aqueous film-forming foam (AFFF). However, because compounds introduced through direct infusion can suffer from ionization suppression, accurate quantification can be difficult. During 2024, low-flow liquid chromatography separation, which reduces ionization suppression, was coupled with the 21T FT-ICR instrument to develop an improved approach for untargeted PFAS quantification in complex mixtures.

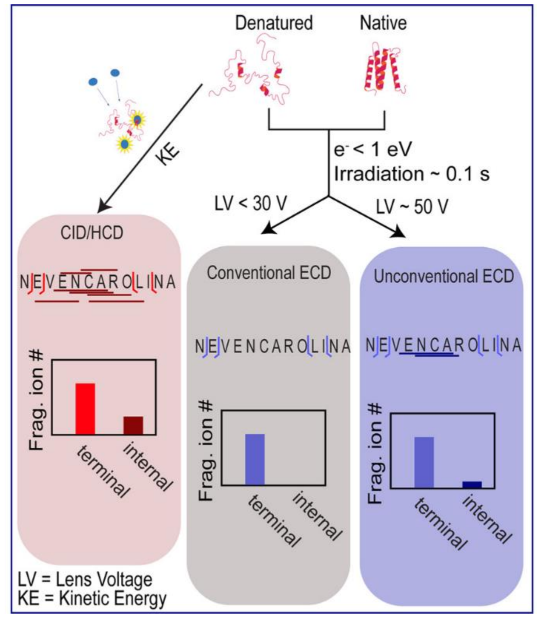



***Figure 2.6.5.*** *While internal fragment ions from intact proteins are assignable following collisional activation (CID/HCD, Left), such ions do not appear following electron capture and transfer dissociation (ECD/ETD, Middle). However, they may be observed at low abundance from unconventional operating conditions (Right).*

In the area of **biological applications**, a perspective on how to perform *de novo* peptide sequencing from tandem mass spectrometry data was published (*Mol. Cell. Proteomics*, **23**, 100875 (2024)). Significant effort was also spent on software development for the analysis of protein tandem mass spectra. A patent disclosure was filed for a novel de novo sequencing algorithm. Other research dug into the formation of internal fragment ions from multiple protein backbone bond cleavages in electron-based tandem mass spectrometry (*Mol. Cell. Proteomics*, **23**, 100814 (2024), **Figure 2.6.5**). While other researchers have made the claim that such fragments can be detected and assigned, data from the 21 T FT-ICR mass spectrometer showed that such fragments are not present at sufficient levels to be annotated. In addition, even if possible, such annotation would be prone to a high false positive rate. This research represents a course correction in the field.

The ICR Facility also continues to innovate in **instrumentation development** for FT-ICR mass spectrometry. In 2024, gas-phase depletion of contaminants in dissolved organic matter through RF frequency manipulation in the external linear ion trap bridging the commercial Thermo Fisher front end with the 21T FT-ICR mass analyzer greatly increased the number of molecular compositions that can be assigned in such samples (*J. Am. Soc. Mass Spectrom*. **35**, 2465-2471 (2024), **Figure 2.6.6.**

A comparative study also showcased the superior performance of 21T FT-ICR MS for molecular composition assignment in dissolved organic matter compared with lower field instruments *(J. Am. Soc. Mass Spectrom*. **35**, 2400-2407 (2024)).

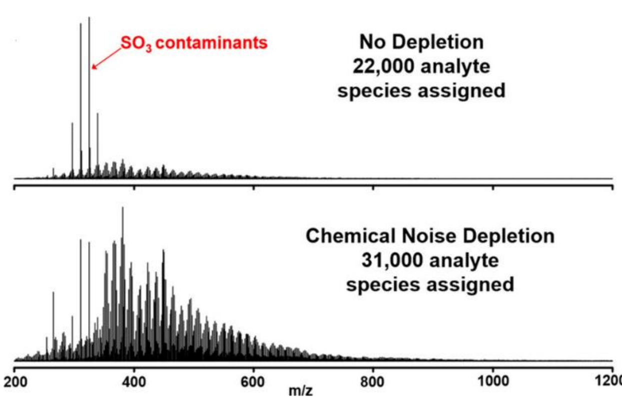



***Figure 2.6.6.*** *Number of molecular compositions assigned in dissolved organic matter with (Bottom) and without (Top) gas-phase depletion of chemical conta-minants.*

## MAINTAINING FACILITY AND DEVELOPMENT OF NEW MAGNET SYSTEMS INCLUDING OPERATION SCHEDULE AND SHUTDOWNS

### Facility Plans and Directions

The ICR facility will continue to expand its user facility using the world's first 21T FT-ICR mass spectrometer, including expansion of the MALDI imaging sampling and acquisition capabilities, and LC FT-ICR MS for complex mixtures. In addition to the front-end upgrades described above for the 14.5T and 21T instruments, a novel MALDI imaging source was acquired in 2024. This source is compatible with the new front ends. An additional FT-ICR mass spectrometer, to be installed in an existing 9.4T actively-shielded, 155mm bore magnet has been ordered. This instrument will add trapped ion mobility spectrometry (TIMS) to our Facility. TIMS allows for rapid gas-phase separation of isomers for improved analysis of complex mixtures. Other plans include improved automation of dissolved organic matter direct infusion analysis, an approach that, along with the automated AI-driven automated data analysis described above, will significantly increase sample throughput in our Facility.

### Facility Operation Schedule

The ICR facility operates year-round, with weekend instrumentation time scheduled. Throughout 2024, a major effort was dedicated to the front-end upgrades from the Velos Pro linear ion traps to the Eclipse tribrid instrumentation. As a consequence, the number of users that had access to the instrumentation decreased. However, we expect to return to our previous number of users once the upgrade has been completed and continue to grow as the new capabilities are becoming available. The ICR facility operates with both on-site users and users sending samples for data acquisition by internal ICR support staff.

## CONDUCTING EDUCATION AND OUTREACH ACTIVITIES

### Outreach to Generate New Proposals – Progress on STEM and Building User Community

Despite reduced access for external users due to the substantial upgrades to our Facility, the ICR program provided magnet time to six new principal investigators in 2024. ICR faculty participated in several conferences to increase the visibility of the User Facility, including the 34$^{th}$ American Society for Mass Spectrometry (ASMS) Sanibel Conference, which was co-organized by Amy McKenna on "Mass Spectrometry in Energy and the Environment" and featured a keynote lecture by Ryan Rodgers, the European FTMS Conference (featuring a keynote by Christopher Hendrickson), the annual American Society for Mass Spectrometry conference, the 2024 Ocean Sciences Meeting, and the SERDP & ESTCP PFAS Project Meeting.

The ICR Facility had several undergraduate students performing research in our program, including students from the Biology, Chemistry, and Computer Science Departments (a total of five students). With Prof. Hakansson's arrival in July 2024 as the new Director of the ICR Program, two new Chemistry graduate students have been recruited. Several computer science graduate students are also working under the supervision of Ryan Rodgers. Huan Chen is co-supervising graduate students in the Department of Civil and Environmental Engineering at the FAMU-FSU College of Engineering and Amy McKenna is co-supervising students at Colorado State University. Martha Chacon-Patino worked with high school students through an externship program.

### Education and Training

The ICR program provides education and training to students, postdoctoral associates, faculty, and technical staff at the Cold Spring Harbor (NY), which is a ten-day training intensive workshop on mass spectrometry where ICR staff and postdocs serve as instructors on various topics. ICR personnel provided hands-on, individualized training for software and data processing for all users along with tutorial workshop-style lectures throughout 2024. Several ICR faculty members have served as guest lecturers for both undergraduate and graduate courses at FSU in 2024.

#### *Stem Outreach*

The ICR Facility actively participates in STEM outreach in local K-12 schools in Leon, Gadsden, Franklin, Jefferson, and Wakulla counties, with demonstrations designed to highlight fundamental principles of ICR. Several ICR staff also participate in the MagLab's Magnetic Momentum Scholars program.

## 2.7 NMR/MRI FACILITY

The *NMR/MRI User Program* at the MagLab in Tallahassee (FSU) is partnered with the *AMRIS User Program* in Gainesville (UF). Research foci in Tallahassee include solid-state NMR (ssNMR) applications to materials science, chemistry, biology, and biochemistry, along with *in vivo* magnetic resonance imaging (MRI) of small animals and tissues. The NMR/MRI team comprises the *NMR Instrument Managers* (6 Research Faculty, 1 Associate in Research, 1 Faculty Affiliate, 1 Technical Staff, 1 Postdoc), the *NMR Technology Group* (4 Research Faculty, 3 Technical Staff), the *Affiliated Faculty* (5 Affiliated Professors), and the *Management Team* (1 Director, 1.33 Support Staff). There are thirteen active NMR platforms on site, including three flagship instruments supported by the NSF core grant, including **(i)** the 36T Series Connected Hybrid (**36T-SCH**) platform, which operates at 35.2T/1.5GHz for $^{1}$H NMR, making it the highest-field magnet for NMR in the world; **(ii)** the 14.1T/600MHz/395 GHz dynamic nuclear polarization (**600-DNP**) NMR platform (which also includes an Overhauser DNP setup for liquid-state NMR, **600-ODNP**); **(iii)** the 21.1T/900MHz (**900-MRI**) ultrawide bore (105mm) MRI platform, which is currently the highest-field MRI/S instrument in existence. In addition, there are **(iv)** one 20.0T/850MHz (**850**, launched in February 2024) and **(v)** two 18.8T/800MHz platforms (**800#1**, **800#2**), which are configured for biosolids and materials ssNMR, as well as for methods development and staging of UHF NMR experiments on the flagship platforms. These instruments are unique, in part, due to their coupling with unparalleled staff expertise and some of the world's best NMR probes, which are designed and constructed by our *NMR Technology Group*. Additionally, there are a series of moderate-field instruments (**600#1**, **600#2**, **600#3** (NEW, *vide infra*), **600-SOL**, and **500**), which are essential for triaging experiments, running unique high-temperature and/or $^{1}$H/$^{19}$F/X (HFX) experiments, testing new HTS solution NMR probes, and supporting the research of numerous users from around the U.S. and the world.

The NMR/MRI User Program, which is run by our Research Faculty, Technical Staff, and Affiliates, and overseen by Dr. Robert Schurko, annually serves *ca*. 250-375 users from around the world, including PIs, students, postdocs, and technicians. In 2024, our number of users was **270**, which at first sight, seems to be lower than in previous years (2023: **341**, 2022: **352**, 2021: **311**, 2020: **234**, 2019: **286**). However, for the 2024 Annual Report, we have adjusted how users are tabulated; specifically, only those with experiment time within 2024 are counted – users are not added from 2024 publications for which data were collected in previous years. We believe this affords a very accurate reflection of user magnet activity and the impact of magnet/platform downtimes in a given year and encourages more input from our user base (*N.B.*: this will be our means of user counting in future Annual Reports). This being said, we had a deficit of users due to the **36T-SCH** being down because of a damaged breaker, which resulted in no experimental time in 2024. **800#2** experienced an accidental quench in July 2024, but was brought back online in August 2024, so minimal time was lost. Finally, the number of peer-reviewed publications from the NMR/MRI User Program for 2024 was **53**, higher than in 2023 (**46**), but slightly below the ten-year average (**57.1**). Similar to 2023, the slightly substandard publication count can be directly attributed to a loss of 36T SCH experiment time, which we hope will resolve in 2025, as well as the absence of the **830** platform for most of **2023**.

We continue to have success in supporting our users associated with the NIH RM1 grant (GM148766) obtained by Drs. Rob Schurko (FSU/NHMFL), Bill Brey (FSU/NHMFL), and Joanna Long (UF/AMRIS) for the *National Resource for Advanced NMR Technology*, which supports three Technology Development Projects (TDPs), including **TDP1** - *High Sensitivity NMR of Mass Limited Samples, Complex Mixtures, and Structural Biology*, **TDP2** - *Dynamic Nuclear Polarization NMR*, and **TDP3** - *Biomedical NMR Research Beyond the Reach of Conventional NMR Magnets*. In 2024, we received a supplement award to support the goals of TDP1 (RM1 GM148766-02S1, $141,820).

### OPERATION OF A WORLD-LEADING HIGH-MAGNETIC-FIELD USER PROGRAM

#### Unique Aspects of Instrumentation Capability

**Ultra-High Field (UHF) NMR: 36T-SCH:** The **36T-SCH** was in its sixth year of user service in 2024. This platform has resulted in **67** peer-reviewed publications since its commissioning in November 2018 (including **8** in 2024, **9** in 2023, **11** in 2022, **9** in 2021, and **14** in 2020).

Unfortunately, there was no experimental time on the **36T-SCH** in 2024 (usually, between 90-100 days are allotted). The magnet has not been operational since September 2023, because one of the six room-temperature circuit breakers overheated during normal operations. The magnet was restored to operation in December 2024/early January 2025.

Work is continuing to achieve *ca*. 0.1ppm stability on the **36T-SCH** magnet. In 2024, with additional funding from an NIH RM1 supplement, we upgraded to newer hardware that supports 64-bit data exchanges between the VST and controller Field Programmable Gate Arrays (FPGAs), which improves the resolution of the field estimate used by the compensator. This new setup arrived in October 2024.

Data acquired on the **36T-SCH** before 2024 continue to prove their value for the ssNMR of half-integer quadrupolar nuclei (*i.e.*, nuclear spins of 3/2, 5/2, 7/2, and 9/2, which constitute 73% of NMR-active nuclides in the periodic table) in a wide range of materials, as evidenced by **8** publications in 2024. In 2024, our major focus continued to be $^{17}O$ ssNMR of chemicals, materials, and biological systems, where the **36T-SCH** affords enormous gains in signal (especially for natural abundance samples, n.a.($^{17}O$) = 0.037%) and resolution (since the central transition (CT, $+½ \leftrightarrow –½$) patterns of half-integer quadrupolar nuclides narrow as the inverse of $B_0$), along with new explorations of extremely challenging spin-1/2 ($^{103}Rh$) and quadrupolar ($^{35}Cl$, $^{71}Ga$, $^{139}La$) nuclides in different materials.

Improvements were made on the 2023 1.3mm HXY MAS probe (#64), which features an NHMFL in-house built stator. The probe was previously made functional in HCN mode, and new tuning capabilities have been added and improved, including a triple-resonance $^1H/^{31}P/^{13}C$ and $^1H/^{13}C/^{17}O$ modes, along with several double-resonance (HX) modes, including X = $^{103}Rh \leftrightarrow {}^{73}Ge$, $^{61}Ni \leftrightarrow {}^{35}Cl$, $^{17}O$, $^6Li$, $^2H$, $^{13}C$, and $^{71}Ga$.

**DNP NMR: 600-DNP/600-ODNP:** The 600MHz DNP platform, a joint effort between NMR, AMRIS, and EMR that opened for users in late 2018, has yielded **57** publications to date. It features the most efficient high field (*i.e.*, ≥ 600MHz/395GHz) MAS DNP instrument in the world that is available to a large user base, due to the improved μw delivery and unique on-site expertise – as such, it accounts for >40% of all publications from DNP platforms of 14.1T or higher worldwide. This unique DNP platform has both MAS DNP ssNMR (**600-DNP**) and Overhauser DNP (**600-ODNP**) instruments (solids and solutions platforms, respectively, on two separate magnets), which receive μw irradiation via a quasi-optical table (built-in-house) that splits the gyrotron μw beam. Much of the developmental research takes advantage of the expertise across divisions, especially between NMR/MRI and EPR. The DNP system can be operated continuously (24/7) for up to three weeks at a time, unlike any other platform in the world. This enables extremely challenging DNP NMR experiments and support of users across the career spectrum, including early-career professors without routine access to DNP NMR. A benchtop EPR spectrometer and spinner are available for sample screening: these improve sample preparation and minimize probe damage.

Due to the expertise and diligence of Drs. Fred Mentink-Vigier and Thierry Dubroca, the **600-DNP** had **256** magnet days in 2024 (this is greater than our predicted maximum of 240 and is exclusive of *ca*. 30 days for service and downtimes, and almost 1.5 months for upgrades), and several new research groups were recruited. We note that in 2023, a 395GHz gyrotron was purchased from Bruker to replace the previous one, which was 10 years old. Installation commenced in late 2023 and was completed in February 2024, along with a brand-new Bruker NEO console (the older console was repurposed to **600#2**).

In-house development of MAS-DNP NMR probes continued in 2024, pushed by the team of P. Gor'kov, F. Scott, and F. Mentink-Vigier. The 1.3mm HXY low-temperature (100 K) DNP MAS probe (#65) was completed in December 2024, and we are working to expand the number of tuning configurations throughout 2025. The 1.9mm HXY low-temperature (100 K) DNP MAS probe (#67) is still in progress, but we anticipate a much faster completion in 2025, due to previous work on the 1.3mm probe and 3.2mm HXY low-temperature (100K) DNP MAS probe (#61) that was commissioned in August 2022.

Also in 2024, Drs. Schurko and Mentink submitted an NSF RI-1 preproposal entitled, "*Mid-scale RI-1 (M1:IP):National Facility for Ultra-High Sensitivity Solid-State NMR*", which proposes the implementation of the <u>first ever ssNMR spectroscopy platform that combines DNP and cryoMAS capabilities</u>, which would serve researchers from across the U.S. and around the world. This 1.0GHz/54mm bore/658GHz DNP/CryoMAS ssNMR platform will include a 23.5T magnet, a 1.0GHz spectrometer, a 658GHz gyrotron (for DNP) from Bruker, and an assortment of DNP and CryoMAS probes.

**900-MRI**. The 900MHz/21.1T ultra-wide bore (105mm) magnet, which was built in-house at MagLab, has been in operation since 2005, yielding **127** publications over its lifetime and **53** since 2017. It is largely used for MRI of small animals and *in vivo* MRI studies, which are made possible by the 105mm bore; however, it is also used for ultra-wideline NMR of unreceptive nuclei. An issue of concern continues to be the **900-MRI** control room, which has cryogenics controls and electronic safety equipment that is approaching the end of life (it is over 20 years old). Work is underway to replace this equipment to safeguard MagLab's flagship instruments. We note that the **500** platform augments MRI capabilities and provides a staging ground for experiments at 900MHz. It is equipped with *in vivo* MRI, microimaging, diffusion, and MR rheology instrumentation from previous systems or built in-house. We are hoping that NSF funds can be obtained from the ongoing Condition Assessment to address these issues.

**ssNMR from 800-850MHz.** The **800#1**, **800#2**, and new **850** platforms are our high-field workhorses that serve a large community of users who require access to high-field ssNMR and have yielded hundreds of publications over the last 10 years. These platforms are unique due to the (i) wide array of probes that are available with virtually any tuning configurations that our users need (14 different probes are in service from 800-850MHz) and (ii) unmatched expertise in the development of NMR methods and applications of complex experiments to solve challenging problems in chemistry, materials science, and biology.

The new **850**, which has a 2018-vintage NEO console, and replaced the **830** that quenched in November 2022, is now up and running – in part thanks to the rapid construction of new 2.5mm MAS probes. In early 2024, the in-house built 2.5mm (#63) and 3.2mm (#51) HX MAS probes were commissioned, the latter being converted over from capabilities at 830MHz. During 2025, the NMR Technology Group will be designing and building two new probes: a 1.3mm HX(Y) MAS probe and 5.0mm static (or 3.2mm HX MAS) low-E NMR probe. All of this development is possible due to the much larger bore size of the **850** relative to that of the **830** (*i.e.*, 54mm vs. 31mm, respectively).

From late 2024 to present, we have been working with Phoenix NMR (Loveland, CO) on the launch of a low-temperature (~70K) static 5.0mm HX probe (**800#1** and **800#2**) for ultra-wideline NMR studies of unreceptive nuclides and variable-temperature studies of molecular-level dynamics. It is currently under testing as this document is being written.

**ssNMR at 600 MHz.** The **600#1** and **600#2** platforms continue to be of vital service to our users, providing opportunities for routine experimentation, triaging for higher fields, and unique HFX and H(F)XY capabilities. A new **600#3** platform will be launched in 2025, using a magnet and console obtained from University of Central Florida (it is compatible with probes from **600#1** and **600#2**).

### Major Research Activities and Discoveries

**36T-SCH:** The **36T-SCH** continues to be our go-to instrument for applications of ssNMR to challenging half-integer quadrupolar nuclei, providing significant enhancements in both signal and resolution. As mentioned above, $^{17}O$ ssNMR continues to be of great interest to our users, including a $^{17}O$ ssNMR study of calcium oxalate monohydrate, a main component of kidney stones [*Inorg. Chem*. **2024**, *63*, 10179]; a multinuclear ssNMR ($^{1}H$, $^{17}O$, $^{31}P$, $^{43}Ca$) study of octacalcium phosphate, a widely studied material for bone substitution and precursor in biomineralization [*Faraday Discuss*. **2024**, 451]; a $^{1}H$-$^{17}O$ ssNMR study of carboxyl-bridged hydrogen bonds (CBHB) commonly found in organics and proteins (and thought to play important roles in biological functions in the latter) [*J. Phys. Chem. A* **2024**, *128*, 4288]; work on the mechanochemical $^{17}O$-enrichment of bicarbonate salts, which are crucial in carbon capture systems [*ChemRxiv* **2024**, 1–36]; and a review on $^{17}O$ ssNMR of lipid membranes featuring work conducted on the 36T-SCH [*J. Phys. Chem. B* **2024**, *128*, 3527]. Work on unreceptive nuclides included the first ever $^{103}Rh$ ultra-wideline ssNMR study of inorganics and organometallics, featuring the development of broadband CP experiments for low-γ nuclei [*Chem. Sci.* **2024**, *15*, 2181]; a $^{35}Cl$ ssNMR-guided crystallography study on an ionic cocrystal of a drug, ponatinib HCl [*CrystEngComm* **2024**, *26*, 1219]; and two $^{71}Ga$ and $^{139}La$ ssNMR studies of ionic conductors, featuring use of the 1.3 mm fast MAS probe (**Figure 2.7.1 #1**, ***NSF Science Highlight***) [*J. Am. Chem. Soc.* **2024**, *146*, 14022; *ChemPhysChem* **2024**, *25*, e202300934]).

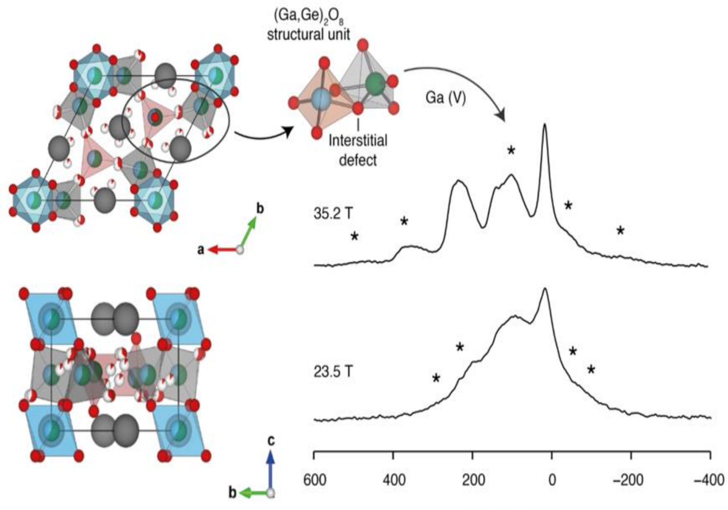



***Figure 2.7.1. Left**: Defect chemistry of a gallium containing electrolyte (oxygens in red). **Right**: Resolved (35.2T) vs. unresolved (23.5T) $^{71}Ga$ ssNMR spectra and a disorder model. (*) indicate artefacts (spinning sidebands).*

**900-MRI:** The flagship **900-MRI** platform, the highest-field MRI system in the world, yielded several MRI and NMR publications. $^{23}Na$ and $^{1}H$ MRI/S continue to be of great importance on this instrument. Schad and co-workers continue to press forward on making $^{23}Na$ MRI/S a reality for clinical situations, with work on a pulse sequence for extracting single- and triple-quantum MRI signals [*Magn. Reson. Med*. **2024**, *92*, 900], and quantification of relaxation times in $^{23}Na$ MRI experiments [*NMR Biomed.* **2024**, *37*, 1]. Grant *et al.* used high-field MRI to examine human mesenchymal stem cell-derived extracellular vesicles with ultrasmall superparamagnetic iron oxide (USPIO) nanoparticles, which enhance their visibility in magnetic resonance imaging (MRI) [*ACS Appl. Nano Mater*. **2024**, *7*, 24160]. Chen worked on a new computational tool called the Automatic Sequential Assignment Program (ASAP), to improve accuracy, efficiency, and robustness in signal assignments for large, non-crystalline proteins [*J. Magn. Reson*. **2024**, 361, 107664]. Finally, Holmes *et al.* conducted the first ever $^{103}Rh$ ssNMR experiments at 900 MHz, reporting remarkable spectra for inorganic and organometallic complexes of concern in catalysis [*Chem. Sci.* **2024**, *15*, 2181].

**600-DNP:** In 2024, research on the **600-DNP** yielded a record annual number of high-quality papers (**12**), continuing to produce groundbreaking science. For instance, Zhao *et al.* used DNP ssNMR to achieve unprecedented molecular-level insights into the preservation and transformation of organic carbon in soil from saline wetlands, demonstrating the critical role of DNP NMR in resolving complex biopolymer structures [*J. Am. Chem. Soc.* **2025**, *147*, 519]. Sinha and co-workers unveiled the first atomic-level evidence of charge-pair salt-bridge interactions between glycosaminoglycans (GAGs) and collagen proteins in native cartilage, showing how DNP is crucial for probing $^{13}C$-$^{13}C$ and $^{13}C$-$^{15}N$ interactions with no isotropic enrichment [*J. Am. Chem. Soc*. **2024**, *146*, 23663] (**Figure 2.7.2**, ***NSF Science Highlight***). Poulhazan *et al.* employed DNP ssNMR to investigate the complex biological architectures of the glycoprotein-rich cell walls of *Chlamydomonas reinhardtii* in their native state, revealing nanoscale heterogeneity, glycan-protein interactions, and hydration dynamics [*Nat. Commun.* **2024**, *15*, 1]. Bastos *et al.* probed covalent connectivity of glycogen within brewer's spent yeast cell walls, illustrating that glycogen is structurally integrated with β-glucans through distinct glycosidic linkages, and exhibiting the usefulness of DNP NMR for characterizing complex polysaccharide architectures [*Carbohydr. Polym*. **2024**, *324*, 121475]. On the developmental and methodological end of DNP, Chatterjee *et al*. showed that strongly coupled nitroxide biradicals can efficiently hyperpolarize surrounding solvent protons without requiring protons on the biradical itself [*J. Phys. Chem. Lett.* **2024**, *15*, 2160]. Finally, Scott *et al.* demonstrated that sorbitol-based glass matrices significantly extend the temperature range for MAS-DNP above 200 K, maintaining high NMR sensitivity and enabling enhanced biomolecular investigations [*J. Phys. Chem. Lett*. **2024**, *15*, 8743].

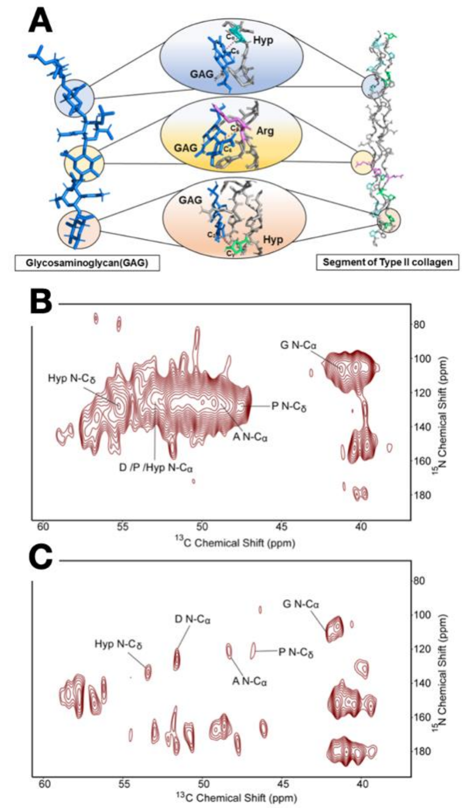



***Figure 2.7.2.*** *(**A**) 3D model showing the interaction between GAG and type II collagen. DNP-enhanced 2D $^{15}$N–$^{13}$C dipolar correlation NMR spectra of cartilage (**B**) and bone (**C**).*

**Other Major ssNMR Instruments:** Our 850, 800(×2), 600(×2), and 500MHz platforms are the workhorses for the majority of high- and moderate-field ssNMR experimentation, as well as serving as screening platforms for flagship instruments. The **800#1**, **800#2**, and **850** are of importance for ssNMR of biosolids (due to high sensitivity and large chemical shift dispersions) and for half-integer quadrupolar nuclides in chemicals, pharmaceuticals, and a wide range of materials (again, due to narrowing of CT powder patterns proportional to $B_0^{-1}$). **600#1** and **600#2** act in support of these instruments, providing unique opportunities like $^{1}$H-$^{19}$F-X ssNMR, variable-temperature NMR, and MRI and diffusion measurements. The 500 platform is heavily utilized for research on energy materials (*e.g.*, $^{7}$Li NMR and MRI of energy materials) and is equipped with a laser for heating to temperatures of *ca*. 700°C.

Some research highlights include: **(a) Biosolids and Biomaterials**: Using ssNMR to: (i) to elucidate the membrane-disruptive mechanism of the host defense peptide *piscidin 1* against enveloped viruses [*Front. Chem.* **2024**, 12]; (ii) study the molecular architecture of chitin- and chitosan-dominated cell walls in zygomycetous fungal pathogens [*Nat. Commun.* **2024**, *15*, 8295]; and (iii) probe the molecular dynamics (with $^{2}$H ssNMR) of methionine side chains in a nine-residue low-complexity peptide (RC9) at low temperatures below 200 K [*ChemPhysChem* **2024**, *25*, e202300565]. **(b) Chemistry and Materials**: A wide range of multinuclear ssNMR was used to: (i) uncover the molecular mechanisms governing the hydrolytic stability and structural transformations of a Zn-based metal-organic framework (MOF) [*Nat. Commun.* **2024**, *15*, 10776]; (ii) provide direct evidence of metallic-like carriers in highly faceted $Cd_2SnO_4$ plasmonic nanocrystals, revealing large Knight shifts in $^{113}$Cd and $^{119}$Sn NMR spectra [*Adv. Opt. Mater.* **2024**, *12*, 2400388]; (iii) unveil the coordination environments of Pb in lead-silicate glasses, demonstrating that pyramidal $PbO_3$ and $PbO_4$ units with sterically active lone pairs are primarily formed (i.e., with $^{207}$Pb isotropic-anisotropic correlation spectroscopy) [*J. Phys. Chem. B* **2024**, *128*, 2811] and (iv) illustrate how defect engineering modifies the local structural environment and acidity of amorphous aluminosilicates (with high-field $^{27}$Al and $^{17}$O ssNMR) [*Nat. Commun*. **2024**, *15*, 6899].

## CARRYING OUT IN-HOUSE RESEARCH AND SCIENTIFIC INSTRUMENTATION DEVELOPMENT IN SUPPORT OF THE USER PROGRAM

### Probes

The probes designed by the *NMR Technology Group* are a major factor in setting the MagLab apart from other facilities around the world and keeping our user program on the cutting edge. This team, led by Dr. W. Brey and P. Gor'kov, designs, manufactures, and implements probes of very high quality. They provide versatile tuning configurations for multinuclear ssNMR, low-*E* coils for lossy biosolids samples, and some of the best rf circuits and coils for the detection of weak NMR signals.

Some of the new probe developments are described in the relevant instrument sections above, so here is presented an overall summary of new probes, capabilities, and tuning configurations that arose in 2024.

***New Probes, Tuning Configurations, and Related Hardware***

- **36T-SCH**:
  - 3.2mm HX MAS Low-E probe (mid-gamma) (#59) – improvements and repairs
  - Static HX Low-E probe with interchangeable sample coils (#57) – upgrades
- **900-MRI**:
  - Modular *in vivo* MRI probe with multi-channel capabilities – in design phase
- **850**:
  - 2.5mm HX MAS probe (Materials and Bio, 2-channel) (#63) – can now tune to 75-80% of all nuclides under $^{31}$P.
  - 3.2mm HX MAS probe (Materials, 2-res), adapted from 830MHz (#51)
  - 3.2mm HX MAS low-E probe (#68) – under construction, ETA 04/2025
  - 1.3mm HX(Y) MAS probe (#69) – under construction, ETA 06/2025
- **800#1/800#2**:
  - 2.5mm HX MAS probe (#66) – improvements (this probe, released in 09/2023, covers 80% of NMR-active nuclides in the Periodic Table (*i.e.*, $^{1}$H/$^{19}$F and $^{105}$Pd to $^{31}$P)
  - 5mm HX static probe with VT capabilities (#PH1, Phoenix, Feb. 2024) – still undergoing testing, just arrived back from Phoenix NMR
- **600-DNP**:
  - 1.3mm HXY low-temperature (100K) DNP MAS probe (#65), operational as of 01/2025
  - 3.2mm HXY low-temperature (100K) DNP MAS probe (#61) – improvements and second year of operation for users
  - 1.9mm HXY low-temperature (100K) DNP MAS probe (#67) – in construction phase, ETA 08/2025
- **800 at AMRIS**
  - 3.2mm HXY MAS low-E probe built by the NMR Tech group for UF – 05/2024 installation at UF/AMRIS

***HTS NMR Probes***

Bill Brey and the *NMR Technology Group* also continue to work on the incorporation of HTS coils in solution NMR probes for optimized efficiency and sensitivity. Significant technical progress was made for high sensitivity solution probes based on HTS resonators. Staff developed an approach to achieve the excitation bandwidth needed for $^{13}$C NMR at 900MHz in a commercial Bruker spectrometer without reducing sensitivity, a development that can be readily implemented by other users. The group also assisted ASC students in characterizing small superconducting cavity resonators used for evaluating $Nb_3Sn$ deposition techniques, work which was sent as a highlight to NSF.

***Probes Under Planning***

- 0.7mm HCNO MAS probe – the ultimate probe for $^{13}$C/$^{15}$N/$^{17}$O ssNMR of labelled proteins and peptides for **800#1**, **800#2**
- 1.3mm HFX fast MAS probe for **800#1**, **800#2**
- 5mm probe for *in situ* study of charging/discharging batteries for **400**

**Platform Upgrades and Concerns**

Most of the information on platform upgrades and in-house research is described above, due to the quenched magnets, equipment downtimes, and arrival of new magnets and hardware over the course of 2024. Therefore, a brief, bulleted summary of upgrades, issues, and concerns is provided:

***Platform upgrades***

- **36T-SCH**: New modifications to cascade field regulation system, aiming for 0.1ppm stability.
- **850**: Installation of new magnet and console to replace quenched 830 – completed January 2024.
- **600#3**: 600MHz wide-bore magnet obtained from the University of Central Florida, fitted with an older 500MHz console from University Michigan. This will relieve the **600#1** and **600#2** platforms, installation in 2025.
- **400**: Upgraded (Sanford Burnham magnet, University Michigan console, future 3.2 probe) for triaging and battery experiments that require lower fields. Probe for *in situ* battery analysis is being worked on.

***Issues and Concerns***

- **36T-SCH**: Offline from October 2023-December 2024 due to a faulty breaker. Problems are still occurring.
- **32T-ASC**: The 32T all-superconducting magnet is down for the foreseeable future.
- **900-MRI**: Replacement of control room electronics (cryogenics controls and safeties).
- **800#2**: Quench and near death of in July 2024, brought successfully to field in August 2024.

We note that the current state of most of our NMR consoles and magnets is very good, with most operating near 100% of the allotted user days. We stress that the **850** that replaced the **830** is making possible the scheduling of high-field ssNMR time for more users – this should have a good impact on publications in 2025 and late 2024.

## MAINTAINING FACILITY AND DEVELOPMENT OF NEW MAGNET SYSTEM INCLUDING OPERATION SCHEDULE AND SHUTDOWNS

### Facility Plans and Directions

2024 saw the departure of two key team members: (i) **Dr. Amrit Venkatesh**, who accepted a position as an Assistant Professor at the University of Virginia, and (ii) **Dr. Wenping Mao**, who joined United Imaging Healthcare in Wuhan, China. During this period, we had two new hires, including (i) **Dr. Faith Scott** (previously a postdoc at MagLab under the supervision of Drs. Schurko and Mentink-Vigier) to replace Dr. Mao, and (ii) **Dr. Shubha Gunaga** as a postdoc for operations on the 36T-SCH and 600DNP platforms (obtained her Ph.D. from the University of Ottawa, Canada, in 2023). Furthermore, **Dr. Thierry Dubroca** moved into our group from the EPR User Program, in order to enhance our focus on DNP NMR spectroscopy. In late 2024/early 2025, we are interviewing for a Research Faculty I position to replace Dr. Venkatesh and are currently in the process of making a final decision.

The NSF core funding cuts (2023–2028) to the NMR/MRI User Program have had significant impacts, leaving us understaffed and stretched to our limits. However, the program remains strong and dynamic, with generally high morale. We are continuing to pursue initiatives including: (i) Continued expansion of the scope of our activities on the **36T-SCH**, **600-DNP**, and other high-field instruments, due to funding of the *National Resource for Advanced NMR Technology* (RM1-GM148766); (ii) submission of NSF RI-1 preproposal titled, "*Mid-scale RI-1 (M1:IP):National Facility for Ultra-High Sensitivity Solid-State NMR*" to obtain the world's first 1.0GHz DNP/CryoMAS NMR spectrometer – if we advance to the proposal round, this will be a major focus in 2025; (iii) the planned submission of an NSF-RI2 to acquire the world's first 1.4 or 1.5GHz ssNMR spectrometer (in collaboration with Bruker), which would open unprecedented opportunities in application of ssNMR to materials, chemical compounds, and biosolids; (iv) the continued design, construction, and commissioning of new NMR probes, including a 1.9mm HXY DNP MAS NMR probe and several new probes for the **850** [Gor'kov, Brey, Kitchen, Scott]; (v) commissioning of the Phoenix NMR "HFX" ($^{1}$H-$^{19}$F-X) 1.3mm fast MAS probe for 600#2, to enable studies on pharmaceuticals and other fluorine-containing samples [Gor'kov, Kitchen, Schurko]; and **(vi)** the ongoing search for a used NMR magnet (shielded, 800MHz or higher, standard or wide bore) to complete the set-up of a fourth high-field instrument for users [Gan, Schurko, Ramamoorthy].

### NMR/MRI Facility Operations Schedule

The majority of our instruments operated at near 100% capacity (*i.e.*, 365 user days, **Figure 2.7.3)**, including **900-MRI**, 800**#1**, **600#1**, and **600#2**. The new **850** platform (January 2024) gave us 361 user days. The **800#2**, quench meant that only 314 user days could be offered. The **600-DNP** platform has a record 256 magnet days in 2024 (above the predicted 240 days). Our average subscription rate is ~131% (*i.e.*, 31% oversubscribed). Drs. Z. Gan, I. Hung, R. Fu, S. Wi, F. Mentink, T. Dubroca, S. Grant, and A. Blue continue to be responsible for great success on these instruments, in terms of doing great science and keeping the instruments and probes in top condition. Furthermore, our robust remote operation routines developed during the COVID pandemic continue to assist users with remote access to our spectrometers.

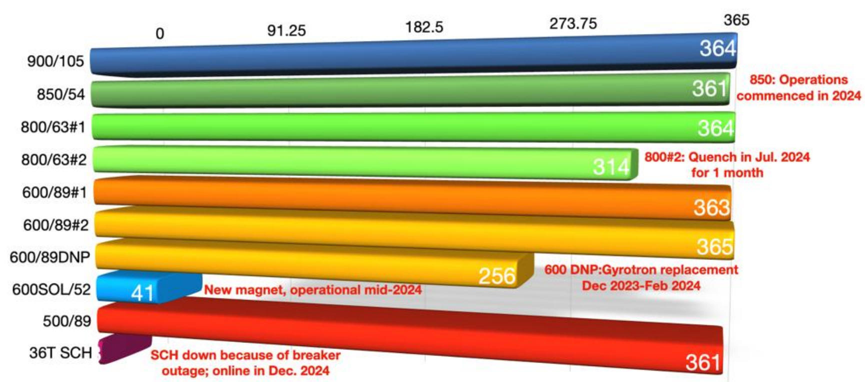



***Figure 2.7.3.*** *User magnet time on major NMR/MRI platforms at the NHMFL in 2024.*

## CONDUCTING EDUCATION AND OUTREACH ACTIVITIES

### User Community and Recruiting

Our user numbers were very good this year (**270**, see information on user counts above), with a ratio of **74:26** for U.S. to international users, and students and postdocs comprising **50%** of our users. For a second year in a row, we had a large number of new PIs (**19**) and projects, comparable to our 2023 number (**22**), signifying that (i) our recruitment of users has been very successful and (ii) our user operations, both on-site and remotely, continue to operate at the highest levels. As in previous years, our Affiliated Faculty, Research Faculty, and Technical Staff have attended major international conferences to support the research efforts of our users, as well as recruiting, including the Experimental NMR Conference, EuroMAR, International Society for Magnetic Resonance, International Society for Magnetic Resonance in Medicine, Rocky Mountain Conference for Magnetic Resonance, Alpine NMR Conference, American Chemical Society conferences (regional and international), among others. We also continue to be active in our advertising, recruiting, and sponsorships at several of these meetings.

To make it easier for our Users and Staff to track the conditions and activities of magnets and probes, we have continued to update our web pages and organize and update our lists of spectrometers and probes with several interactive databases. This greatly aids us in presenting immediate information to users, keeping the newly revised MagLab website updated, and facilitating reporting activities.

In 2024, we hosted our annual *User Committee* and *External Advisory Committee* meetings. Schurko made presentations at the Neutrons and Complementary Techniques for Quantum Materials Workshop at Oak Ridge National Laboratory in July 2024, with a presentation entitled: *New Opportunities for Neutron Sources and Solid-State NMR of Unreceptive Nuclides*, in order to try to make connections between the large solid-state chemistry and physics communities that use neutron sources, but do not know of the MagLab's NMR capabilities. In 2024, our MagLab Magnetic Resonance Series has taken off, with weekly or bi-weekly seminars by team members, postdocs, students, and even prominent visitors to MagLab.

### Education and Training

The NMR/MRI team had another great year in educational and training outreach activities.

**(a) Workshops.** M. Elumalai co-hosted the 2024 MRI RF coil workshop (May 6-10), which featured morning lectures and an afternoon workshop where quadrature coils for rat MRI were built.

**(b) Inaugural 2024 MagLab Summer School on Solid-State NMR Spectroscopy.** We ran our first ssNMR summer school, though attendance was curtailed by a series of violent tornadoes that hit Tallahassee in May 2024. Three undergraduate students from Washington and Jefferson used this meeting to work on an NMR project, which was published in 2024 [*Magn. Reson. Chem*. **2024**, *62*, 179]. The 2025 Summer School will be offered May 12-16, 2025. These events are organized by R. Schurko and Prof. R. Iuliucci (Washington & Jefferson College), and participants included Mentink, Gor'kov, Scott, Grant, and students and postdocs from Schurko's group and the MagLab.

**(c) Student supervision and training.** Our team participated in the supervision of graduate (GR), undergraduate (UG), and high school (HS) students through 2024. UG and HS efforts include:

- F. Scott, 1 UG, 3D printing of DNP probe parts; 2 UGs, Summer REU projects
- M. Elumalai, 1 UG, Design of $^{1}H/^{2}H$ coil for 21.1T MRI; 1 UG, making a cryogenic dipper; 1 UG, Conductive inks for MRI; 1UG, Measuring energy consumption of MRI magnets
- S. Cho, 1 UG, Testing ferroshim patterns for MRI
- I. Litvak, 1 UG, Field homogeneity improvements on the 600-SOL; 1 UG, Testing ferroshim patterns; 2 UGs, outreach internships; 1 HS, shadowing HTS resonator testing
- R. Schurko, 1 UG HITM student, 1 UG Summer REU student, 4 UGs undergraduate research assistants
- A. Venkatesh, 1 UG, Summer REU project
- S. Grant, 2 UGs, Coil fabrication and quality assessment, post-stroke animal behavioral assessment, and adipose-derived mesenchymal stem cells; 1 UG HITM research project.
- Z. Dowdell and J. Sanchez (PhD students) supervised 2 UGs on cocrystal projects.

### STEM Outreach

STEM outreach continued to be exceptional in 2024. Our major contributors are I. Litvak, F. Scott, and M. Elumalai, who organize a remarkable number of activities, including (a) the annual "Neighborhood Camp Fair" activities, which had 100+ attendees (60 MS/HS students, 46 from Title I schools, +adults, and the majority of attendees were from URM areas), (b) the "Teen Summer Program Fair" aimed at Tallahassee South Side residents (31 middle- and high-school students, 21 from Title I schools, +adults); (c) a career expo at Fairview Middle Scholl (60-70 attendees); and (d) numerous STEM demos at elementary schools such as Ruediger, Woodville, Pineview, W.T. Moore, and Riley. They and others participated in organizing and judging local science fairs. Dr. Venkatesh participated in the MagLab Research Mentor Incubator (MRMI) program and professional development session for FAMU undergraduate students across STEM fields. Dr. S. Grant presented at the Engineering Living Learning Community for FAMU undergraduates (years 1 and 2). Drs. Scott and Schurko conducted tours for the Women in Math, Science, and Engineering (WIMSE) program at FSU, with 5-6 undergraduates in attendance each time. Dr. Mentink-Vigier participated in lecturing at the Maglab's Science Night. Finally, we had many volunteers (faculty/student) for the MagLab Open House in February 2024 (6/18), K-12 outreach activities (4/6), and a wide range of MagLab Tours (4/9).

## 2.8. PULSED FIELD FACILITY

The Pulsed Field Facility (PFF), located within Los Alamos National Laboratory (LANL) in Los Alamos, NM, utilizes both LANL and U.S. Department of Energy assets to provide pulsed magnetic fields to our international community of users – from undergraduate students to senior investigators. Along with our magnets, we provide users with robust scientific instrumentation engineered to operate in the transient pulsed magnetic field environment, along with the support of scientists who are active researchers with expertise in high magnetic field-driven science.

### OPERATION OF A WORLD-LEADING HIGH-MAGNETIC-FIELD USER PROGRAM

**Capabilities**

The suite of magnets and associated techniques supported at the PFF are listed in **Table 2.8.1**. At the heart of our magnet operations is a fully multiplexed (9 output) computer-controlled 4MJ, 16kV capacitor bank. Currently, this capacitor bank is responsible for providing power to all operational pulsed magnet systems, including our workhorse 65T Short-pulse magnets and the higher energy 60T Mid-pulse and 75T Duplex magnets. LANL is uniquely home to a 1.4GVA generator, which the PFF utilizes as a pulsed-power system to provide the hundreds of megajoules required to run our 100T multi-shot and 60T Controlled Waveform ("Long-pulse") magnets; the former is the first and only magnet in the world to provide repeatable, non-destructive magnet fields for science experiments at 100T. Furthermore, the rectification of the generator output enables the control of the pulsed power waveform, allowing for the optimization of both the 100T and 60T Long-pulse for existing experimental research techniques. Currently, these two magnets are unavailable to users while the generator is under repair.

***Table 2.8.1.*** *Pulsed-field magnets available to users at the NHMFL-PFF*

| Capacitor Driven Pulsed Magnets | | | | |
|---|---|---|---|---|
| **Magnet System** | **Bore, $^3$He Sample Space** | **Rise Time, Max dB/dt** | **Pulse Duration** | **Supported Research*** |
| **65T Short-pulse (x4)** | ⌀15mm, ⌀ 9mm | 8ms, 8.1T/ms | 80ms | Magneto-optics – IR through UV<br>Magnetization – Extraction, Torque<br>Magnetic Susceptibility<br>Magneto transport – DC through MHz; incl. Critical Current Measurements and RF<br>Pulse Echo Ultrasound Spectroscopy<br>Fiber Bragg Grating Dilatometry<br>Polarization<br>Magnetocaloric<br><br>Sample Temperatures: 400mK to 300K<br>For compatible techniques: Pressures up to 5GPa and in-situ sample rotation |
| **75T Duplex** | | 1.8ms, 25T/ms (30 - 75T) | 80ms | |
| **60T Mid-pulse** | | 32ms, 1.8T/ms | 300ms | |
| **Generator Driven Pulsed Magnets**** | | | | |
| **Magnet System** | **Bore, $^3$He Sample Space** | **Rise Time, Max dB/dt** | **Pulse Duration** | **Supported Research*** |
| **100T Multi-shot** | ⌀ 10mm, ⌀ 5mm | 8ms, 7.5T/msec (40 – 100T) | 3s | All techniques listed above |
| **60T Controlled Waveform ("Long-pulse")** | ⌀ 25mm, ⌀ 18mm | Adjustable | 3s, Up to 100ms full field flat top | All techniques listed above, plus:<br>Magnetothermal studies<br>(Heat Capacity and Magnetocaloric)<br>Larger Sample Volumes |

* *Resources available to work with users to develop and field new and novel techniques as needed in our magnet systems.*

***Offline while LANL's 1.4 GVA generator is being repaired.*

**Research Highlights**

High magnetic fields usually destroy superconductivity. However, over the past six years, measurements carried out at the NHMFL-PFF (transport, magnetometry, the magnetocaloric effect, and MHz penetration depth) by researchers at NIST/UMD have shown that $UTe_2$ possesses multiple bulk superconducting phases, including the "Lazarus" state, which are stabilized by field, exhibiting the highest magnetic field range of any re-entrant superconductor. Recent experiments last year have shown that, for certain field orientations, zero resistance persists from around 45T to beyond 75T. Superconductivity in such high magnetic fields presents a considerable challenge for current theoretical approaches. Whilst models such as the Jaccarino-Peter compensation effect can be eliminated as an explanation, the magnetic-fluctuation-mediated superconductivity mechanism thought to occur in heavy-fermion compounds such as URhGe may provide a qualitative understanding of $UTe_2$. However, the detailed magnetic-field-orientation dependence of the high-field superconducting phase is challenging for any interpretation; pulsed-field experiments show that the Lazarus state wraps around the b-axis in a "halo"-like fashion. Similar experiments by the same team of researchers have shown evidence of the apparent "homogenizing" role of high magnetic fields in $UTe_2$; whereas its zero-field properties are highly sensitive to details of the synthesis method and crystal quality, the phase diagrams are much more unified in fields above 45T. The most extreme form of this behavior occurs when the Lazarus phase appears at high magnetic fields in crystals that are not at all superconducting at zero field (so-called "Orphan Superconductivity"). All of these observations provide very tight constraints for any theory of $UTe_2$.

The set of experiments described here was made possible by some of the PFF's unique magnets, the 75T Duplex magnet and the 60T Midpulse Magnet, as well as the unique 3D printed cryogenic goniometers made in-house at the facility. The latter permit precise and reproducible sample orientation in the magnetic field at temperatures down to 400mK. For more details on these recent studies see: Nature Comm., **15** 3378 (2024) (DOI) and https://arxiv/org/abs/2402.18564 (soon to be in PNAS).

## CARRYING OUT IN-HOUSE RESEARCH AND SCIENTIFIC INSTRUMENTATION DEVELOPMENT IN SUPPORT OF THE USER PROGRAM

### Research Highlight

Measuring the capacitance of a material in high magnetic fields can provide evidence of elusive high-field phase transitions that are not clearly observable with other measurement techniques by probing the dynamics of the lattice structure and the electronic system. Unfortunately, the primary challenge in capacitance measurements arises from the fact that the capacitance of the coaxial cable used in the measurement is comparable to, or greater than the device under test (DUT). To overcome this challenge, it is crucial to effectively separate the capacitance of the coaxial cable from that of the DUT. To do this, scientists at the PFF have developed a capacitance measurement technique that employs a virtual ground to completely isolate the two comparable sources of capacitance in the measurement while also working in the millisecond duration pulse of the magnet system.

To highlight the success of this development technique, staff scientist Minseong Lee and his collaborators at Rutgers University measured a Ni-based magnetoelectric compound both via a traditional magnetization technique and with the newly developed capacitance measurement technique. While both techniques – in both DC and pulsed fields – show a hysteresis loop at low field, the capacitance measurement exhibits a pronounced peak around 25T, which corresponds to a subtle slope change in the magnetization. This suggests that although the net magnetization only changes slightly at high fields, the magnetic symmetry undergoes a significant transformation – from one that permits magnetoelectric coupling to one that does not.

Excitonic insulators, fractional quantum Hall states, and similar unconventional electronic phases are more than a curiosity. These phases are experimental platforms to critically examine our understanding of condensed matter systems and push the limits of our scientific knowledge. Such electronic phases are expected to arise in conventional metals, where the application of large magnetic fields forces the electrons into a single state, a highly unstable configuration known as the "quantum limit." Unconventional electronic phases should be more likely to occur when strong correlations are present, however, other competing effects tend to dominate which makes it hard for these phases to be experimentally realized.

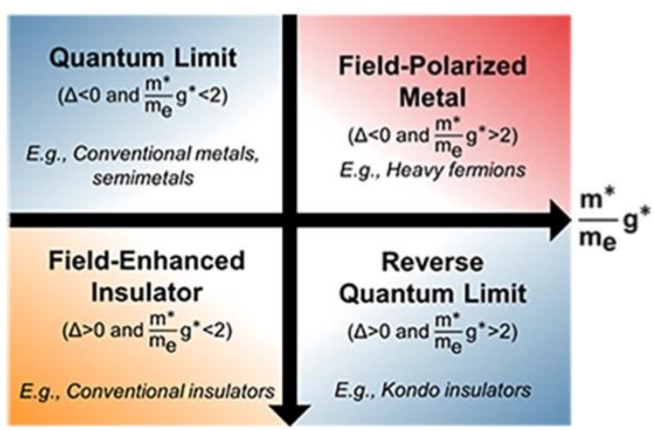



***Figure 2.7.1.*** *Electronic phase diagram at high fields that depends on the strength of the correlations (horizontal axis) and whether the electronic structure is gapped (Δ > 0) or metallic (Δ > 0).*

Using the 65T short-pulse and 75T duplex magnets at the Pulsed Field Facility to study the enigmatic $YbB_{12}$, a team of researchers at the PFF discovered that the quantum-limit-physics expected to occur in strongly correlated metals under high magnetic fields can instead be realized in strongly-correlated insulators (with a gap between energy bands). This phenomenon, so-called the "reverse quantum limit" because of its direct analog to the conventional quantum limit in metals, is distinct in that magnetic fields cause the electronic states of the insulator to move in a manner that is opposite of such states in a metal **(Figure 2.7.1)**. These findings suggest strongly-correlated insulators are a promising platform to explore the rich array of unconventional electronic phases expected to arise in the (reverse) quantum limit. For $YbB_{12}$, in which the reverse quantum limit was observed in the low magnetic field insulating state, the results suggest that there is a common set of bulk Landau levels that are driving the observed quantum oscillations in both the insulating and the high magnetic field conducting state. These results may in turn lead researchers to an understanding of how quantum oscillations are observed in the insulating state of this material in the first place. For more details see: Nature Comm. **15**, 1607 (2024) (DOI).

### Magnet Development

As noted last year our 65 T magnets are currently being wound out of a CuCrZr alloy with a cooling gap between the A and the B coils which has notably reduced the duty cycle of the magnets, providing more pulses to users; however, one downside of the new design was the collapsing of the outer coil resulting in premature failures of the magnet. In the last year, the outer coil instability was improved through the use of thicker conductor, which has improved the lifetime of the magnets. This work highlights the ongoing efforts to balance the time of cooling against the soft failure modes of the magnets. We are currently working on ways to mitigate this new development. Over all 2024 contained a record number of ~3,500 pulses between 60 – 65T in our short pulse magnets, a 30% increase from the previous record set in 2015. There were also a record number of 65T magnets produced this year (10), with currently 5 spares in stock ready to serve users.

## MAINTAINING FACILITY AND DEVELOPMENT OF NEW MAGNET SYSTEM INCLUDING OPERATION SCHEDULE AND SHUTDOWNS

### Generator Related Activities

In 2024 the effort to return the 1.4-gigawatt LANL motor generator to service reached several key milestones. Importantly all of the machining, testing, and sub-assembly work has been completed for the new rotor, and the final assembly work is scheduled to begin in early 2025. During the work on the rotor in Birr, Switzerland the pulsed field facility's power delivery team turned their efforts to wrapping up various maintenance and upgrade activities that they were able to perform with the extended downtime of the rotor. Some, but not all, of the work, included updating the entire vibration monitoring system, installing new temperature and flow sensors, valve replacements, and testing the generator protection and transformers. The new drive and excitation systems which are necessary for the operation of the motor generator have also been installed and cold-commissioned. Finally, a third major effort related to the motor generator has been the replacement of its cooling system, another multi-year, multi-million-dollar project to help ensure reliable generator operations in the future. The entire open-loop part of the system, including the tanks, pumps, cooling towers, and associated foundations and pipes as well as the control systems have all been replaced. Work is nearing completion and will be done in the first half of 2025

### 85T DUPLEX MAGNET

Efforts have continued to deliver an 85T all-capacitor bank-driven duplex magnet, a unique magnet that requires the tandem operation of both the 16kV, 4MJ Short-pulse and 18kV, 2MJ 100T capacitor banks. All hardware and power infrastructure required for the operation of this new magnet is now complete. The control software required to operate this system is expected to be complete in the first half of 2025 and the magnet commissioning and testing is anticipated to occur thereafter.

### High Voltage Capacitor Bank

The Alpha-Omega built 30kV-1.2 MJ capacitor bank was commissioned to 10 kV at the vendor site and was delivered to LANL and the pulsed field facility late in 2024. The timeline for its onsite installation and commissioning will be driven by the need for higher voltage > 18 kV pulsed magnet R+D.

### Mode of Operation

Jointly with the DC Facility, the PFF solicits proposals through a common call three times a year to streamline the application process and ensure the availability of personnel and magnet resources. The capacitor bank-driven magnets operate Monday through Friday from 7am to 7pm, with a later start of 10am on Mondays due to weekly maintenance. Generally, no more than three pulsed magnets – either three 65T magnets or two 65T magnets and either the 75T Duplex or 60T Mid-pulse – are scheduled for users each week to enable turnaround and continuation of an experiment following a magnet failure. The generator-driven magnets – the 100T and 60T Long-pulse continue to be offline while we await the new rotor for the motor generator.

## CONDUCTING EDUCATION AND OUTREACH ACTIVITIES

As in past years, PFF members widely participated in the Los Alamos National Laboratory Summer Physics Camp, a two-week free camp for about 40 students primarily in New Mexico that focuses on inspiring interest in STEM through inquiry-based labs. This year five of our staff scientists — Johanna Palmstrom, Shengzhi Zhang, Chris Mizzi, and Boris Maiorov — were instrumental in developing and showcasing hands-on magnet-related demonstrations. As part of the camp, the User Program Director of the PFF, Laurel Winter, gave the attendees a tour of the MagLab Pulsed Field Facility. In addition, many of our staff gave talks at universities and conferences throughout the year to encourage new collaborations and users to the facility.

# 3 EDUCATION AND OUTREACH

## 3.1 EDUCATION

The Center for Integrating Research and Learning (CIRL) guides the K-12 educational and broader mentoring efforts of the MagLab's education and outreach mission. Our programs are designed to include research-based best practices in science and engineering education for K-12 students and in mentoring for students, teachers, postdocs, and faculty in STEM. Our staff participate in, and facilitate, professional development in their specific disciplines so that we can ensure the MagLab is aware of best practices for building a STEM workforce. The K-12 education and broader mentoring efforts would not be possible without the CIRL team. Below are some examples of the leadership and relative professional development initiatives that CIRL staff have engaged in over the last year.

CIRL Personnel Highlights in 2024:

- CIRL's K-12 Education Director, Carlos R. Villa collaborated with colleagues from the Laser Interferometer Gravitational-Wave Observatory (LIGO) and the National Optical-Infrared Astronomy Research Laboratory (NOIRLab) to present at the National Science Teaching Association Annual Conference in New Orleans, LA. The presentation, *Generating Classroom Lessons from NSF Funded Facility Resources*, highlighted K-12 resources and opportunities for teachers across all three labs. Villa was also awarded three of the MagLab's inaugural Culture Catalyst Values Award, being recognized in Impact, Leadership, and Excellence for his work at the MagLab.
- CIRL's Mentoring Director Dr. Kawana Johnson served on the planning committee for the 2024 International Mentoring Association (IMA) Conference held in Charlotte, NC where she assisted in generating new ideas and connecting with vendors to encourage participation in the vendor showcase. In addition, Johnson presented a "Trend Talk" during the conference and published an article in *Connect Magazine, the official magazine for the International Mentoring Association.* The article was entitled "The Value of Mentoring in STEM."
- CIRL's Director Dr. Roxanne Hughes served her fourth of a 4-year term as the Past Chair of the American Physical Society's (APS) Forum on Outreach and Engaging the Public (FOEP). In April of 2024, she was announced as an American Association for the Advancement of Science (AAAS) Fellow for her distinguished contributions to teaching and mentoring, particularly in understanding and fostering STEM identity development for women and underrepresented minorities in both formal and informal education environments.

**Inclusive Excellence in CIRL Education Programs**

Diversity and inclusion are focal points of all MagLab educational and outreach activities. **Table 3.1.1** highlights the CIRL's programs (i.e., one week or longer).

***Table 3.1.1.*** *Type of Attendance in Education Programs*

| 2024 | Total |
|---|---|
| Research Experiences for Undergraduates (REU) summer | 13 undergraduates |
| Magnetic Momentum Scholars Program | 10 undergraduates |
| Research Experiences for Teachers (RET) summer | 10 K-12 teachers |
| High School Externship (2023-2024 Academic Year) | 19 high school students |
| MagLab Godby Summer Scholars Program | 5 high school students |
| Camp TESLA (1-week camp) | 21 middle school students |
| Summer camp (1-week camp) | 20 middle school students |

### WEB-BASED OUTREACH

**Magnet Academy**

The Magnet Academy is MagLab's web-based home for free resources on magnetism and electricity for educators and learners of all ages. Magnet Academy resources include lesson plans, recorded science demonstrations, and interactive activities for teachers, students, and parents. **Table 3.1.2** shows the Google analytics for 2024.

***Table 3.1.2.*** *Pageviews for Magnet Academy in 2024*

| Page Title | Page Views[1] | Active Users[2] | Avg Number of Views per User | Avg. Engagement Time | Event Count[3] |
|---|---|---|---|---|---|
| Total Magnet Academy Views | 577,000 | 309,597 | 1.74 | 1m 11s | 2,328,018 |
| Watch & Play | 195,843 | 91,925 | 1.92 | 1m 22s | 757,386 |
| Read Science Stories (Learn the Basics) | 16,885 | 10,307 | 1.81 | 1m 43s | 69,290 |
| Explore History | 281,308 | 180,488 | 1.49 | 1m 42s | 1,157,762 |
| Try This at Home | 32,507 | 23,855 | 1.36 | 45s | 149,963 |
| Plan a Lesson | 10,228 | 7,388 | 1.3 | 1m 19s | 43,079 |

## K-12 EDUCATION PROGRAMS

### Maglab Field Trips

CIRL provides educational field trips to 5th-12th grade school groups at the MagLab's Tallahassee location (**Figure 3.1.1**). The goal of the MagLab field trips is to expose students to MagLab-related science and engineering activities. Field trips include a hands-on activity facilitated by Villa and requested by the teacher from a list of options available on the MagLab website. The full description of the hands-on activities offered can be found on the MagLab's website: https://nationalmaglab.org/education/teachers/. In addition, student groups also participate in a tour of the Tallahassee facility led by a MagLab scientist. For the 2023-2024 school year, the field trips were advertised directly to local school administrators, the MagLab Educators Club (a mailing list with over 520 subscribers that include educators and parents), as well as through local and national educational organizations such as the Big Bend/Leon Association for Science Teaching, the Florida Association of Science Teachers, and the National Science Teaching Association.


***Figure 3.1.1****. Students learn about circuits during a field trip to the MagLab.*

During the 2023-24 school year, Villa provided outreach to 1,609 students from 37 schools. Most participating students were 5th graders (41%), with 9th graders making up 27% of outreach and 10th graders being the third largest group (24%). Requests for field trips in 2023-24 came from Florida, Alabama, and Georgia. The two most popular activities requested were: (1) Electricity, Static & Currents: The Power All Around Us, and (2) Build an Electromagnet: Turn Magnets On & Off. Each represents 37% of field trip requests. One of CIRL's broadening participation goals is to ensure at least 50% of our outreach includes Title I schools (i.e., schools in which children from low-income families make up at least 40% of enrollment) who might not have access to innovative scientific resources like the MagLab. For the 2023-2024 school year, 65% of the school groups came from Title I schools.

**Metrics for Success.** After each field trip, teachers were sent a short online survey asking them about their experience. Overall, the teachers were very satisfied with their experience. 100% (n=20) of teachers would participate in a MagLab field trip again, and 100% (n=20) would recommend the MagLab field trip experience to their colleagues, and all but one rated their experience as excellent or very good. 100% of teachers said that the website provided them with enough information to appropriately select an activity and incorporate it into their class. **Table 3.1.3** presents average satisfaction scores (i.e., 5 rating = the highest) for the quality of the instruction that Villa provided. The high ratings show that the outreach experiences were well received by the educators.

[1] Views of web pages including repeat views by the same user.
[2] Unique users who engaged with the site.
[3] The event count shows a specific interaction or occurrence on the website (e.g., views, clicks, downloads), highlighting how often a user interacts with specific elements on the website within a given time span.

***Table 3.1.3.*** *Teacher Ratings of Classroom Outreach*

| Survey Question | Mean Response (n=20) |
|---|---|
| During the hands-on activity, the outreach educator employed instructional strategies that made the content/concept(s)understandable to my students. | 4.95 |
| During the hands-on activity, the outreach educator employed instructional strategies that made the content/concept(s)understandable to my students. | 4.95 |
| During the hands-on activity, the outreach educator made connections between the content/concept(s) presented and the real-world. | 4.95 |
| During the hands-on activity, students were encouraged to ask scientific questions to shape their understandings. | 4.95 |
| The hands-on activity was developmentally appropriate for my students. | 4.95 |
| The hands-on activity aligned with relevant state/national standards. | 4.84 |
| I learned more about the MagLab during this field trip. | 4.84 |

*(5 pt. Likert scale 5=Strongly Agree, 1=Strongly Disagree)*

**Lessons Learned.** Based on survey feedback from classroom teachers, Villa will adjust the MagLab tour training to help tour guides introduce students to the lab's broader research activities by making technical details more age-appropriate. The hands-on segment will emphasize electromagnet and electricity activities, rather than including a static electricity activity. To improve the teacher response rate to the survey responses, next year we will provide a QR code at the end of the field trip and follow up with an email containing the QR code with a traditional survey link.

***Gainesville***

The MagLab facilities at the University of Florida conduct their own educational programs that are currently facilitated by Eli Wolf. During the 2023-2024 school year, staff from the AMRIS and High B/T MagLab facilities gave 13 tours of the facilities to 238 people. These tours included K-12 students, K-12 teachers, undergraduate students, and graduate students.

***Los Alamos***

In 2024 LANL Pulse Field Facility members once again widely participated in the now 7th annual Los Alamos National Laboratory Summer Physics Camp for Young Women, a free camp for about 40 (in-person) students that focused on inspiring interest in STEM through inquiry-based labs. The camp is led almost entirely by women currently working in STEM. Five of our scientists — Johanna Palmstrom, Shengzhi Zhang, Chris Mizzi, KM Rubi, and Boris Maiorov — were instrumental in developing and showcasing hands-on magnet-related demonstrations, while the PFF User Program Director Laurel Winter provided a tour for the students at LANL. Additionally, throughout the year many of the scientists at the PFF gave talks about high-field research at universities all over the country.

**MagLab Summer Camps**

The MagLab hosted two in-person summer camps in the summer of 2024 (**Figures 3.1.2 and 3.1.3**). The goal of these MagLab summer camps is to provide a space for participants to do MagLab-related science and to introduce participants to relevant MagLab careers and role models in STEM. This year's camps were able to achieve both goals by creating programs that included presentations and activities with relevant MagLab STEM professionals (i.e., 4 faculty/postdocs, 2 staff members, and 2 grad/undergrad students) as well as activities that were connected to that role model's area of study. During the week of camp, participants came to the MagLab Monday-Friday from 9 am – 4 pm. During the program, campers were able to meet STEM professionals from around the lab and ask questions about their research, career, and


***Figure 3.1.2.*** *One of the 2024 MagLab Summer Camps.*

educational path in addition to their hobbies and interests. Each camp culminates with a reception wherein the campers showcase the projects they completed during the week and compete in an engineering challenge with their families.

Some of the highest-rated activities were: the liquid nitrogen demo showing the impacts of low temperatures that also serves as an introduction to superconductors; the mystery powders activity where the students use the chemical properties of materials to identify a piece of evidence and solve a “crime”; and the DNA extraction activity and the DNA bracelets. During the reception, the campers tested the strength of their candy towers by placing an empty vessel on top of it and then filling it with water until it collapsed.

***Figure 3.1.3.*** *A couple of summer campers work on an engineering project they built.*

**Metrics for Success:** To assess how successful the camps were at achieving the goals, we gave each participant a pre- and post-program survey. To assess the impact of the camp on “doing science”, we used a survey instrument that measured STEM self-efficacy along with survey questions asking them to rate the activities that they participated in. To measure whether we created a safe space for the youth, we used a sense of belonging within STEM survey and a survey that measures attitudes toward making mistakes. To assess goal 2, how well we introduced youth to careers and role models in STEM, we used surveys that measured the relevance of STEM and asked them to rate the tours and role model activities to help us determine ways to improve the program. Connecting these concepts of doing science and meeting role models and learning about their career paths has been linked to STEM identity development. **Tables 3.1.4 – 3.1.6** show that both camps achieved their goals by giving campers a space to do science and introducing them to role models who were working in STEM. The tables highlight that 90% of the TESLA campers and 94% of the summer campers learned about new STEM disciplines. 92% of all campers reported that they learned more about how to achieve a career in STEM. Furthermore, 98% of the campers said that they felt they were a part of the camp and 98% of all campers said they felt accepted by their peers at camp, thereby demonstrating that the camps are creating a safe space for participants to practice their science skills and learn about STEM careers.

***Table 3.1.4.*** *Participants self-reported learning about careers.*

| During Camp… | TESLA Percent (n=20) | Summer Camp Percent (n=18) |
|---|---|---|
| Did you learn about new STEM disciplines and fields? | 90% | 94% |
| Did you learn about STEM careers you had not heard of before? | 95% | 94% |
| Did you learn more about how to achieve a career in STEM? | 95% | 89% |

***Table 3.1.5.*** *Participant connections to STEM role models.*

| During Camp… | TESLA Percent (n=20) | Summer Camp Percent (n=18) |
|---|---|---|
| Did you meet any STEM role models? | 80% | 94% |
| Did you meet someone who taught you more about what it is like to work in science? | 100% | 100% |

***Table 3.1.6.*** *Sense of Belonging in Camp*

| During Camp… | TESLA Percent (n=20) | Summer Camp Percent Agree (n=18) |
|---|---|---|
| I was a part of the camp. | 100% | 94% |
| I was accepted by my peers at camp. | 90% | 100% |

**Lessons Learned.** Based on the survey feedback and data collected, we realized some of the activities need to be adjusted for 2025 due to low scores by the campers. Villa will work with the role models and teachers to connect the activities to the tours and make both more relevant, interactive, and hands-on, which includes giving students more time to explore open-ended activities. Villa also plans to recruit more role models for the activities and connect each activity to a MagLab discipline.

### High School Externship

The goal of CIRL's High School Externship program is to give students real-world experience in their interested STEM career path, by pairing them with a MagLab scientist to learn more about research careers in STEM. Villa worked with local Tallahassee high schools to recruit students. Nineteen students were accepted and paired with a mentor at the MagLab to work on a STEM project for an entire school year. During their time at the MagLab, the participants were able to meet their mentor's research team and interact with other STEM professionals (e.g., postdocs, graduate students, and technicians at the MagLab). At the end of the school year, the MagLab hosted an in-person poster session to provide the participants an opportunity to showcase the work they accomplished during the externship program to their friends, family, and MagLab staff (**Figure 3.1.4**). A full list of students, their mentors, and their research topics are presented in **Table 3.1.7.**

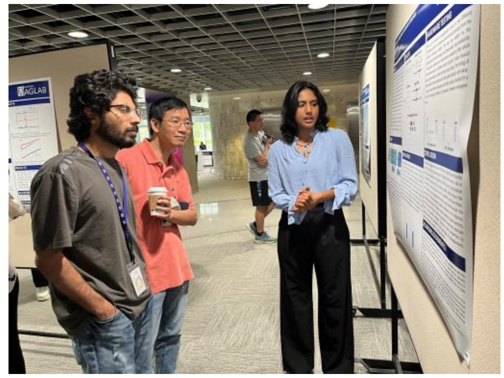


***Figure 3.1.4.*** *A MagLab Extern explains her work during the High School Externship poster session.*

***Table 3.1.7.*** *High School Externship 2023-24*

| Student | Mentors (MagLab Department) | Research Subject |
|---|---|---|
| Mikhail Abraimov | William Scott Marshall (MST) | Novel Approach to Calculation of Bike Route Distance Using Concept of Fractal Dimension |
| Thomas Avellone | Andy Powell (DC Field) | KiCad, Soldering, Autodesk Inventor, and 3D Printing |
| Bharghavi Baskar | Subramanian Ramakrishnan (CMS) | Opted not to do a poster |
| Himank Chhaya | Kaya Wei (CMS) | Investigating the physical and magnetic properties of YbIr2Zn20 through Ga and Cu doping |
| Siri Davidi | William Oates (CMS) | Exploring Entanglement in Quantum Computing |
| Suhas Gaddam | Cyprian Lewandowski (CMS) | Simulation of Ohm's Law |
| Aaron Hu | Hitesh Changlani (CMS) | Quantum Phase Transitions in Magnetic Systems |
| Kavyashree Kadhirvelu | Komalavalli Thirunavukkuarasu (CMS) | Opted not to do a poster |
| Rishil Kodela | Cyprian Lewandowski (CMS) | Simulation of Ohm's Law |
| Tryphon Mazu | Vince Toplosky (MST) | Mechanical Properties of Prosthetic Limb Materials |
| Rishon Natha | Ilya Litvak (NMR) | Testing of Coils for NMR Probes in Superconductors |
| David Prather | Daniel Davis (ASC) | Temperature and Flow-Rate Detection of Cooling-Water for Solid-State Relays Protecting Superconducting Magnets |
| Vikram Rhodes | Hans Van Tol (EMR) | Creating an Optimized Sample Holder toEffectively Measure Magnetic Resonance |
| Brian Rietkerk | Andy Rubes (DC Field) | Threading and Manufacture |
| Vaneesha Sinha | Kaya Wei (CMS) | Opted not to do a poster |

**Metrics for Success.** To assess how well the High School Externship program was in achieving its goals, we gave each participant a post-program survey. **Table 3.1.8** shows the means for participants' responses as evidence of students' increased interest in STEM careers after participating in the program, thereby demonstrating that the program reached its goal of giving students real-world experience in STEM careers.

In addition,100% of the participants who completed the post-survey said they were more interested in a STEM career post-program and that they would recommend the program to a friend. All of these respondents also said that they found the instructions they received during the program to be helpful and believed that their goals were met.

***Table 3.1.8***. *Benefits of participating in the externship program.*

| My participation in externship… | Mean N=13 |
|---|---|
| Led me to a better understanding of my own career goals. | 3.8 |
| Increased my interest in studying science in college. | 3.8 |
| Made me think more about what I will do after graduating. | 3.6 |
| Made me more confident in my ability to succeed in science. | 3.4 |
| Increased my confidence in my ability to participate in scientific research. | 3.6 |
| Made me feel like a part of the scientific community. | 3.5 |

*(4 pt. Likert scale 4=Strongly Agree, 1=Strongly Disagree)*

**Lessons Learned.** Feedback from externs and their mentors proved invaluable in refining the program for next year. Based on their input, several improvements will be implemented. Externs will receive reminders about the commitment expected from them during onboarding and at the orientation meeting, which will be recorded and made available for all participants. To support mentors, the program manager will conduct monthly email check-ins to address any potential challenges that come up during the program. Additionally, a Zoom onboarding session will be organized for mentors, focusing on aligning expectations, setting schedules, and developing a mentoring compact. This session will also be recorded for those unable to attend. These adjustments aim to enhance the experience and effectiveness of the program for all participants.

**Godby Science Scholars Program**

In the summer of 2024, the MagLab hosted five high school students in the Godby Science Scholars program, a 3-week program developed to broaden the participation of students in STEM (**Figure 3.1.5**). Godby High School is a local Title I school (40% are eligible for free lunch). The program's goals are to introduce participants to MagLab research and careers and develop their scientific skills. The program culminates with a research proposal presentation by the students to MagLab scientists to initiate possible ongoing research opportunities.

Participants came to the MagLab Monday-Thursday for 7 hours each day. The program schedule included hands-on activities, tours of MagLab facilities, and presentations and interviews with MagLab scientists who could serve as potential STEM role models.

***Figure 3.1.5.*** *The 2024 Godby scholars Pose for a photo as they tour the MagLab's DC Field area.*

**Metrics for Success.** Data collection for the evaluation of the Godby Science Scholars was done through a pre- and post-program survey to participants. Before the program, 20% of participants said they were interested in pursuing a career in materials science. After the program, 100% of the participants said they were interested in pursuing a career in materials science. 100% of participants said that their participation in the program helped them understand materials science better and increased their interest in studying materials science in college. **Table 3.1.9** shows that the means for all the measured STEM skills increased, providing evidence that the program increased the students' STEM skills, thereby meeting the goals of the program.

***Table 3.1.9.*** *Godby Science Scholars STEM Skills.*

| How would you rate your ability to… | Pre-survey Mean (n=5) | Post-survey Mean (n=4) |
|---|---|---|
| Figure out the next step in a research project | 3.00 | 3.75 |
| Prepare a scientific poster | 3.20 | 4.75 |

| How would you rate your ability to… | Pre-survey Mean (n=5) | Post-survey Mean (n=4) |
|---|---|---|
| Formulate a research question that could be answered with data | 2.80 | 4.50 |
| Feel a part of the scientific community | 3.25 | 4.00 |
| Identify limitations of research methods and designs | 2.80 | 4.00 |
| Feel like a scientist | 3.40 | 4.00 |
| Identify limitations of research methods and designs | 2.80 | 4.00 |
| Interact with scientists from outside your school | 3.00 | 4.00 |

*(5 pt. Likert scale 5=Strongly Agree, 1=Strongly Disagree)*

**Lessons Learned**. Based on 2024 survey feedback, Villa will collaborate with MagLab scientists to create presentations that highlight their personal interests and STEM career paths alongside their research. Teachers will facilitate pre-session discussions to help students formulate questions for the scientists. Additionally, Villa and the teachers will explore ways to make hands-on activities more interactive in response to student feedback.

### Teachers and Informal STEM Educators

CIRL supports K-12 teachers and informal STEM educators through educator and parent workshops and the annual Research Experiences for Teachers (RET) program. The Educator workshops are designed by Villa to introduce educators to MagLab-specific STEM topics that can be incorporated into their science lessons. Villa ensures that these workshops conform to state and national education standards and engage students in MagLab-related, inquiry-based, hands-on science activities. **Table 3.1.10** highlights the workshops offered in 2024.

***Table 3.1.10.*** *Educator and Parent Workshops offered by CIRL*

| Date | Presentation Title | Location | Attendance |
|---|---|---|---|
| 4/2 | Talented and Gifted (TAG) District Advisory Council (DAC) Presentation | Leon County Schools | 22 parents |
| 10/9 | Observations and Inferences | Woodville Elementary School Professional Learning Community (PLC) | 12 science teachers |
| 11/7 | The National Magnet Lab presents Tesla Tales | National Science Teaching Association | 50 science educators |
| 11/7 | Generating Classroom lessons from NSF-funded facility resources | National Science Teaching Association | 14 science educators |
| 11/9 | National MagLab RET: Collaborating with Research Scientists to Create Engaging Lesson Plans | National Science Teaching Association | 8 science educators |
| 11/13 | Science Teaching Best Practices: Inquiry | Woodville Elementary School Professional Learning Community (PLC) | 12 science teachers |

### Research Experiences for Teachers (RET) Program

The goals of the RET program are (1) to help educators connect MagLab science to their STEM teaching lessons and (2) to support teachers in creating MagLab-centric lesson plans. The program consisted of a one-week in-person visit to the MagLab that included tours of multiple MagLab facilities (ASC, ICR, NMR, MST, CMS, and DC Field) along with talks by MagLab scientists, followed by monthly meetings during the fall wherein Villa provided pedagogical support for the culmination of the program – a MagLab-related science lesson plan to be posted on the MagLab's website, https://nationalmaglab.org/education/teachers/ret/.

To help the teachers connect MagLab science to their lesson plans, each teacher was paired with a MagLab scientist who served as a science consultant. The teachers met virtually with their MagLab scientists throughout the fall to develop a STEM lesson plan that

***Figure 3.2.6.*** *The 2024 RET Cohort*

incorporated MagLab resources and/or content. 83 teachers applied for the 2024 program and ten teachers were selected **(Figure 3.2.6)**.

This year's cohort consisted of three elementary teachers, three middle school and four high school teachers. They represent five different states (Alabama, Arkansas, Florida, Maryland, and Virginia) and all teach at Title I schools. A list of the participants and their scientist mentors can be found in **Table 3.1.11**. The lesson plans are available to the public on the RET website:
https://nationalmaglab.org/education/teachers/professional-development/research-experiences-for-teachers

***Table 3.1.11.*** *2024 RET Participants*

| RET Participant (School, State) | MagLab Mentor | Lesson Plan Title |
|---|---|---|
| Kayla Beckert (Gaithersburg High School, MD) | Mark Meisel (AMRIS) | Chemistry Students & Teachers Promoting Racial, Economic, and Environmental Justice |
| Christine Danger (Hillsborough County Public Schools, FL) | Huan Chen (ICR) | The World's Biggest & Smallest Predators |
| Tara Dean (Monroe County High School, AL) | Malathy Elumalai (NMR) | Exploring the Hertzspung-Russell (HR) Diagram with 3D Printing |
| Sonia Figueroa (James S Rickards High School, FL) | Cyprian Lewandowski (CMS) | Material Science in Chemistry (Moire Patterns, Graphene, and Quantum Dots) |
| Cynthia Kuhlman (Highland City Elementary, FL) | Munir Humayun (GYPSUM) | Connecting the National MagLab to the Phosphate Industry |
| Zachary Leonard (Weeki Wachee High School, FL) | Alexey Souslov (CMS) | How Animals Use Magnetic Fields to Survive |
| Kaila Leonberger (Thomas Jefferson Middle School, VA) | Lissa Henderson (ICR) | Electricity & Magnetism Career Explorations: Hands-on Research Opportunities from the National MagLab |
| Matt Matilla (Scott Charter School, AR) | Dan Davis (ASC) | Unveiling the Unseen: Mathematical Explorations in Tomography and Imaging Techniques |
| Elaine Mina-Ramos (Martin Luther King Jr. Middle School, MD) | Wei Guo (MST) | Frozen Grains: The Intersection of Wild Rice and Cryogenics |
| Tiffany Thompson (Oak Ridge Elementary, FL) | Scott Marshall (MST) | Magnetic Fields & Football Fields |

**Metrics for Success.** Data collection for the evaluation of the RET program included a pre-survey before the program began, a mid-point survey at the end of the first week, and a post-survey after the teachers had presented their lesson plans at the conclusion of the program in November. To assess the impact of the program on helping teachers to connect MagLab science to their lessons, the mid- and post-surveys asked the teachers to rate the impact of the program on their interest in STEM research, improvements in understanding science research and incorporating it into their science teaching (see **Table 3.1.12 and 3.1.13** for a summary of the means from the participant surveys). On the mid- and post-surveys, 100% of the respondents (n=10) replied that the RET program increased their understanding of research at the MagLab, increased their understanding of the ways that MagLab research can be applied to their STEM teaching, and stimulated them to think about ways they can improve their teaching. Additionally, 100% of the participants indicated that participating in the program increased their ability to guide students through open-ended science experiments and that after they participated in the program, they were more confident in providing examples of current STEM research into their STEM teaching.

***Table 3.1.12.*** *Participants Reported Impacts of the RET Program*

| The RET Program… (N=10) | Mid-point Mean | Post-survey Mean |
|---|---|---|
| The RET program increased my understanding of research at the MagLab. | 4.00 | 4.00 |
| The RET program increased my interest in the research at the MagLab. | 4.00 | 4.00 |

| The RET Program… (N=10) | Mid-point Mean | Post-survey Mean |
|---|---|---|
| The RET program Increased my understanding of the ways that MagLab research can be applied to my STEM teaching. | 3.80 | 3.90 |
| The RET program Increased my interest in the ways that MagLab research can be applied to my STEM teaching. | 3.90 | 4.00 |
| This portion of the RET program stimulated me to think about ways I can improve my teaching. | 3.90 | 4.00 |

*(4 pt. Likert scale 4=Strongly Agree, 1=Strongly Disagree)*

***Table 3.1.13.*** *Attitudes Towards Science Teaching*

| (N=10) | Pre-survey Mean | Mid-point Mean | Post-survey Mean |
|---|---|---|---|
| I understand STEM concepts well enough to be an effective STEM teacher. | 3.10 | 3.50 | 4.00 |
| I am confident in my ability to guide students through open-ended science experiments. | 3.10 | 3.50 | 3.90 |
| I often provide examples of current STEM research into my STEM teaching. | 2.60 | 3.80 | 3.60 |
| When a student has difficulty understanding a STEM concept, I feel confident that I can help them understand it better. | 2.90 | 3.50 | 4.00 |
| When teaching STEM, I will usually welcome student questions. | 3.70 | 3.90 | 4.00 |

*(4 pt. Likert scale 4=Strongly Agree, 1=Strongly Disagree)*

To determine the impact of the program on supporting teachers in the creation of their MagLab-centric lesson, the post-survey asked teachers to rate the support they received (see **Table 3.1.14**) and the post-survey scientists asked for their input on the lesson plan process. These results indicate that the program achieved its goals of helping educators connect MagLab STEM to their lesson plans to MagLab science.

***Table 3.1.14.*** *Support on Lesson Plan Development*

| How satisfied are you with the following elements of the RET program? (Post-survey) | Mean (n=10) | Percent Satisfied |
|---|---|---|
| The support I received from the overall group of RET participants in developing a lesson plan. | 3.90 | 100% |
| The support of my MagLab scientist mentor in developing my lesson plan. | 3.60 | 90% |

**Lessons Learned.** Overall, the program was rated very highly. The participant feedback shows us that we are meeting the goals of the program. All of the participants reported learning about MagLab science and felt supported as they created their MagLab-centric lesson plans. Based on 2024 survey feedback, Villa plans to improve the program by explaining to the scientists why they have been matched with their assigned teachers to help them clarify their roles as science consultants. Villa will share the scientist presentations with the teachers for the in-person week and RETs will have one afternoon during this week to shadow their assigned scientist to learn more about their research. The Fall program will focus more on lesson plan development.

Further evidence of the positive impact of the program on teachers' abilities to connect MagLab science to their students can be seen through a new addition made last year – to provide travel support for teachers to present their lesson plans and experience at conferences. As part of their 2023 RET experience, Ann Marie Dubick (Campbell Middle School: Marietta, GA) and Valerie Hucey (Whiddon Rogers Education Center: Fort Lauderdale, FL) presented at the National Science Teaching Association (NSTA) meeting in November 2024. Their presentation titled *Collaborating with Research Scientists to Create Engaging Lesson Plans* gave an overview of the MagLab RET program and featured the lessons created by the RETs with the input of MagLab researchers. It also highlighted the impact participating in the MagLab RET had on their classroom practices and professional development and how they developed new classroom activities that promote the development of scientific practices and MagLab-related research.

## UNDERGRADUATE STUDENTS

Undergraduate students are at a crucial stage in the STEM workforce trajectory, during which they are developing research skills in specific STEM fields. The MagLab offers two undergraduate programs that are facilitated by CIRL's Mentoring Director, Kawana Johnson: (1) the Magnetic Momentum Scholars Program and (2) the Research Experiences for Undergraduates (REU) Program.

### Magnetic Momentum Scholars Program

The Magnetic Momentum Scholars (MMS) program is a partnership with Florida Agricultural and Mechanical University (FAMU). The goal of the MMS program is to expose FAMU students to STEM careers at the MagLab through tours, professional development sessions, and shadowing experiences. For seven weeks during the Spring 2024 semester, the MagLab hosted a cohort of 10 FAMU undergraduates in the MMS program. Nineteen FAMU students applied and 10 were accepted. Students were exposed to the facility. **(Figure 3.1.7).**

***Figure 3.1.7***. *Spring 2024 Momentum Scholars*

The 10 student participants represented the following undergraduate stages: 30% sophomores, 40% juniors, and 30% seniors and majors: 40% biological sciences, 20% engineering disciplines, 20% physics, 10% math, and 10% information technology. Dr. Johnson planned professional development sessions that were held each week. These sessions included panels by STEM graduate students and postdocs, MagLab faculty, and STEM industry professionals. These sessions allowed the students to gain professional advice and learn about various career paths in STEM. In addition, MagLab faculty provided the students with weekly tours of the various departments and research areas within the lab to inform them of potential research opportunities. The program also included a shadowing component that allowed students to rotate to different departments to shadow a researcher for a pre-determined timeframe. The program culminated in a 3-minute pitch presentation wherein the students described their experience in three minutes or less. A list of the Magnetic Momentum Scholars, majors, and classifications can be found in **Table 3.1.15.**

***Table 3.1.15.*** *2024 Magnetic Momentum Scholars*

| First Name | Last Name | Major | Classification |
|---|---|---|---|
| Makayla | Hall | Biology/ Pre-Medicine | Junior |
| Lourdelandie | Laguerre | Biology | Senior |
| Emori | Long | Astrophysics | Junior |
| JoanMarie | Morris | Information Technology | Junior |
| Esther | Perceval | Chemical Engineering | Sophomore |
| Bryan | Rosier | Pre-Mechanical Engineering | Sophomore |
| Laila | Spinner | Biology Premed | Senior |
| Aliyah | St Louis-Alleyne | Physics | Junior |
| Lailah | Timmons | Biology Pre-Medicine | Sophomore |
| Edwin | Washington | Pure Mathematics | Senior |

**Metrics for Success.** To assess whether the program is meeting its goal of exposing a group of college students to STEM careers at the MagLab, Johnson gives students a pre- and post-program survey and reaches out to mentors and tour guides through a post-program survey. For the students, 25% of participants had little knowledge of careers in STEM research prior to the start of the program. By the end of the program, 100% of participants said they had a substantial or fair amount of knowledge about careers in STEM research.  100% of respondents reported that they met scientific researchers, and connected with potential STEM mentors, and peers interested in STEM research. 100% of participants also reported that they were able to explore whether STEM graduate school or a STEM research career may be the right path for them to pursue. In addition, 100% of participants said they felt comfortable following up with any of the professionals they met during the program. We were able to incorporate a pre/post survey to measure interest in pursuing an advanced degree. **Table 3.1.16** highlights their responses and demonstrates an increase in student interest in pursuing an advanced degree. Overall, 100% of participants said they were satisfied or very satisfied with their overall experience in the program.

***Table 3.1.16.*** *Responses to pre/post survey*

| What type of degree do you plan on pursuing? | Pre-Program Percent (n=8) | Pre-Program Count | Post-Program Percent (n=7) | Post-Program Count |
|---|---|---|---|---|
| Bachelor's Degree | 100% | 8 | 86% | 6 |
| Master's Degree | 25% | 2 | 43% | 3 |
| Ph.D. Degree | 13% | 1 | 57% | 4 |

MagLab professionals were asked to participate as speakers, tour guides, and shadowing participants during this 7-week program. When asked to rate their degree of satisfaction with the program, 92.8% of participants (n=13) were satisfied. 100% of participants were somewhat or extremely satisfied with the level of communication provided by the program manager *(e.g. expectations/timeliness).* After the program ended, 4 scholars were selected to continue as interns with a mentor they met during the program. Three mentors worked with those students for an additional 5 weeks. When asked if they worked well together with their mentee, 100% of mentors agreed or strongly agreed. To assess the quality of mentoring, we asked mentors to tell us what strategies they used to ensure the students understood their expectations. The most cited strategies for a successful relationship were talking to my mentee about future career plans and providing advice (n=3) and encouraging the mentee to ask questions (n=3). The full list of strategies can be found in **Table 3.1.17.** We plan to continue presenting this information to mentors who volunteer for future programs so that they can see what types of strategies are most useful.

***Table 3.1.17*** *Mentoring Strategies Utilized by Mentors*

| What mentoring strategies did you utilize with your mentee(s)? | Percent (n=3) |
|---|---|
| Talking to my mentee about future career plans and providing advice | 100% |
| Encouraging the mentee to ask questions | 100% |
| Discussing expectations for the mentee at the beginning of the program | 67% |
| Introducing mentee to other members of the research team | 67% |
| Giving my mentee multiple opportunities to engage in research activities | 67% |
| Having regular communication and/or check-ins throughout the program to make sure the mentee understands the project | 33% |
| Maintaining a consistent schedule | 33% |
| Pre-program meeting to answer questions | 33% |
| Providing background reading material before the program | 33% |
| Having mentee attend research meetings | 0.0% |

**Lessons Learned.** Overall, the program was a success as 100% of the students **reported that they learned more about research at the MagLab, met scientific researchers, and connected with potential STEM mentors.** Feedback indicated that tours, professional development sessions, and mentoring opportunities worked particularly well for the participants' experience. Feedback also indicated that scheduling for the shadowing experiences was sometimes a challenge for mentors and mentees. Based on this feedback, Johnson is working to modify the 2025 program by eliminating the shadowing experience and providing more opportunities for students to learn about potential research opportunities and meet potential mentors at the MagLab. The modified program will run for 4 weeks and participants will be given an opportunity to continue as an intern after the 4-week session has ended. The influence of this change will be measured through the survey instruments.

**Research Experiences for Undergraduates (REU)**

The MagLab's REU program invites undergraduates from across the country to participate in a 10-week research experience. The goals of the MagLab's 10-week REU program are to provide undergraduate students with opportunities to learn research skills and explore MagLab-related research career options. The REU program also allows MagLab scientists and engineers to develop their mentoring skills. To recruit students, Johnson posted information about the program on multiple sites (e.g., Handshake, Simplicity, multi-school listings via job management boards, Pathways to Science); sent details to deans and department chairs at Historically Black Colleges and Universities (HBCUs) throughout the country as well as with REU alumni to share within their networks, and solicited assistance from MagLab faculty and staff in promoting the opportunity to students and colleagues within their sphere of influence. The MagLab REU program had 80 applicants. Based on students' responses to the application, most of the applicants heard about the program from a MagLab employee (46.1%), a friend/professor/advisor (38.4%), or the MagLab website (15.3%). The selection process relies on mentors to review the applications and send Johnson their top three choices. These choices are based on students' experience and interest in the mentor's respective research area or discipline. Johnson then finalized this list, accepting 13 participants from the mentor's top choices (**Figure 3.1.8**).

***Figure 3.1.8.*** *Summer 2024 REU Participants*

The 13 REU participants were divided across all undergraduate stages: 15% freshmen, 8% sophomores, 46% juniors, and 31% seniors. The participants represented a variety of majors: 54% engineering *(e.g. Biomedical-2, Biological Systems-1, Mechanical-1, Chemical-2),* and 46% physical science *(e.g. Physics-2, Chemistry-2, Physical Science-1, Material Science-1)*. Besides the demographic statistics provided in **Table 3.1.1,** 30.7% of our REUs came from Minority Serving Institutions or community colleges.

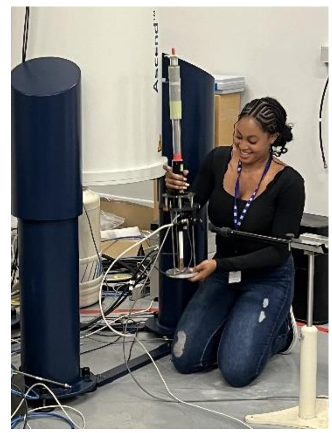


***Figure 3.1.9.*** *REU Student in a Lab*

Johnson planned professional development sessions that were held once a week to help students gain a broader understanding of various types of STEM careers. These sessions included: panels by MagLab research faculty, tenure-track faculty, graduate students, as well as MagLab alumni who are STEM entrepreneurs or industry professionals. Sessions also included information on graduate school applications and developing an elevator pitch. Each week, beginning in week 6, REUs led tours of their labs for the rest of the group **(Figure 3.1.9)**. The program culminated in a 3-minute pitch presentation wherein the students described their research project in three minutes or less. MagLab faculty and staff were invited to serve as judges to provide participants with feedback and recognize the top three presenters with prizes. A list of the REU participants, their respective universities/colleges, research topics, and mentors can be found in **Table 3.1.18.**

***Table 3.1.18.*** *2024 REU Participants*

| First Name | Last Name | School | Research Area | Mentor(s) | Department |
|---|---|---|---|---|---|
| **Chiemeka** | **Amadi** | Florida State University | Using Ferro-Shims to Improve the Field Homogeneity of a 14T-Magnet | Theirry Dubroca | EMR |
| **Gage** | **Avonce** | Columbus State Community College | Quick Fatigue Life Characterization Using Coding | Ke Han & Rongmei Niu | MS&T |
| **Sebastian** | **Castro** | Florida State University | Ion Transport in Perfluorosulfonic Acid Membranes | Daniel Hallinan | NMR |
| **Ellen** | **Ding** | Georgia Institute of Technology | Particle Levitation Velocimetry with | Wei Guo | CMS |

| First Name | Last Name | School | Research Area | Mentor(s) | Department |
|---|---|---|---|---|---|
| | | | Superconducting Magnetic Coils | | |
| **Ivanska M** | **Gierbolini Colon** | University of Puerto Rico Mayaguez Campus | Evaluation of Overall Sensitivity of Biradicals for DNP-NMR | Amrit Venkatesh & Faith Scott | NMR |
| **Natalie** | **Ibbetson** | California State University East Bay | Hunting For 15N-DNP in liquid at 14.1T | Tomas Orlando | EMR |
| **Felicia** | **Kedrowski** | University of Wisconsin Eau Claire | Formulation and Rheological Characterizations of MAX Epoxy Composites for 3D Printing | Subramanian Ramakrishnan | CMS |
| **Jasmine** | **Prieto** | Florida State University | 63Cu NMR Thermometry at Low Temperatures | Arneil Reyes | CMS |
| **Victoria** | **Rash** | The University of Texas at Dallas | Solid Gains: Creatine Characterized by Solid-State NMR | Robert Schurko | NMR |
| **Janelle** | **Thomas** | Florida A&M University | Field Mapping and Characterization of the Magnetic Field Profile of a Thin Steel Ring in a 9.4T Magnet | Ilya Litvak | NMR |
| **Taylor** | **Vanderlinden** | Florida State University | Constructing a Double Resonant 33 mm ID 1H-2H RF Coil | Malathy Elumalai | NMR |
| **Garrett** | **Wibbels** | South Dakota Mines | Influencing Crystal Growths with External Magnetic Fields | Kaya Wei | CMS/DCF |
| **Vivienne** | **Zacher** | Florida State University | 3D Printing and Physical Characterization of a Bioabsorbable Mesh | Jamel Ali | CMS |

**Metrics for Success.** Our pre-/post-survey of all participants helped us to assess the success of the program. In terms of research skill development, we used a modified version of the undergraduate research student's self-assessment (URSSA) survey instrument (Weston & Laursen, 2015[4]). Although this survey has historically been administered post-program by other REU programs, we were able to incorporate a pre-survey to measure actual changes in skills rather than retrospective self-reported changes. **Table 3.1.19** highlights the mean changes from pre- to post-program related to skill development, demonstrating the success of the program. In addition, all participants indicated that the experience increased their positive perception of STEM careers or reaffirmed their already positive perception of STEM careers. Sixty-two percent of the REU students rated their mentor as above average or outstanding.

[4] Weston, T. J., & Laursen, S. L. (2015). The undergraduate research student self-assessment (URSSA): Validation for use in program evaluation. *CBE—Life Sciences Education*, *14*(3), ar33.

***Table 3.1.19.*** *Skill Development for REU Participants*

| How would you rate your ability to… | Pre-Program Percent (n=12) | Post-Program Mean (N=12) |
|---|---|---|
| Analyze data for patterns | 3.75 | 4.08 |
| Figure out the next steps in a research project | 3.09 | 3.67 |
| Problem-solving, in general | 3.85 | 4.00 |
| Formulate a research question that could be answered with data | 3.42 | 3.83 |
| Identify limitations of research methods and designs | 3.82 | 3.75 |
| Understand the theory and concepts guiding my research project | 3.62 | 4.08 |
| Understand the connections among scientific disciplines | 3.83 | 4.08 |
| Understand the relevance of research to my coursework | 4.08 | 4.75 |

To measure mentoring quality, we reviewed the categories of quality mentoring developed by the Center for the Improvement of Mentored Experiences in Research (CIMER) to determine which were most relevant to undergraduate mentees in the 10-week program. Three best practices for mentoring developed by CIMER are aligning expectations, assessing understanding, and maintaining effective communication. Our surveys to REUs and mentors focused on these practices to assess whether they were being utilized in the program. We asked REUs to rate their mentors and to tell us the effective strategies that their mentors used throughout the program. We also asked mentors to tell us what strategies they used to ensure the REU understood their expectations and completed their projects. 100% of REU participants said they worked well together with their mentor and 92% said their mentor was available when they needed them during the program.

By asking both mentees and mentors to describe quality mentoring strategies we were able to determine: (1) what strategies were rated most impactful by REUs and (2) whether mentors were using these best practices. The most impactful mentoring strategies were maintaining a consistent schedule and having regular communication and/or check-ins throughout the program to make sure the mentee understands the project. The full list of strategies can be found in **Table 3.1.20.** We plan to present this information to mentors who volunteer for future programs so that they can see what types of strategies are most admired by undergraduates.

***Table 3.1.20.*** *Quality Mentoring Themes Triangulated by REU Students and Mentors*

| REU Students | REU Mentors |
|---|---|
| Students were asked what strategies that their mentor(s) used to **check for understanding.** The themes from their responses were:<br>• Communicated frequently and answered questions thoroughly (n=2)<br>• Made sure I understood (n=2)<br>• Conducted weekly meetings with an agenda (n=1) | REU mentors were asked how they **checked for understanding** when communicating expectations to REU students. They indicated that they used the following strategies:<br>• Asking questions and engaging in discussion (n=9)<br>• Frequent meetings (n=4) |
| REU participants were also asked about the overall **mentoring strategies** that mentors used that they found **particularly impactful**. The strategies identified were:<br>• Morning meetings (n=1)<br>• Sharing knowledge and advice (n=3) | Mentors were asked what **mentoring strategies** they used that they thought were **impactful**. They provided the following strategies:<br>• Maintaining a consistent schedule (n=10)<br>• Having regular communication and/or check-ins throughout the program to make sure the mentee understands the project (n=9) |

**Lessons Learned**. Overall, the program was successful in meeting its goals as evidenced by the survey results summarized above. Because of the feedback received, we were able to identify three areas that we plan to improve for next year: (1) the application process, (2) recruitment, and (3) the professional development scheduling. For the application process, we will request mentor interest forms in late September asking for a more detailed project title and description. Those titles will then be included in the REU application and potential candidates will be allowed to select their top 3 project ideas. This should assist mentees in being more informed about the work they could perform. In addition, it should assist mentors in narrowing down their top 3 applicants. For the recruitment efforts, we will post the REU application materials to more STEM professional organization job boards. And lastly, we will change the time for the professional development activities to the late afternoons instead of midday to provide more opportunity for mentees to bond as a cohort by continuing their conversations.

## GRADUATE STUDENTS AND POSTDOCS

During the 2023-2024 academic year, Johnson held the 2nd Mentoring Incubator. The Incubator was designed to give graduate students, postdocs, and faculty the resources and structure to grow professionally and achieve their goals while effectively supporting others in doing the same. In the fall of 2023, three faculty, three postdocs, and six graduate students participated in the program. By introducing the Center for the Improvement of Mentored Experiences in Research (CIMER) mentorship education curriculum, the incubator supports mentor and mentee skill development while engaging participants in understanding their individual needs and interests. To achieve the program goals, four sessions were held during the 2023/2024 fall and spring semesters. **Table 3.1.21** provides the list of sessions held and their descriptions. These sessions were facilitated by three MagLab employees who completed the CIMER training in 2021 (i.e., Kawana Johnson, Roxanne Hughes, Huan Chen).

Participants received certificates of completion, a letter of acknowledgement sent to the Lab's director and their direct supervisor, and a personal thank you letter from the program director. During the summer of 2024, Johnson conducted a follow-up survey with program participants and interviewed some individuals to expand her knowledge and gain insight into the needed direction of the 2024/2025 program. Feedback from the program participants included a desire to continue the 4-session format and to include more discussion in the session on Maintaining Effective Communication. As a result, the format will remain, but presentation material will be reviewed to determine what information should be removed, modified, or enhanced. The program restarted in October 2024 with an end date in February 2025.

***Table 3.1.21.*** *2023-2024 Mentoring Incubator Session Topics and Schedule*

| Session Topics | Dates/Times |
|---|---|
| Meeting #1 (Aligning Expectations in the Mentoring Relationship) | Wednesday, Sept. 27, 2023 @ 11:30 a.m. |
| Meeting #2 (Maintaining Effective Communication) | Wednesday, Nov. 8, 2023 @ 11:30 a.m. |
| Meeting #3 (Assessing Understanding in the Mentoring Relationship) | Wednesday, January 24, 2024 @ 11:30 a.m. |
| Meeting #4 (Articulating Your Mentoring Philosophy) | Wednesday, March 20, 2024 @ 11.30 a.m. |

## EVALUATION AND RESEARCH

### Evaluation

In 2024, each program manager evaluated their respective programs. The results of these evaluation summaries are shared and discussed with the Director of CIRL to make decisions for the next year's programs. Primary metrics for each program are determined based on the program's goals and mission and measured using appropriate methodology. The forms of evaluation are listed in **Table 3.1.22.**

***Table 3.1.22.*** *Evaluation Description for 2024 MagLab Education and Outreach Programs*

| Program | Form of Evaluation |
|---|---|
| MagLab Field trips | Post-program survey to teachers after field trip |
| Summer Camps | Pre-/post-program survey to students, post-survey to parents, and post-camp survey to teachers |
| Godby High School Program | Pre-/post-program survey to students and post-camp survey to teachers |
| High School Externship | Post-program survey to externship participants, post-program survey to mentors |
| RET | Pre-/Mid-/Post-program surveys to RET participants, post-program survey to mentors |
| Magnetic Momentum Scholars Program | Pre-/post-program survey to Magnetic Momentum Scholar participants, post-program focus group and individual interviews with participants, post-program survey to mentors |
| REU | Pre-/post-program survey to REU participants, mid-program and post-program focus groups with REU participants, post-program survey and interview with mentors |

### Research

A cornerstone of CIRL's programs is that they are developed based on research conducted by CIRL staff. Our research not only informs our MagLab programs but adds to the broader national conversation around

STEM education and mentoring programs. Hughes continues to lead CIRL's research efforts, which are supported by a STEM identity lens (one's sense of belonging and future success in STEM).

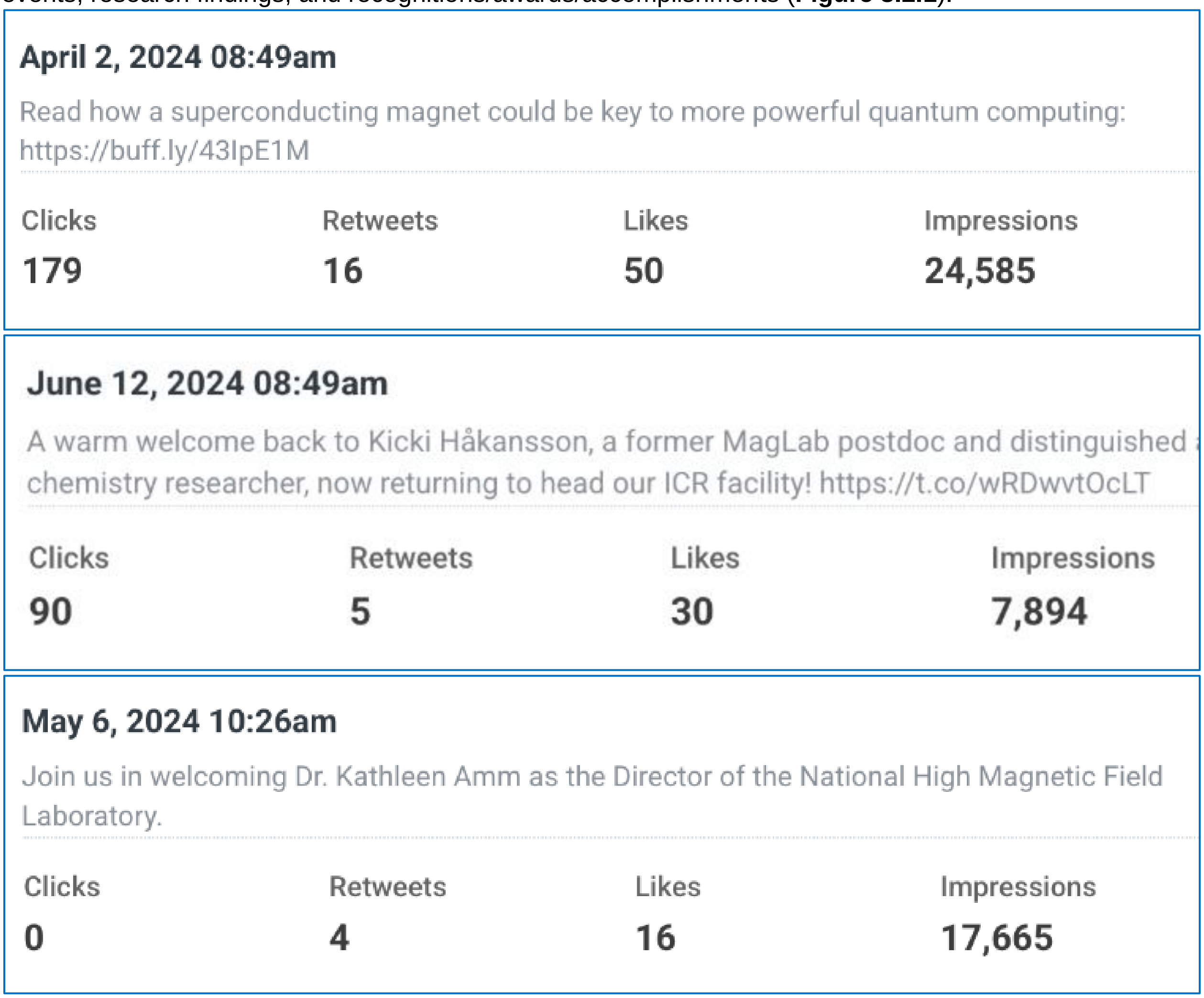
## 3.2 PUBLIC OUTREACH

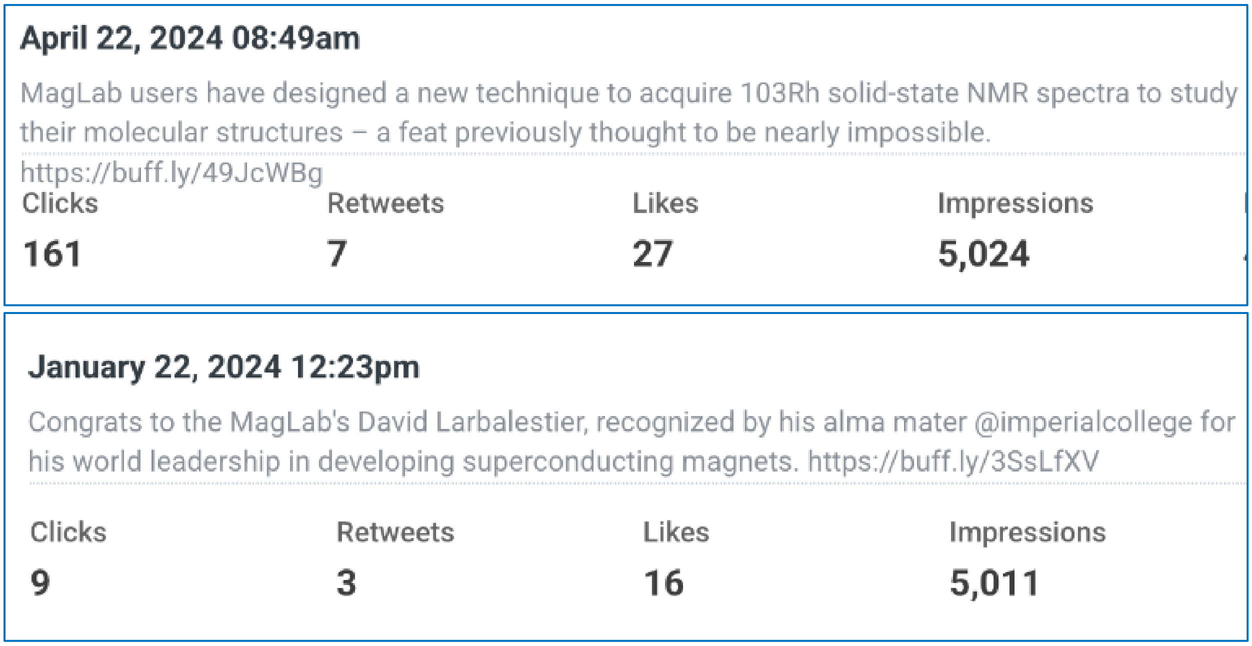
Public outreach is run by the MagLab's Public Affairs team who use a comprehensive communications strategy to reach a broad audience with content designed for varying levels of scientific understanding. In 2024, the MagLab posted 14 news stories. The MagLab was mentioned in about 870 news articles, blogs, or social media posts in outlets such as the Tallahassee Democrat, Wired, Yahoo News, Science Daily, Magnetics Magazine, Los Alamos Reporter, Sky News, and many others reaching more than 2.3 billion readers/viewers worldwide.

### WEBSITE AND SOCIAL MEDIA

In 2024, the website received more than 4.1 million "events" (events are a measure of website interactions: view, watch, click, download, scroll, submit a form, etc.) - a nearly 20% increase from 2023. New and returning website user numbers increased by more than 30% compared to last year and organic search numbers reached nearly 475,000 (an increase of 36% over 2023). Page views also increased for the research, news/events, and the MagLab sections of the website.

The MagLab's X account reached about 200,000 people in 2024. Median X engagement is only 0.029%, but MagLab's X content experienced a much higher than average engagement rate of about 1%. The top tweets of 2024 were focused on the announcement of new staff (particularly the MagLab director), events, research findings, and recognitions/awards/accomplishments (**Figure 3.2.1**).




April 22, 2024 08:49am

MagLab users have designed a new technique to acquire 103Rh solid-state NMR spectra to study their molecular structures – a feat previously thought to be nearly impossible.
https://buff.ly/49JcWBg

| Clicks | Retweets | Likes | Impressions |
|---|---|---|---|
| 161 | 7 | 27 | 5,024 |

January 22, 2024 12:23pm

Congrats to the MagLab's David Larbalestier, recognized by his alma mater @imperialcollege for his world leadership in developing superconducting magnets. https://buff.ly/3SsLfXV

| Clicks | Retweets | Likes | Impressions |
|---|---|---|---|
| 9 | 3 | 16 | 5,011 |

***Figure 3.2.1.*** *Top Tweets of X Engagement*

The lab’s Facebook posts received more than 100,000 impressions reaching different ages, genders, and geographic locations including India, Brazil, Pakistan, Bangladesh, Mexico, the UK, and Germany. The lab's Facebook audience remains comprised of more women than men and is better positioned to reach 35-54+-year-old audiences, but with a holistic age distribution that remains broad (**Figure 3.2.2**).

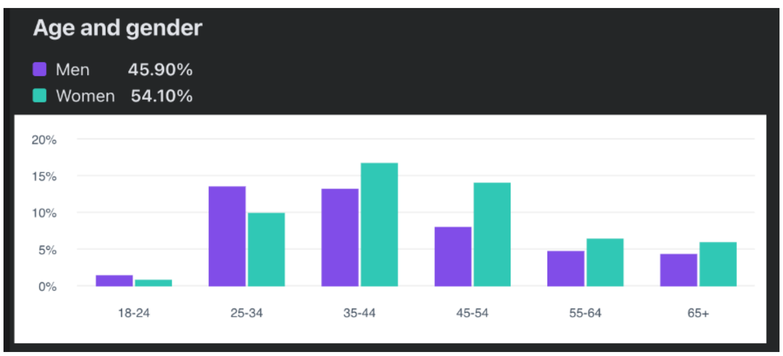



***Figure 3.2.2.*** *MagLab Facebook Audience age and gender breakdown.*

Instagram saw a 14% audience growth in 2024 as well as growth in impressions, likes, comments, and reach. Three of the top five posts that received the highest number of impressions in 2024 were Open House-related. The lab also continued to explore Threads; a new primarily text-based network connected to Instagram where we have another 345 followers.

LinkedIn saw a 20% audience increase in 2024 and a higher-than-average engagement rate of 4.4%. (average LinkedIn engagement sits between 1% and 4%).

MagLab videos received more than 11.5 million impressions on YouTube in 2024 and were viewed 730,000 times. The lab’s YouTube channel added 3,500 subscribers and more than 28,000 hours of MagLab videos were watched in 2024. Peaks in views coincide with social media promotion and the release of new video content.

MagLab YouTube viewers come from all ages with more than 60% of viewers between 18 and 34. More than 31% of the MagLab’s YouTube watchers are female and audiences come from around the globe including India, the Philippines, Pakistan, Bangladesh, Indonesia, the United Kingdom, Canada, South Africa, Sri Lanka, Australia, Malaysia, Ethiopia, Turkey, Brazil, Kenya, Vietnam, Myanmar, Egypt, Germany, Thailand, Iraq, and Nigeria.

The most popular videos on the MagLab’s YouTube channel continue to be the See-Thru Science video series which shows viewers what electricity and magnetism might look like if they weren't invisible. In 2024, the See-Thru Science series earned another million plus views bringing the series to more than 12.3 million total views.

## EVENTS

The Public Affairs team engaged with excited and enthusiastic audiences throughout 2024. Events are an important way for people of all ages to connect with the MagLab by meeting our researchers, seeing our unique lab spaces, and enjoying the fun of hands-on science. Events excite and inspire young visitors and remind adults that science is important and worthy of continued support.

Our Open House returned on February 24, 2024, and hosted more than **8,500 visitors** from across the southeast to play with the nearly 100 hands-on toys, games, and demonstrations at Open House 2024. The 2024 **toy-themed** event invited visitors of all ages to come **channel their inner child and explore the science of toys and the creative fun that comes from play. Special** experiences included:

- A giant **PlayLab** that offered pretend play spaces inspired by MagLab labs that give kids the chance to put on their lab coats and play the role of a researcher.
- A classic **Lite Brite** that was used to explain the science of light.
- **Giant magnetic pioneer toys** - Fuzzy Faraday, Tousled Tesla & Coifed Conwell - inspired by Wooly Willie.
- An experiment to see whether the powerful **Junkyard Magnet** would squish a **squishmallow** toy was held hourly.
- **Barbie** was the basis for learning about chemistry and painting with pink pigments (plus dressing up like Scientist Barbie and posing in a Barbie Box)
- Visitors learned the **physics of spinning toys** like **tops** and **yo-yos**, made **Play-Doh circuits** and **Silly Putty**, saw magnetic dancing dolls, watched cryogen-powered "Cold" Wheels Cars, engaged with special **Transformers** and **My Little Pony** activities, and looked through a working Lego microscope.
- A special Lego-themed scavenger hunt took visitors around the MagLab as they hunted for pieces and hunters to locate pieces around the lab for a mystery build. (**Figure 3.2.3**).

Survey data shows that about half of 2024 Open House visitors had never been to the lab before the event and that about 90% agreed or strongly agreed that the event helped them better understand the science at the MagLab and how it benefits our community.

The Public Affairs Team completed the 2023-2024 Science Night series at Leon County Libraries and launched the 2024-2025 school year season as well (**Table 3.2.1**). Science Night is a public event targeting young children but also acts as a critical engagement point with parents, grandparents and other guardians of all ages.


***Figure 3.2.3.*** *Photos from Open House 2024.*

Each Science Night features a topic/theme and starts with a science story read-along by a MagLab Scientist which is used to help the scientist explain their exciting research to the mostly elementary-aged students and their families. Following the story, students take part in hands-on science with brand-new dynamic activities designed to share the inspiration of science. Participants of all ages also get to engage with MagLab scientists and ask questions about all the things they've ever wondered about.
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***Figure 3.2.4.*** *Photos from the 2024 Science Night season.*

Each Science Night features a topic/theme and starts with a science story read-along by a MagLab Scientist which is used to help the scientist explain their exciting research to the mostly elementary-aged students and their families. Following the story, students take part in hands-on science with brand-new dynamic activities designed to share the inspiration of science. Participants of all ages also get to engage with MagLab scientists and ask questions about all the things they've ever wondered about.

Data from the 2023-2024 Science Night season showed 87% of the kid participants giving Science Night five out of five stars and nearly all agreeing that "science is fun" after the conclusion of a Science Night event. More than 90% of parents said their children learned something from the Science Night they attended and more than 92% said they also learned something, demonstrating that this primarily K-5 event offers a dynamic way to reach audiences of all ages. Science Night also continued to branch outside of the main library location to offer experiences at branch libraries across the community. (**Figure 3.2.4**).

***Table 3.2.1.*** *2024 Science Nights*

| Date | Scientist/Topic | Hands-On Activities | Location | Attendees |
|---|---|---|---|---|
| **1/18/24** | ***Joseph Frye-Jones, ICR***<br><br>We live on a rock that's hurtling through space and orbiting a star. Come get to know the other neighbors in our solar system and learn about the chemistry holding it all together at this STAR PARTY! | • Wrap your head around the planets Solar System Hat<br>• Don jetpacks & walk the distance between plants in this Space Walk<br>• Make your own Moon Phases with cookies and light | Main Library | 90 |
| **2/15/24** | ***Lissa Anderson, ICR***<br><br>You are a chemical masterpiece! Your genes are a special code that determines many things about you from your hair color to your facial expressions. Join us as we learn more about the science of what makes you YOU. | • Candy DNA models<br>• Build a Dog<br>• Test to see if you are a genetic supertaster | Lake Jackson Branch Library | 50 |

| Date | Scientist/Topic | Hands-On Activities | Location | Attendees |
|---|---|---|---|---|
| **3/21/24** | ***Jamel Ali, Condensed Matter***<br><br>There's a lot more going on around us than we can see with our eyes. Microscopes take us to a new realm filled with viruses, bacteria, and so much more. Get to know some germs and take a close look at the tiny universe at our fingertips. | • Make a Microbe<br>• Small World Stroll<br>• Paper microscopes | Main Library | 90 |
| **4/18/24** | ***Bianca Trociewitz, EMR***<br><br>Engineers use math, science, and creativity to solve problems. Come put your imagination to work as we craft new inventions together and have fun flexing our STEM skills. | • Balloon rocket car races<br>• Engineer your own catapult | Main Library | 80 |
| **9/19/24** | ***Steve McGill, DC Field***<br><br>Why is the sky blue? And a bumble bee black and yellow? Open your eyes to the rainbow of colors in our world. Learn where color comes from and its eye-popping role, not just for humans, but across the animal kingdom! | • Spinning Spectrum<br>• Light Box<br>• Color Mixing | Northeast Branch Library | 130 |
| **10/24/24** | ***Fred Mentink-Vigier, NMR***<br><br>Our world is crawling with creepy creatures! Just in time for Halloween, we'll explore the bewitching world of insects and arachnids. Learn the ways these amazing creatures live, work, and communicate. | • Bee Dance Party<br>• Insect Investigation<br>• Butterfly Life Cycle | Main | 125 |
| **11/21/24** | ***Emily Hughes & Sylvia Long, ICR***<br><br>Have you ever helped cook dinner, or bake cookies? You're an everyday chemist! Chemistry is all around us, from the cars we drive to the plants outside. Come formulate fun with everyday chemistry! | • Inflating puffer fish<br>• Ph-antasmic Red Cabbage Art | Main | 115 |
| | | | **2024 TOTAL ATTENDEES** | **680** |

## 3.3. CONFERENCES AND WORKSHOPS

Each year, the MagLab hosts or sponsors a variety of workshops and conferences related to high magnetic field research **(Table 3.3.1)** In 2024, seven conferences/workshops were offered in person across scientific disciplines.

***Table 3.3.1.*** *List of 2024 sponsored workshops and conferences.*

| Event | Date | Location/ Type | Description | Attendees |
|---|---|---|---|---|
| **Theory Winter School** | January 8-12 | In-Person Tallahassee, FL | The school will bring together lectures covering recent developments in the field of superconductivity. The topics will include material and technique-specific developments, such as 2D moiré and graphene materials, hydride sulfides, photo-induced superconductivity, and uranium ditelluride, as well as more general theoretical discoveries in the realm of flat-band superconductivity and efficient solutions to gap equations. | 48 |
| **Laura Greene Festschrift** | January 12-13 | In-Person Tallahassee, FL | A scientific symposium and festschrift celebration to honor Laura Greene and her many contributions to science. This event will take place in Tallahassee on Friday, January 12 and Saturday, January 13, 2024. | 77 |
| **Mass Spectrometry for Complex Mixtures in Energy & the Environment: 34th Sanibel Conference on Mass Spectrometry** | January 21-24 | NA | This conference was the first mass spectrometry focused event that will provide an opportunity for the two research fields of petroleum/biofuel and natural organic matter to converge on the unique challenges associated with polydisperse complex mixtures and provide an opportunity to identify and learn from advancements made in each of these areas. Bringing together scientists, the conference will discuss the status and future trends in the characterization of different mixtures, with specific emphasis on qualitative and quantitative aspects, current analytical challenges, data processing advancements and structural techniques. | 80 |
| **MagLab Summer School on Solid State NMR Spectroscopy** | May 13-17 | NA | The weeklong summer school features tutorials on NMR basics and lectures from experts in the field of solid-state NMR spectroscopy. | 5 |
| **11th Workshop on Mechanical and Electromagnetic Properties of Composite Superconductors** | June 10-14 | NA | The 11th MEM international workshop is to disseminate results and exchange ideas among researchers studying electromechanical properties of low and high-temperature superconductors, superconductor manufacturers, and superconductor application developers. | 40 |
| **External Advisory Committee Meeting** | August 18-20 | In Person Tallahassee, FL | The EAC is charged with reporting on the State of the MagLab to the leadership of its three partner institutions: Florida State University, the University of Florida, and Los Alamos National Laboratory. | 64 |
| **User Committee Meeting** | September 18-20 | In Person Gainesville, FL | An annual meeting of users who represent the laboratory's broad multidisciplinary user community and advise lab leadership on all issues affecting users of our facilities. Hosted by the MagLab/UF facility in Gainesville, FL. | 90 |

| Event | Date | Location/ Type | Description | Attendees |
|---|---|---|---|---|
| **6th International Symposium on Pathomechanisms of Amyloid Diseases** | December 4-6 | In Person Tallahassee, FL | The purpose of this symposium is to bring established investigators, junior researchers and industrials together to discuss and expand this exciting area of research. In addition, a series of educational lectures are planned to educate beginners (students and post-doctoral fellows) and motivate them to pursue research in this area. Partial support for graduate students and post-doctoral fellows will be offered. | 81 |

## 3.4 BROADENING OUTREACH

In addition to the Diversity and Education sections of this report which speak to the MagLab's work to broaden participation through education and outreach, MagLab staff regularly take advantage of conferences and workshops to share information about the lab's user program with diverse researchers from around the globe. Each talk, presentation, poster, or abstract opportunity provides the chance for scientists to learn more about the lab's research capabilities and broaden our user program to new scientists from across disciplines and career levels – from graduate students and postdocs to track faculty.

In 2024, MagLab staff gave **136** lectures, talks, and presentations to organizations around the country and the world **(Figures 3.4.1, 3.4.2, and 3.4.3)**.

During the year, the MagLab continued the important work to broaden participation through outreach and presentations at prominent meetings and conferences including the American Physical Society (APS) March Meeting, 29th Annual NMRS (National Magnetic Resonance Society) Meeting, International Conference on Magnetism, XIX National Superconductivity Conference, 31st Conference of the Condensed Matter Division of the European Physical Society (CMD31), 11th Workshop on Mechanical and Electromagnetic Properties of Composite Superconductors (MEM24), 2024 Ocean Sciences Meeting, 72nd American Society for Mass Spectrometry (ASMS) Conference on Mass Spectrometry and Allied Topics, Experimental Nuclear Magnetic Resonance Conference, GlobalNMR Discussion Meeting, International Conference on Quantum Fluids and Solids, Workshop on Neutron Scattering, The International Society for Optics and Photonics (SPIE) 2024, and American Institute of Chemical Engineers (AIChE) Spring 24.

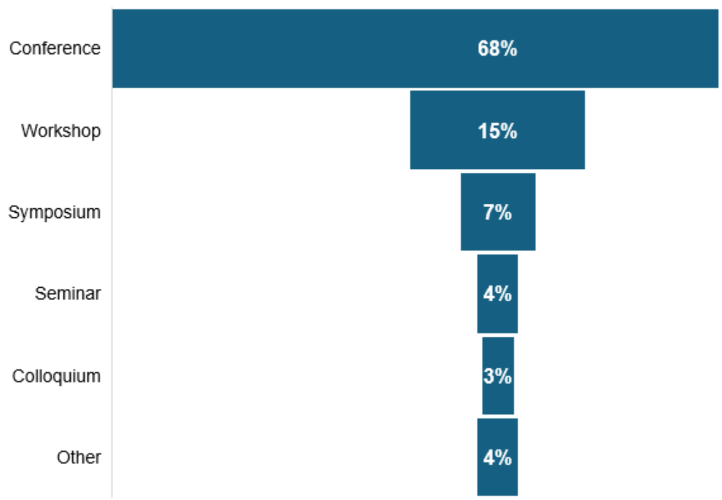



***Figure 3.4.1.*** *2024 Presentation types.*

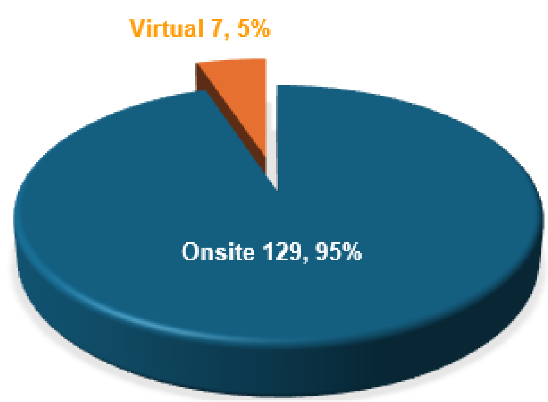



***Figure 3.4.2.*** *Presentations given virtually in 2024.*

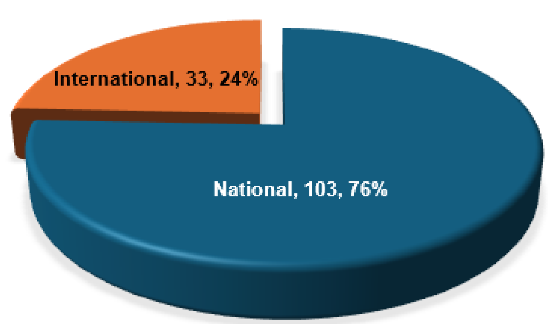



***Figure 3.4.3.*** *Breakdown of 2024 presentations by geographic distribution.*

# 4. IN-HOUSE RESEARCH IN SUPPORT OF THE USER PROGRAM

## 4.1 MAGNETS AND MATERIALS

### APPLIED SUPERCONDUCTIVITY CENTER

The Applied Superconductivity Center (ASC) supports the development of magnet technologies from materials up to important feasibility validations. Work at ASC defines the limits of conductor, magnet components, and magnets via tests and post-test analyses using extensive materials science and physics tools. There is a natural transition from ASC to the missions of MS&T, DOE labs, and magnet manufacturers. ASC also develops characterizations of structure and properties that definitively connect processing with performance, with characterization tools to find processing origins and material root causes of performance shortfalls. This provides a natural pathway for collaboration with conductor manufacturers. ASC extends the boundaries of knowledge in materials, conductors, and magnets via a portfolio of high-impact research grants including the NSF core grant to MagLab, via collaborations with other laboratories and institutions, and via commercial partnerships. Faculty in ASC aim to propagate knowledge and training via support of MS, PhD, and post-doctoral staff, interactions with industry and federal agencies, participation in review panels and oversight committees, and support of publications, conferences, and learned societies.

### MAGNET SCIENCE AND TECHNOLOGY

The Magnet Science and Technology (MS&T) division supports the NHMFL's Mission to develop, operate, and maintain existing and new magnet systems that enable a world-leading high-magnetic-field user program. In 2024 MS&T made important progress on the all-superconducting 40T magnet design and developmental coil testing; fabrication of large, pulsed coils for the LANL 60T Controlled Wave (CW) and 100T multi-shot magnets; development of the high-strength, high-conductivity materials required for pulsed and DC resistive magnets and continuing to maintain the suite of resistive magnets in the DC Field Facility including the world-record high fields produced by the 45T Hybrid, the 36T, 1ppm Series-Connected Hybrid and the 41.5T all-resistive magnets. In addition, high temperature superconducting insert coils for a commercial 25T all-superconducting magnet have been developed in MS&T in collaboration with a commercial partner, Cryomagnetics. The following sections further describe the achievements in these areas.

### PROGRESS DURING THIS REPORTING PERIOD

**Development of Bi-2212 Conductor**

A core activity under Science Driver 8 (SD8) is research to understand the opportunities and limits of magnets made from multifilamentary round-wire Bi-2212. Support by NSF core funds was leveraged to bring in additional support for collaborations with Engi-Mat, NavaFlex, Bruker OST and Lawrence Berkeley National Laboratory (LBNL) that targeted specific challenges for Bi-2212 powder and conductor development. Funds included two SBIR phase-I awards and a university-lab collaborative grant from DOE ARDAP. The reproducibility of good powder by Engi-Mat was improved in 2024. Multiple new Bi-2212 billets were produced in 2024 with aims to improve the wire performance and reproducibility. The new wires were made with improved precursor powder quality, more uniform filaments, modified wire architecture including all hexagonal sub-elements (all-hex), and other fabrication process changes. We evaluated seven billets in all, including one from a new manufacturer Kiswire.

We also continued the study of Bi-2212 filament sausaging (a term used in the superconducting wire industry to describe uncontrolled variations of cross-section area, like a string of sausages, that can lead to breakage and performance loss) during wire drawing. The all-hex billet was a solution proposed by our previous study that showed hexagonal sub-elements had fewer merged filaments than other arrangements after the full over-pressure heat treatment. The reduced filament merging resulted in better supercurrent flow and higher critical current density. The billet with all hexagonal sub-elements showed critical current density $J_C$(4.2K, 5T) of 7600A/mm$^2$, which is the highest since 2018. Further studies on the all-hex billet are planned for 2025, including the procurement of this wire for planned magnets.

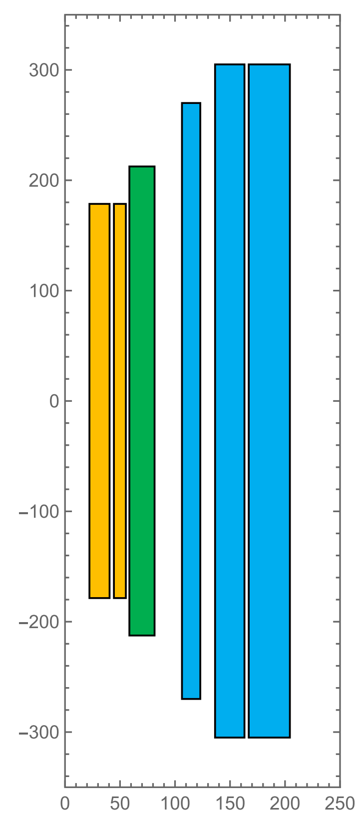



***Figure 4.1.1.*** *Two Bi-2212 coils (yellow) and a Bi-2223 coil (green) inside our 212mm, 12T LTS magnet to generate a total of 28T. The Bi-2223 coil will have to be replaced with another Bi-2212 due to the vendor having recently ceased production and sales of Bi-2223 conductor.*

**28 T Superconducting Magnet with High Homogeneity**

SD8 support for the advancement of Bi-2212 technology also addresses the MagLab core mission to advance NMR magnet technology. Previous annual reports document how the readiness for technology has steadily advanced to the point that a demonstration of an NMR magnet can be proposed. To fulfill this opportunity, an R01 proposal to the NIH to demonstrate technology for a 28 T hybrid LTS/HTS demo NMR magnet system using Bi-2212 insert coil has been proposed in previous years, and now has been funded, starting later in 2024. While the proposal calls out an HTS insert magnet to be made of three nested coils consisting of two Bi-2212 coils and one Bi-2223 coils, the decision of Sumitomo SEI to drop production of Bi-2223 conductor made it necessary to change the design of the magnet to consist of three nested Bi-2212 coils, **Figure 4.1.1.** Initial coil designs have been started, and they indicate that coil mechanics, particularly for the outer (ex Bi-2223 now Bi-2212) HTS coil shell will be demanding as shown in **Figure 4.1.2**, certainly in terms of mechanical strain as shown in **Figure 4.1.3**. Also, coils to be made for this project will be significantly taller than what we made previously. This means that high tensile, radial, and axial stresses will have to be controlled. While models show that the reinforcement method we developed over the past years appears sufficient to make such coils, several test coils will be made to prove the case. **Figure 4.1.4** exemplifies one approach, discussed further in the next section. One aspect of using Bi-2212 round wire is that field homogeneity needed for an NMR instrument may be easier to achieve than for REBCO. The designs indicate that with a set of $Nb_3Sn$ compensators, it appears possible to achieve few ppm homogeneity. Our commercial partnership with Oxford Instruments will help greatly to address the complete magnet system.

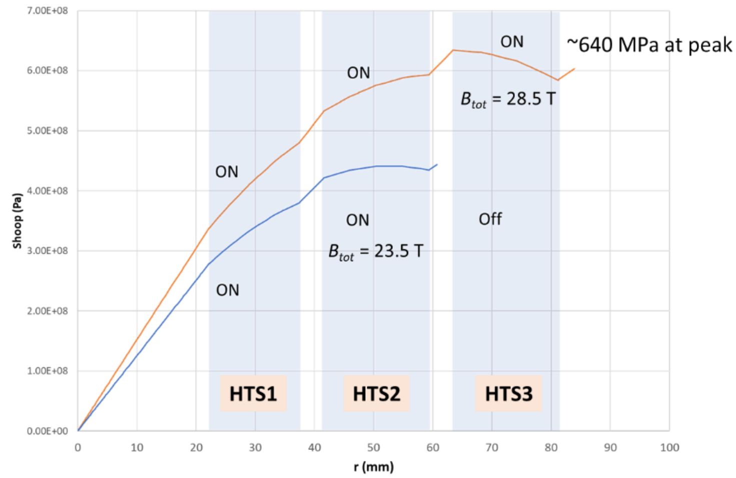



***Figure 4.1.2.:*** *Radial dependence of the hoop stress across the HTS insert coils. With all three coils present stresses of up to 640 MPa can be expected, which is significant.*

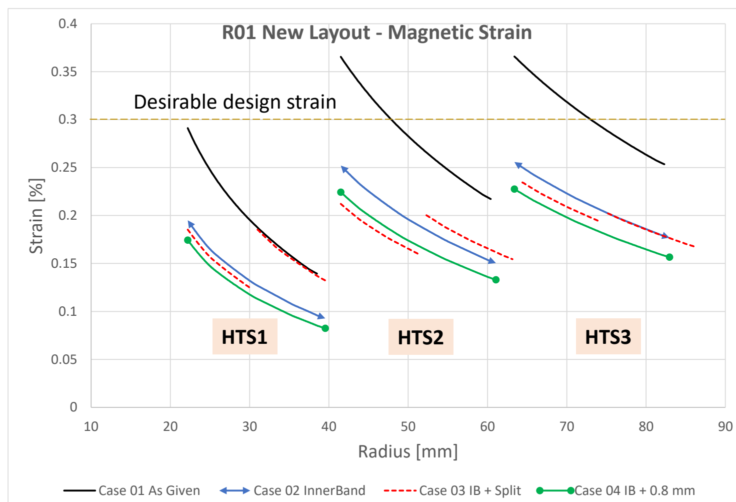



***Figure 4.1.3****. Strain models show four different reinforcement cases. With a proper choice of reinforcement, it appears possible to limit the maximum occurring strain to 0.25%, which is well below the strain target of 0.3%. Splitting of the coils into six subsets decreases the strain even further.*

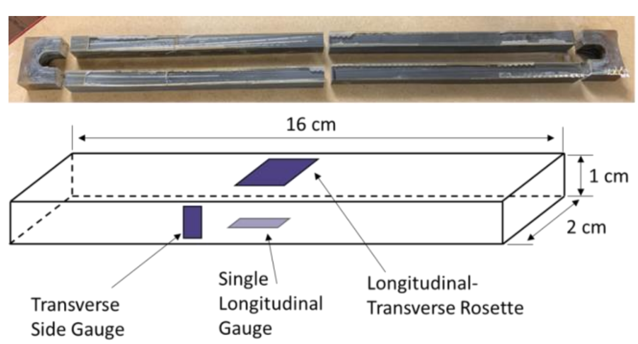



***Figure 4.1.4.*** *(Top) Racetrack-type coil assembly sectioned into four samples in preparation for mechanical testing. The end pieces are not used. (Bottom) Characteristic dimensions of the samples and placement of the film strain gauges.*

**Mechanical Properties of Bi-2212 Winding Packs**

Coil postmortems are used to aid our understanding of magnet per-formance. Mechanically weak areas causing performance limitations are revealed through cross-sectional imaging and transport current characterizations of extracted samples from coil sections. Cross-sectional imaging of segments from a recent Bi-2212 coil revealed cracks running along the interfaces between winding layers and ceramic reinforcement layers. These cracks correlate with a reduction in transport properties of conductor extracted from these areas. The Bi-2212 winding pack is considered a complex composite consisting of superconducting wire, insulating material, ceramic reinforcement fiber, and epoxy. Its properties and the properties of some of the components are not well known. This has motivated a study to experimentally establish the mechanical properties of the Bi-2212 winding pack.

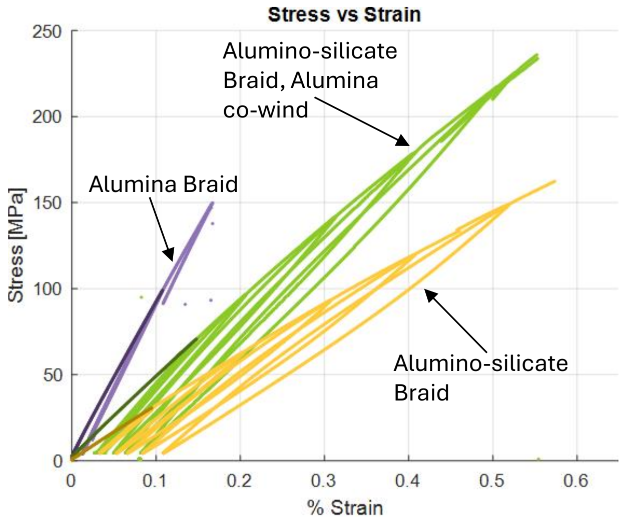



***Figure 4.1.5.*** *Stress-strain curves from an alumino-silicate braided winding pack sample, an alumino-silicate braided winding pack sample xo-wound with alumina, and an alumina braided winding pack sample.*

To enable such a study, a cost-efficient method was devised to emulate a coil winding pack without building actual coils. Braid-insulated Bi-2212 wire was wound in several layers onto a racetrack-type mandrel made from Inconel-600 and annealed in flowing oxygen, as depicted in **Figure 4.1.4**. This racetrack-type coil pack was then vacuum-impregnated with epoxy and sectioned into several straight, rectangular samples. These samples were then equipped with an array of film strain gauges and load-tested in an MTS machine in liquid nitrogen at 77K. To cover the region of interest for actual magnet operation, these samples were axially loaded and cycled from 0.0 to 0.7% strain in increments of 0.1%. The measurements showed that a significant contribution to the strain in transverse direction was made by the thermal contraction the samples experienced during cool-down. This can affect coil integrity in the radial direction and thus limit its performance. While FEA modeling is already used in magnet design to predict the mechanical stresses and strains experienced by coils, a focus will have to be put on incorporating the effects of thermal stresses on cool-down to educate our coil reinforcement strategies.

The resulting stress-strain curves can be seen in **Figure 4.1.5.** The measurements showed the alumino-silicate braided samples co-wound with alumina had a Young's modulus of 47.7GPa. This is almost 1.5 times the stiffness of the alumino-silicate braided samples which were found to have a Young's modulus of 32.3GPa. The alumina braided samples had an even higher Young's modulus of 86.8GPa. This is over 2.5 times the stiffness of the alumino-silicate braided samples and 1.8 times the stiffness of the samples co-wound with alumina fibers. This shows that the inclusion of pure alumina fibers increases the stiffness of the winding pack and suggests that replacing the traditional alumino-silicate braid with an alumina braid will strengthen it. Future experiments have been planned to test other high-strength winding pack compositions.

This experimental set-up provides a relatively cost-effective method of testing novel winding pack reinforcement methods. So far, tests have been done to see the effects of replacing the traditional insulating braid material, alumino-silicate, with a braid made from stronger alumina fibers. Winding pack samples with three compositions were made using NHMFL-61 epoxy. The first consisted of Bi-2212 wire, coated with $TiO_2$ and insulated with alumino-silicate braid. The second included Bi-2212 wire, coated with $TiO_2$,

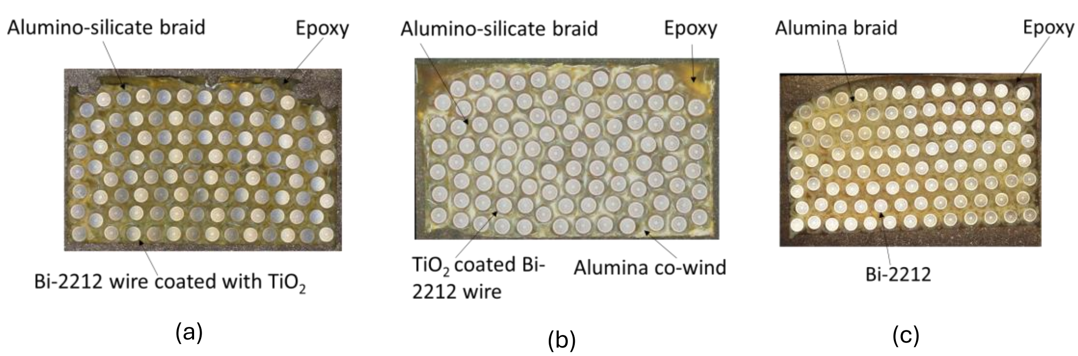



***Figure 4.1.6.*** *Transverse cross-sections of (a) alumino-silicate braided winding pack sample, (b) alumino-silicate braided winding pack sample co-wound with pure alumina, (c) pure alumina braided winding pack sample.*

insulated with alumino-silicate braid co-wound with pure alumina fibers. The third composition involved Bi-2212 wire braided with alumina fibers. Cross-sectional images of the samples can be seen in **Figure 4.1.6.**

**Over-Pressure Heat Treatment (OPHT) Process and Furnace Development and Implementation**

The commissioning of the large OPHT furnace with its original heater insert revealed that the thermal insulation between heater elements and furnace wall was too thin for operation at high pressures. At these pressures, the Ar-$O_2$ gas mix becomes supercritical and starts behaving more like a liquid than a gas, which substantially alters the thermal properties of the compressed, porous ceramic fiber insulation typically used in high-temperature furnaces. In 2024 we received and installed a new heater insert with thicker insulation (furnace ID now 153mm) and started recommissioning of the furnace. After evacuating and drying out of the furnace for several days initial tests were carried out at environmental pressure with a large thermal mass placed inside the furnace, **Figure 4.1.7.**

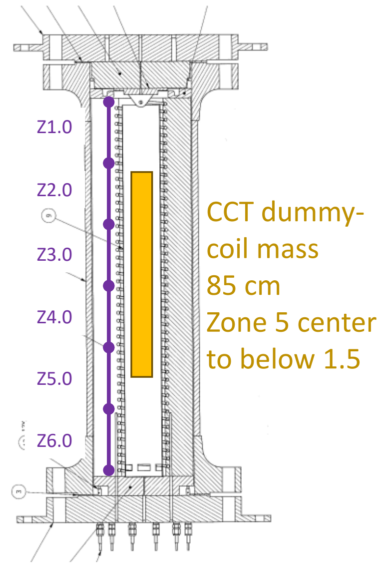



***Figure 4.1.7.*** *Cross-sectional sketch of the large OPHT furnace with the new heater and placement of the dummy coil mass inside. The furnace zones are labeled on the left.*

First coils have been heat treated in the new setup while fine-tuning is still ongoing to increase the homogeneous zone further. This included the installation of new wiring to allow the furnace to run at 100% output power over an extended time frame. The achievable homogeneous zone in this furnace is about 35 cm, which is lower than originally expected but sufficient for many solenoids that we intend to build (**Figure 4.1.8)**. With the large OPHT furnace moving into full commissioning, the plan for 2025 is to also refurbish the smaller OPHT furnace with a new heater system and bring it back online by the end of this year.

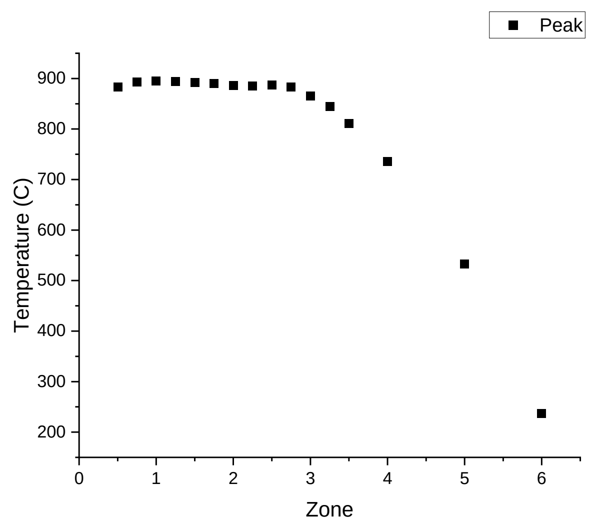



***Figure 4.1.8.*** *At 50 bar pressure the homogenous volume in the furnace extends to a little less than 1.5 zones, which equals to about 35cm.*

**Development of REBCO Characterizations and Partnerships to Improve the Conductor Supply Chain**

At present, none of the 10 manufacturers of REBCO conductor worldwide carry out characterizations at the high-field conditions for which the conductor will be used in MagLab's frontier magnet projects and research areas. This requires MagLab to continually develop and improve conductor characterizations and apply them to all conductors being received.

A strong synergy exists with the fusion community, creating opportunities to advance both MagLab's interests as well. As several companies develop REBCO magnets for plasma confinement tokamaks operating at 20K and magnetic flux densities (B) of 20T and above, the transport properties of conductors are being optimized for these conditions by tailoring the flux-pinning nanostructure. The MagLab is one of the few laboratories where high-field transport tests can be done. In 2024, we implemented a newly developed miniature variable temperature probe to measure transport critical currents (Ic) at fixed orientation at a temperature range from 10K to 55K in background magnetic flux densities up to 31T generated by a resistive user magnet. We aimed to explore Ic variability for R&D tapes manufactured by SuperPower with variable Zr doping and growth conditions. SuperPower recently started to offer a new product, so-called "HM" tapes for high-field magnets, with increased Zr (15% or more Zr), which increases the number of artificial pinning centers and improves conductor performance at low temperatures and high fields compared with the previous product, so-called "AP" tapes for advanced pinning (7.5% Zr). The AP tapes are used in MagLab's 32T and 40T superconducting magnets. Interestingly, the HM conductors have performance *too high* for present MagLab magnet designs operating at <5K because of over-stress and overheating during a potential quench.

With the assistance of funds from the DOE-INFUSE program, MagLab facilities were deployed to characterize new R&D tapes from SuperPower. These HM conductors were grown with even larger fractions of Zr doping, 20% and 25%, where transport data measured up to 31T is shown in **Figure 4.1.9**. All tested short samples are 4mm wide. The results show how additions of pinning continue to improve the critical current. Since SuperPower is the primary supplier of conductor to MagLab for its magnet projects, the characterizations, and feedback provided via the INFUSE program helped improve process controls needed to deliver a reliable and reproducible conductor. The characterizations were important to qualify this manufacturer for privately funded fusion activities, where scaling methods reported previously indicated that the new HM conductors achieve a current density of over 900A/mm$^2$ at 20T and 20K, well above the company's specification of 750A/mm$^2$.

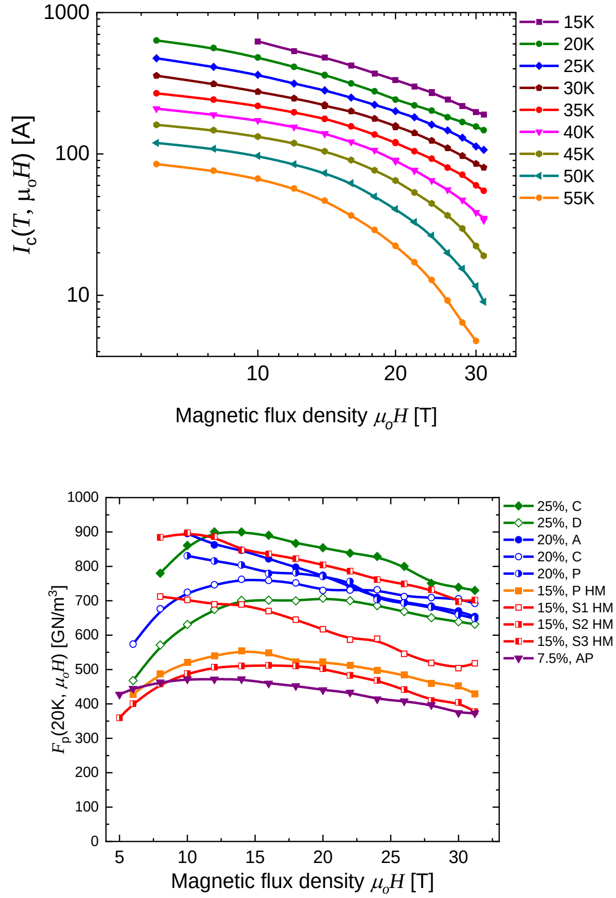



***Figure 4.1.9.*** *Example critical current vs magnetic flux density for a R&D sample with 20% Zr doping measured up to 31T is shown in the top plot. The bottom plot shows how the overall pinning force continues to increase as Zr is added, from 7.5% (black curves) to 15% (red), 20% (blue) and 25% (green).*

## High-Field Coils Made with REBCO

In early 2023, we made and tested "Little Big Coil 4" or LBC4, which continues our exploration of no-insulation magnets with very high winding current density. LBC4 is wound with conductors from the edges of 12mm production tapes, where only one edge is mechanically slit with evident cracks in the ceramic superconductor and the other edge is the natural edge of the Hastelloy. LBC4 was wound in such a way that every slit faced inward towards the LBC4 center, which mitigates the risk that stress from induced screening currents propagates cracks from the slit edge. This particular single-slit conductor usage and slit edge orientation was motivated by *postmortem* observations of LBC3, a coil that reached a record-high DC field of 45.5T by generating 14.4T in the 31.1T NHMFL Bitter magnet but also exhibited plastic conductor damage along edges that underwent large screening current stress (SCS). Remarkably, two of LBC3's pancake coils showed less conductor damage than the other 14 pancakes because the tape slit edge happened to face inward, suggesting the connection between crack propagation and SCS.

To explore this apparent paradox, LBC4 was wound completely from single-slit tapes whose slit edges were all pointed towards the coil center, shown in **Figure 4.1.10.** Indeed, almost no damage was seen on LBC4 after attaining 44.0T, validating the hypothesis about slit edge orientation and mitigating SCS induced conductor damage. However, LBC4 did not reach a new world-record field. After the LBC4 test, from mid-2023 to early 2024, our *postmortem* showed that the key reason was a specific peculiarity of the MOCVD tapes used in our LBC coils. The edges of the 12mm production tapes have a markedly higher density of current-blocking CuO and *a*-axis grains that reduce the critical current below that of the interior of the production width. When slit to 4mm for delivery to us, this meant that one edge of the tape had lower critical current than the other. Measurement of the transverse $J_c$ variability by our reel-to-reel technique and subsequent input of the data into the SCS model explained both the stress behavior and the field achieved by LBC4.

Further computations lead us to propose another LBC test to reach 50T with higher $I_c$ conductors. In 2024, we aimed to test new Little Big Coils using laser-slit edges, thicker REBCO, and pulsed-laser-deposition

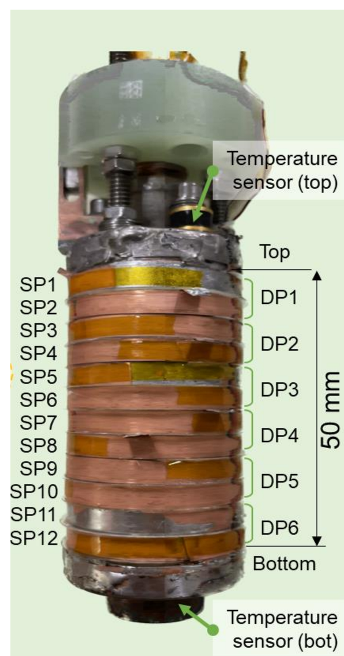



***Figure 4.1.10.*** *LBC4 coil after in-field testing generating a total field of 44T.*

(PLD) conductors made for compact superconducting fusion magnets. These conductors were thought to improve upon mechanically slit MOCVD conductors that were used until now. Indeed, we made and tested LBC5, which is wound with recent, higher $I_c$ conductors produced by a top-tier manufacturer. Detailed measurements and inspections of LBC5 uncovered key differences and new questions: (1) shiny and glowing copper surface leading to too much low contact resistance; (2) thicker REBCO layer leading to flux jump at low temperatures and high fields; and (3) thicker substrate leading to continuous winding failure due to too much strong elasticity during the coil winding. These issues pose a risk to the mechanical integrity of coils. Unfortunately, during the test the 31T NHMFL Bitter magnet tripped so the background field instantaneously decreased from full field of 31.2T to 0T. This event induced huge currents in LBC5 and caused damage to the windings of the magnet, **Figure 4.1.11**.

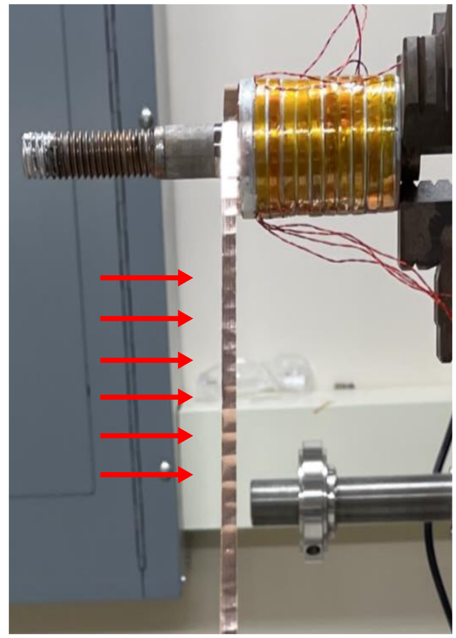


***Figure 4.1.11.*** *The deconstruction of LBC5 (i.e. unwinding) revealed a wavy pattern of sharp kinks caused by the quench of the outsert magnet, which in turn exerted high forces on the conductor of the coil (arrows).*

One key *postmortem* observation was that there were void spaces in module coils, so stresses due to current induced by the Bitter magnet trip led to concentration of strain at the void space. This was revealed by periodic conductor damage with spacing equal to the circumference of turns. We learned new information about radial stress and buckling modes associated with low friction coefficients between individual turns, probably coming from the polishing process to make tapes shiny. For 2025, we intend to investigate new Little Big Coils using recent laser-slit, thicker REBCO, and PLD conductors. They were produced by another manufacturer, having a thinner substrate presumably leading to more flexibility and a higher friction coefficient. Based on these characteristics, we aim to explore reaching towards 50T.

**DC Resistive Magnets**

The 2024 Resistive Magnet Program has been marked by continued operational success, key maintenance milestones, and advancements in coil durability. The ongoing reliability of the 36T SCH and 41.5T resistive magnets ensures that the NHMFL remains a leader in high-field magnet technology, providing a stable and powerful platform for cutting-edge research. Looking to the future, a proposal has been submitted for a large-bore resistive magnet as a strategic investment in future scientific and technological advances to continue to expand our high-field user magnet capabilities.

***Magnet Operations***

The MagLab's 36T, 1ppm Series-Connected Hybrid (SCH) magnet has completed its eighth year of successful operation as the highest field 1ppm magnet in the world. Its resistive insert provides 23T within a 13T superconducting background field. After accumulating over 4,240 hours of operation, the A-coil was replaced in late 2022. To restore 1ppm field uniformity, the A/B-coil assembly underwent recalibration, alignment, and tuning in 2023 with minimal downtime. Since then, the new A-coil has completed 531 hours of user operation, while the outer coils continue to function reliably as originally installed.

The 41.5T all-resistive magnet, which has been in operation since 2017, continues to set performance benchmarks. In June 2023, the A/B-coil assembly was replaced after exceeding 2,000 hours at full field—nearly twice the typical lifespan of similarly stressed coils. The replacement coils have since added another 1,200 hours of operation. In August 2024, the D-coil was replaced after an impressive 2,900 hours, further demonstrating the durability of these high-stress components. The outer C and E coils, which have been in use since 2017, remain operational with over 3,160 hours of service. As a result, the 41.5T magnet remains the most frequently used system in the DC facility.

***Maintenance and Coil Longevity Improvements***

To ensure continued reliability, the MagLab carried out extensive maintenance and fabrication efforts in 2024. This included the production of four spare resistive coils and the completion of over 20 major maintenance actions, such as coil tightening, replacements, and scheduled interventions. A notable advancement this year was the development of a new D-spare coil for the 41.5T magnet. By modifying the stacking pattern, the design maintains field strength while reducing current density, which is expected to enhance coil longevity. This innovation reflects ongoing efforts to improve the resilience and operational lifespan of resistive magnet technology.

### *Proposal For A Large Bore Resistive Magnet (LBRM)*

A proposal for a Large Bore Resistive Magnet (LBRM) capable of generating a direct current (DC) magnetic field of 22.5 Tesla within a 195mm room-temperature bore has been submitted to the NSF Major Research Instrumentation program. This initiative will position the NHMFL to lead advancements in high-field magnet technology, crucial for pushing the frontiers of condensed matter science, nuclear magnetic resonance (NMR), and other high-field applications. No existing magnet worldwide offers the capabilities planned for the LBRM. The present technology in large bore resistive or superconducting magnets peaks at lower fields, which are insufficient for the cutting-edge research anticipated. The magnet design utilizes Florida-Bitter disks, configured to maximize field strength while ensuring durability and reliability. As shown in **Figure 4.1.12**, two of the three coils directly use the design of coils in the widely used 41.5T resistive magnet and design a new innermost Coil A. The construction process will leverage NHMFL's extensive experience and existing infrastructure, ensuring a cost-effective and efficient build. Beyond its scientific contributions, the LBRM will enhance U.S. technological leadership in high-field magnet technology. It will provide critical infrastructure for developing next-generation high-temperature superconductors and their applications in various industries, including energy and healthcare. Furthermore, the project aligns with national goals for advancing scientific infrastructure and maintains NHMFL's position as a global leader in magnet technology research.

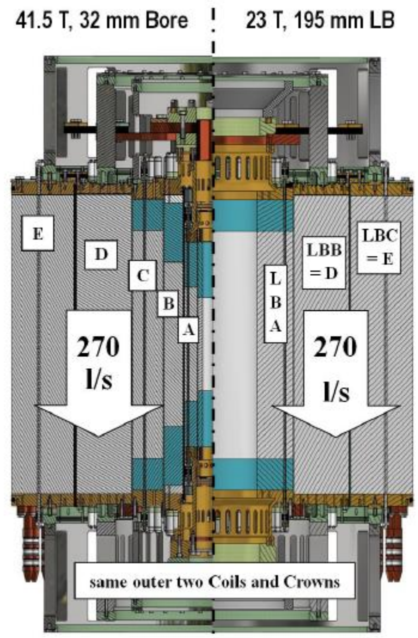



***Figure 4.1.12.*** *The LBRM has three coils as shown in the right cross-section. The two outermost coils will copy the outermost coils of the 41.5T resistive magnet shown on the left side and the inner coil will be newly designed to achieve 22.5T in a 195mm clear bore.*

### Pulsed Magnets

The 2024 Pulsed Magnet Program has continued to improve and upgrade its supply chain by introducing long-length user quality CuCrZr conductor to replace Glidcop AL60 conductor that was suffering from quality issues. This conductor was completely integrated into production of Coil 7 for the 60T Controlled Waveform magnet. Further coil winding developments were completed including comprehensive quality control measures, brazement tests to ensure proper conductor properties of CuCrZr, and detailed winding and vacuum-pressure impregnation (VPI) procedures to ensure delivery of quality coils to our pulsed field facility at Los Alamos National Laboratory.

### *Conductor Development and Supply*

The 2024 research and development efforts in high-strength, high-conductivity conductors have led to significant improvements in materials used for high-field pulsed magnets. Development of CuAg conductors continues to proceed and the development of CuCrZr conductors has extended magnet lifespan and operational efficiency. These breakthroughs strengthen the capabilities of NHMFL magnet systems.

The 65T short-pulsed magnets are our workhorses for users. Because of large demands from users, we are in shortage of the conductors for these magnets. We therefore made efforts to develop conductors for 65T magnets. To increase the yield, we made significant efforts in the development of CuCrZr conductors to replace Glidcop AL60.

We used hardness as one of the parameters to optimize the fabrication parameters and started with three precursors (#1, #2, and #3). The hardness of solution-treated samples was 68±3 HV for all three precursors. Drawing deformation rapidly increased hardness to 113±6 in #2 solution treated (S) and drawn (D) wire at strain (є) =0.76, and to 131±1 HV in

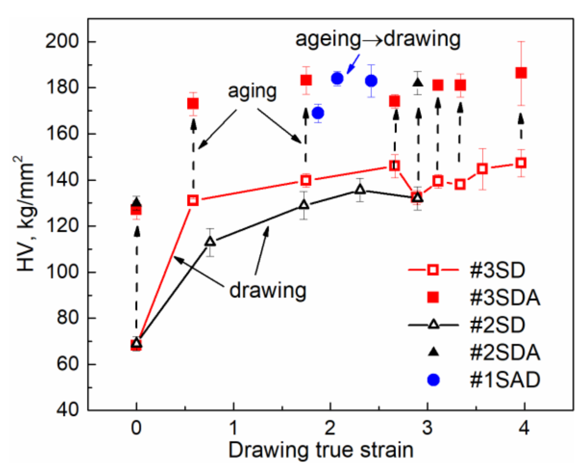



***Figure 4.1.13.*** *The effect of drawing and ageing on hardness in samples with different geometries (named as samples #1, #2, and #3). S, A, and D stand for solution treatment, aging, and drawing, respectively. The order of them indicates the treatment sequence.*

#3SD at ϵ =0.59 as shown in **Figure 4.1.13**. After that, the hardness increase became smaller with further drawing, reaching a plateau at ~140 HV in both wires.

The subsequent aging treatment further hardened the material. Aging increased the hardness by 50 HV (38%) in #2SD at a ϵ of 2.90. In #3SD, the hardness increased by 42 HV (32%) at ϵ of 0.59; 44 HV (24%) at ϵ of 1.75, 42 HV (30%) at ϵ of 3.10; and 39 HV (27%) at ϵ of 3.97. Correlating the aging-induced hardness ϵ with drawing strains, we found that age-hardening values appeared independent of deformation strain values at the strain range of 1.75 ~ 3.97, and high deformation strain did not accelerate aging-induced hardening. The maximum hardness level in both #2SDA and #3SDA were approximately the same as that of #1SAD (183±7 HV). This is consistent with the ultimate tensile strength results reported in our previous work. This observation indicated that the sequence of cold deformation and aging did not influence the eventual achievable properties.

On the other hand, in only solution-treated samples, the aging effect was compared. Aging increased hardness from 68±3 HV to 127±4 HV (an increase of ~87%) in #2SA, and to 130±3 HV in #3SA. This hardness increase was almost equal to the increase in #3SD at a ϵ of 0.59. Therefore, we concluded that the hardness of solution-treated samples was nearly doubled by immediate subsequent treatment, regardless of whether it was cold drawing or aging[4].

Most notably, the sequence of cold deformation and aging did not affect the final CuCrZr hardness, suggesting that either process order could be employed in manufacturing. Using the optimized fabrication process, CuCrZr conductors were produced in collaboration with vendors for coil A of the 65T pulsed magnet. The first magnet built with these conductors demonstrated remarkable performance, completing 1,577 shots, including 972 shots at fields of 60T or higher. In contrast, earlier 65T magnets using GlidCop AL60 conductors typically achieved only 500 shots at these field levels. The new CuCrZr conductors thus significantly outperformed their predecessors in durability and reliability. Encouraged by these results, conductors were also produced for coil B of the 65T magnet. Additionally, longer CuCrZr conductors were fabricated for the 60T CW magnet and coils 3 and 4 of the 100T magnet. In 2024, the longest continuous conductor length achieved was 600 meters. This advancement enables the fabrication of larger coils without joints between layers, reducing cost, stress concentrations, and performance degradation associated with interlayer joints. CuCrZr conductors consistently showed high tensile strength, with values ranging around 570 to 600MPa, which were used to update the properties in project databases. This high tensile strength is crucial for the durability and performance of the magnets under extreme operational conditions.

***Figure 4.1.14.*** *Coil 7 of the 60T Controlled Waveform (CW) was impregnated in the facility shown on the top left. The top right shows a photo of Coil 7 just after the epoxy curing process. The bottom left and right shown the meticulous "breaking out" of the coil from the surrounding cured epoxy to prepare for final shipment to the MagLab Los Alamos National Laboratory Pulsed Field Facility.*

### *Coil Fabrication*

Significant milestones included the completion of the winding and subsequent vacuum pressure impregnation (VPI) processes for the 60T Controlled Waveform (CW) coil 7 as shown in **Figure 4.1.14**. The project also moved forward with the 100T coils, where delays due to material defects were mitigated by developing long-length conductors to minimize joint use. Post-winding inspections included advanced non-destructive testing methods such as eddy current testing, ultrasonic inspections, and x-ray imaging to identify any internal defects or misalignments within the coil structure before moving on to the impregnation and curing phases. The primary focus was on the fabrication and assembly of the 60T CW and 100T coils.

Brazing, a necessary process for joining conductor lengths, was found to reduce the mechanical strength of the newly developed high-strength, long-length CuCrZr conductor. Initially, brazing led to a reduction in tensile strength by about 25%, although further tests with increased sample sizes showed varying degrees of strength reduction, indicating the need for optimized brazing techniques to minimize impact on conductor integrity. Testing was completed to fully understand and mitigate the impacts of brazing on the mechanical properties of CuCrZr, particularly to ensure that the joints would withstand operational stresses without degrading the overall performance of the coils. A picture of the brazement required to minimize stress concentrations at the lead-in and -out of the coil is shown in **Figure 4.1.15.**

***Figure 4.1.15.*** *The Lead-in and -out terminals of Coil 7, where brazing of additional support hardware is required, are highly engineered to reduce stress concentrations at the complicated three-dimensional stress state at the ends of the coil.*

**40T All-Superconducting Magnet**

***Conductor***

During 2024, 8529 meters of REBCO conductor were procured and tested, and subjected to rigorous Quality Control (QC) tests. These included measurements of critical current ($I_c$) at various angles as shown in **Figure 4.1.16** using the recently developed torque magnetometry probe, residual resistivity ratio (RRR), peel strength, critical current versus strain, Young's modulus, and micro-structure examination. The tests affirmed the suitability of the graded $I_c$ conductors primarily used in the Large-Scale Coil (LSC). Additional evaluation was undertaken to potentially qualify a second vendor for the REBCO conductor as shown in **Figure 4.1.17**, but the mechanical properties of tapes from alternative suppliers did not meet the project's specifications, leading to the continuation of the exclusive collaboration with the primary vendor, SuperPower Inc.

***Test Coils***

Several coils were tested this year to qualify the 40T design, including another mini-fatigue coil, test coil 2c (TC2c), the Combined Axial-load Tape Titling (CATT) coils and the Large-Scale Coil (LSC). A mini-fatigue coil was fabricated and tested to verify the fatigue life of crossovers based on both REBCO and Bi-2223. The coil was tested up to 50,000 cycles in the 8T cryo-cooled magnet. The measured strain reached a peak of more than 0.3% during each cycle and the coil did not show any degradation after 50,000 cycles.

After testing eight modules from Test Coil 2 (TC2) individually, four of them were chosen to be re-stacked along with two end modules that had not been tested individually. The new assembly was designated TC2c. The purpose of this test was to further verify our ability to predict the $I_c$ of a coil of multiple modules which should be operated at > 70% of $I_c$.

The coil was tested in liquid helium in a background field provided by the superconducting outsert of the 45T hybrid magnet. Quench protection tests were performed repeatedly as predicted and no coil degradation was observed. Its operating current was limited to 650A by the end module due to the degraded

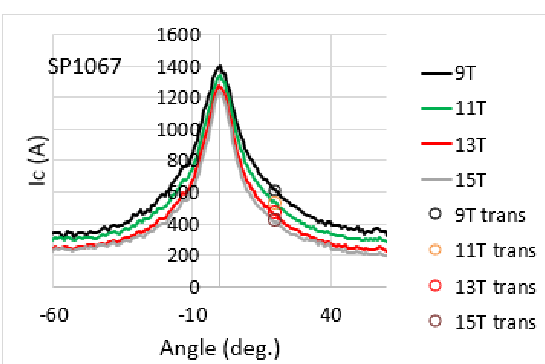



***Figure 4.1.16.*** *Torque magnetometry test results of tape SP1067.*

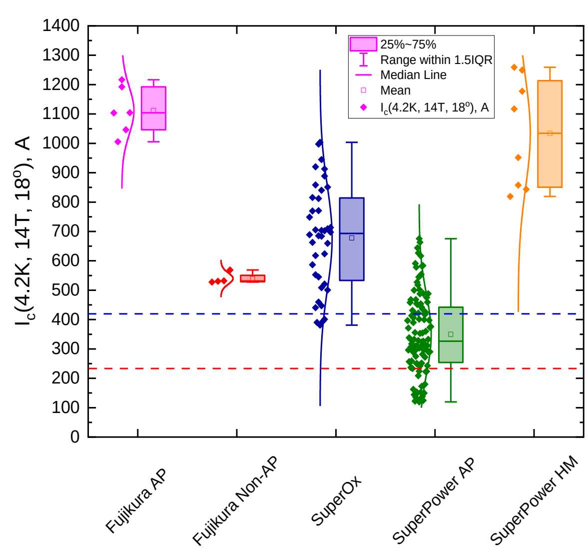



***Figure 4.1.17.*** *Comparison of transport $I_c$(4.2K, 14T, 18°) for tapes from different vendors*

terminal, a typically challenging region in high-field magnets. We believe this limitation was caused by repeated assembly and disassembly.

Modules were previously tested in axial compression without high current and the compressive limit was found. However, in operation of a real coil, the tapes in the modules rotate so the turns are no longer cylindrical, but conical. No testing had been done on the axial compression strength of modules with these tilted turns. Three test coils named CATT#1 to #3 were tested to set the design limit for the combination of tilting angle and axial pressure. The tilting angle is a key parameter in REBCO coils due to the relatively high level of shielding currents that cause the thin REBCO tape to tilt at an angle from the axial direction of the coil. The viable region of the combined axial stress and tilt angle has initially been verified as shown in **Figure 4.1.18.**

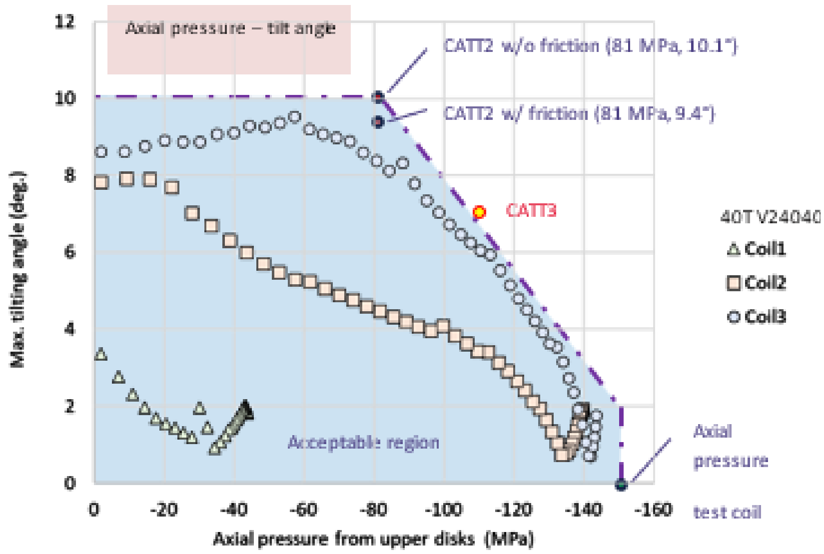
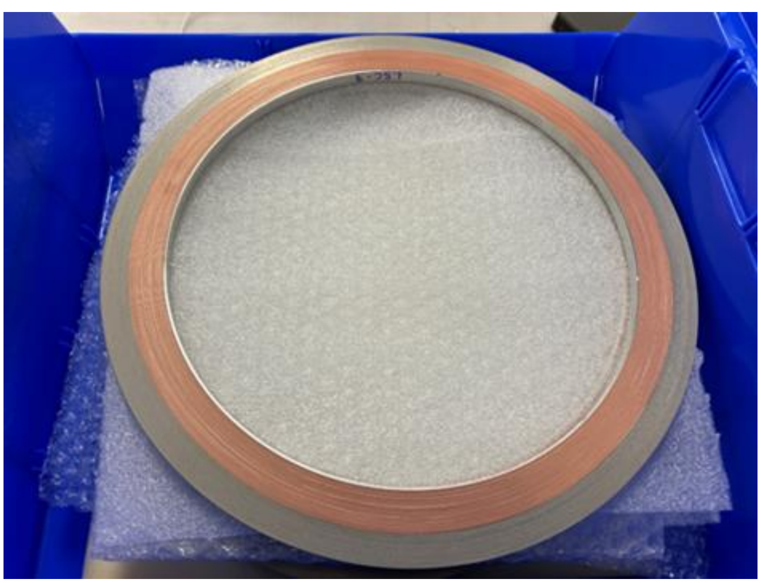



***Figure 4.1.18.*** *The combination of axial pressure and the maximum tape tilt angle. The blue region is believed to be a safe operating space based on the coil test results and the actual 40T magnet design lies within this space.*

The LSC shown in **Figure 4.1.19** was tested to verify the HTS coil technologies on a large scale, similar to that of the real coils for the 40T magnet. The design of the LSC was completed by February 2024. It consists of 22 modules of 130mm inner radius and 161mm outer radius, 21 quench protection heaters, and uses a total net amount of 3.7km of REBCO conductor. Its self-inductance is 1.022H and the stored energy is 0.213MJ at a full operating current of 645A. The design was reviewed by the Technical Advisory Committee (TAC). The LSC has inner and outer diameters equal to those of the outermost REBCO coil of the 40T magnet and half the length.

We finished the coil fabrication and first-round test in the 4th quarter of 2024. The coil did reach a maximum current of 609A, but less than the expected operating current of 650A. We are still investigating the reasons for the low operating current.



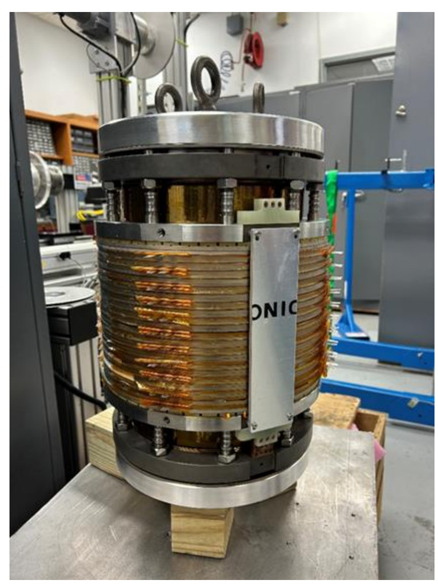


***Figure 4.1.19.*** *A single module from the LSC is shown on the left. The completed LSC stack with all 22 modules after pre-compression is shown on the right.*

***Design***

The 40T magnet's design is continuously refined based on iterative testing and simulation results including those from the recent LSC. The design features nested HTS coils, graded superconductors, and advanced materials like Hastelloy for co-winding, aimed at optimizing the magnet's performance across various operational parameters such as field strength, mechanical stresses, and thermal characteristics. Regular reviews by the project's External Technical Advisory Committee (ETAC) and other oversight bodies ensure that the design is consistent with best practices from the global REBCO magnet community and that it aligns with the critical specifications required for its final application in high-field magnetic environments. **Figure 4.1.20** shows the field profiles of one of the latest 40T all-superconducting magnet designs. Extensive quench modeling of both the 40T magnet and the LSC has also been completed in the past year. These calculations predict the response of the magnet when the quench protection heaters are energized. If the magnet displays abnormal behavior and an emergency discharge is required, heaters are energized and are expected to drive the coils normal. As the normal zones grow, energy stored in the inductance of the magnet is converted into heat within the coils. **Figure 4.1.21** shows the results in the REBCO coils. All three coils start at 650amps of current (solid lines). When the heaters are energized, the temperature starts to rise in all the sections of the REBCO coils (dashed lines). As voltages develop, diodes separating the three coils start to conduct allowing current to bypass some hot spots. The calculations indicate that the peak temperature remains below 220K which means the thermal stress should be acceptable and that the current decays with time constant < 0.5 seconds.

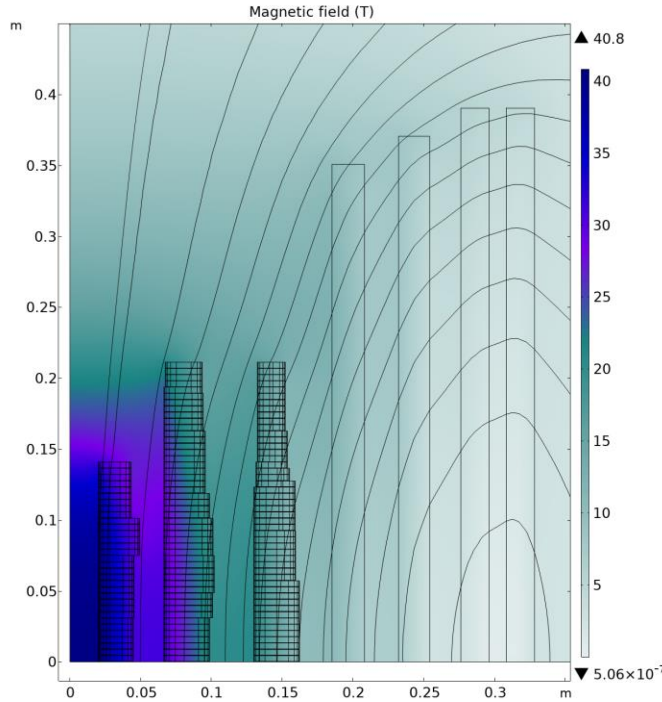



***Figure 4.1.20.*** *Magnetic Field of Preliminary Design. The axis of symmetry is on the left and the mid-place is at the bottom. The three inner coils use REBCO tape and have graded external reinforcement. The outer four coils use $Nb_3Sn$ and NbTI superconductors.*

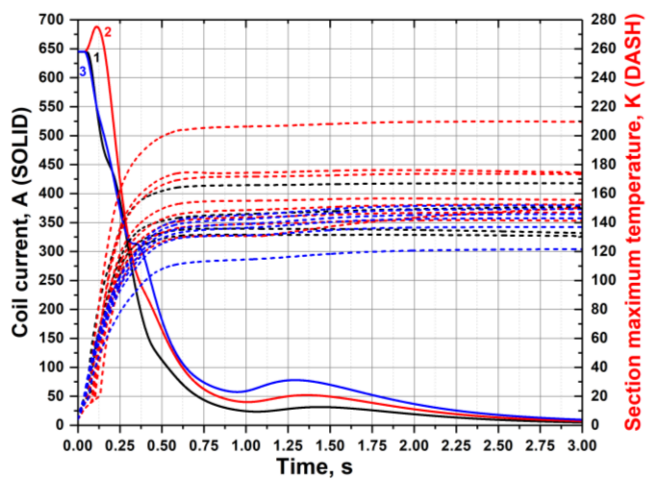



***Figure 4.1.21.*** *Quench simulation.*

**Commercial Partnerships**

MS&T is working with a commercial partner, Cryomagnetics, through an STTR collaboration. The goal of this partnership is to develop the technology for a commercially available 25T all-superconducting magnet using a low-temperature superconducting outsert and a high-temperature superconducting insert designed and built by MS&T. A novel vacuum pressure impregnation (VPI) process was developed to eliminate the deleterious effects sometimes associated with REBCO tape combined with the VPI process. The HTS insert coils being built and tested in MS&T should be delivered to Cryomagnetics by the second quarter of 2025.

## 4.2 Center for FAIR and Open Science

### INTRODUCTION

The MagLab's Center for FAIR and Open Science (CFOS) aims to ensure that all products of research generated at the MagLab are shared according to the principles of FAIR data[1] and open science (FAIROS). The FAIR principles provide guidance for ensuring that data are findable, accessible, interoperable, and reusable by both humans and machines, enabling reproducibility and advanced applications that utilize artificial intelligence and machine learning (AI/ML).

Making data FAIR and open is recognized by both the United States federal government and a broad array of intergovernmental organizations as being essential to accelerating the pace of innovation and making the social and economic benefits of science available to all. To do this CFOS develops regulations, policies, and recommendations on FAIR and open science for all users, including both instrument users who directly utilize magnet systems and data users who access MagLab datasets through open access repositories. The National Science Foundation's (NSF) Public Access Plan 2.0[2] and related provisions in the current Proposal & Award Policies & Procedures Guide[3] are the primary guiding documents used in this process, but documentation and best practices from across the fields of science and engineering are also considered. CFOS also works to address challenges associated with the intersection of information assurance with data management practices. The implementation of measures to make data FAIR such as persistent identifiers (PIDs) for researchers and data indexing systems that allow the tracking of research data provenance also have important implications for research security and resilience.

CFOS recognizes technical and cultural challenges within the disciplines of research practiced at the MagLab that complicate the adoption of FAIR and open data sharing practices. CFOS addresses these challenges by providing knowledge and tools to users that simplify the process of implementing FAIROS, working towards making it an integral and seamless part of the research experience. CFOS staff also participate in research community organizations to help drive the development of solutions to the implementation challenges that MagLab users face.

### USER SUPPORT

MagLab users face a growing complexity in applying FAIROS to their work. For example, data sharing policies from funders, publishers, and institutions increasingly require that products of research, including the raw data underlying the research findings, be made immediately and publicly available upon publication (or other dissemination). CFOS aims to ensure that users have access to tools and knowledge that minimize the time investment required to meet these requirements and maximize the value derived from applying FAIROS principles such as increased citation of the work.

In 2024, CFOS provided support to MagLab users in a variety of ways. Data management and sharing plans (DMSPs), primarily based on guidance from the NSF Division of Materials Research, were made available in a centralized location on the MagLab website to ensure their accessibility for users. DMSPs are available for the MagLab as a whole and for each user facility, providing users with details specific to their discipline of research. CFOS personnel also assisted MagLab personnel by writing/reviewing DMSPs for grant proposals submitted to NSF.

MagLab users also received direct support from CFOS and affiliated MagLab staff in meeting sharing requirements for data, publications, software, and other products derived from their use of MagLab resources. The MagLab maintains its membership to Open Science Framework (OSF), a generalist open access repository that allows users to upload and share their work. Research products can be associated with metadata and assigned PIDs to enable their findability and meet sharing requirements for their work. In the MagLab's Pulsed Field Facility (PFF), CFOS-affiliated staff Lyudmila Balakireva and Fedor Balakirev provided specialized tools that allow PFF users to automatically upload data and metadata collected at the facility to OSF, providing a convenient means of access to user-acquired data and simplifying the process of data sharing.[4]

In the future, CFOS will continue to provide up-to-date guidance and on-demand support for MagLab users. We anticipate that the release of a supplement to NSF's Public Access Plan 2.0 will mandate the use of persistent identifiers for researchers, infrastructure, and research outputs and will necessitate changes to user practice, and CFOS is preparing to address them well in advance of their required implementation.

## FSU COMPUTER SCIENCE COLLABORATION

This year, faculty from the MagLab's Ion Cyclotron Resonance (ICR) user facility entered into a collaboration with faculty from the Florida State University (FSU) Computer Science department funded by Vice President for Research Stacey Patterson. Students in the Computer Science department began to work with MagLab faculty on a variety of data analysis and CI problems with the goal of submitting grants that will bring additional funds to Florida State University and the MagLab. CFOS member David Butcher participated in this effort and submitted a joint grant application under the NSF's Campus Cyberinfrastructure program. Additional applications are planned for 2025 under the NSF's Collaborations in Artificial Intelligence and Geosciences (CAIG) and Accelerating Computing-Enabled Scientific Discovery (ACED) program solicitations. David Butcher also participates in the supervision of Khaled Alharbi, a graduate student in the Computer Science department who is researching the development of CI for cataloguing and annotating AI/ML-ready datasets and application of machine learning models to mass spectrometry data.

## COMMUNITY OUTREACH AND EDUCATION

One of the major challenges that researchers face in the application of FAIROS practices is a lack of appropriate solutions, e.g., lack of necessary cyberinfrastructure (CI) and widely recognized community standards for representation of data and metadata. It is well understood among researchers, policymakers, funders, and other stakeholders that the advancement of FAIROS across the fields of science and engineering will require widespread research community coordination and participation. In recent years there have been a broad variety of initiatives to foster coordination within and between disciplines of research. CFOS participates in these activities to keep the MagLab up to date with current best practices and advocate on behalf of MagLab users.

### Materials Genome Initiative PI Workshop

MagLab faculty attended the 2024 Materials Genome Initiative PI Workshop held in Washington D.C. from July 30 to July 31at the Johns Hopkins University Bloomberg Center. This meeting helped to inform MagLab faculty, including CFOS personnel, as to the state of the art in collection, curation, and exploitation of materials data. David Butcher presented a poster focusing on data flows and data management challenges within the ICR user facility.

### FSU Open Scholar

CFOS participates in the activities of FSU's Open Scholarship Taskforce (OST), a group open to all graduate students, postdocs, faculty, and other academic staff at FSU. The Taskforce discusses subjects such as open access, open publishing, and FAIR data. It provides an excellent opportunity for discussion among researchers and librarians on what can be done to promote FAIROS at Florida State University and elsewhere. OST also continues its discussion with senior university leadership to advocate for open scholarship at all career levels and in all disciplines of research at FSU.

### CI COMPASS Collaborations

In 2024, CFOS continued its collaborative efforts with CI Compass, the NSF Cyberinfrastructure Center of Excellence, to continue to develop strategies for implementation of new CI at the MagLab. The mission of CI Compass is to "provide expertise and active support to CI practitioners at NSF Major Facilities in order to accelerate the data lifecycle and ensure the integrity and effectiveness of the CI upon which research and discovery depend". This support has been critical to helping the MagLab advance its plans for implementing FAIROS practices.

### CI COMPASS FAIR WG

In addition to supporting major facilities, CI Compass maintains a FAIR Working Group that brings together CI professionals and major facility staff to discuss FAIR data implementation at major facilities. Throughout 2024, the Working Group met regularly to discuss the latest innovations in CI and data management to facilitate FAIROS, including new standards for the representation of data and metadata and the facilitation of knowledge network construction and generating data ready for exploitation by artificial intelligence and machine learning technology. These discussions helped to facilitate new connections with groups working on solutions for FAIROS. In 2025, CFOS will continue to meet and discuss concrete implementation of CI concepts developed in collaboration with the Working Group and as part of the collaboration with FSU Computer Science.

### Cyberinfrastructure For Major Facilities Workshop

The biennial Cyberinfrastructure for Major Facilities Workshop was organized by CI Compass and held in Long Beach, California on January 17 and 18, 2024. CI and data management professionals from a variety of major facilities were brought together with NSF representatives to discuss strategies and challenges for building CI for NSF major facilities. David Butcher attended as an invited speaker and presented on the MagLab's approach to advancing FAIR data, implementing persistent identifiers, and engaging users. David also assisted in drafting a workshop report which was published in June 2024 and is publicly available on Zenodo.[5]

**CI COMPASS Fellowship**

This year, the MagLab hosted an undergraduate computer science student as part of the CI Compass Summer Fellowship program. This program provides an excellent career development opportunity for students in STEM fields to learn about NSF major facilities, helping to inspire and train the next generation of CI professionals. The student hosted at the MagLab worked with faculty member Julia Smith on a project that used machine learning to analyze audio recordings of instruments to predict magnetic coil failures and prevent costly and disruptive damage to magnet systems. Given the success of the first year, CFOS plans to continue its participation in the CI Compass Summer Fellowship program in 2025 and, if possible, host two undergraduate students.

**Consultation with CI COMPASS**

In 2024, CFOS began a consultation with CI Compass regarding the construction of a database for MagLab user facility data. This database is being developed as part of the collaboration between the ICR facility and the FSU Computer Science department. Developing standards such as Science-on-schema.org and CroissantML will be utilized to ensure the data is FAIR, AI/ML-ready, and accessible by users. CFOS personnel will meet regularly with CI Compass investigators throughout 2025 to apprise them of progress and receive guidance.

**FAIROS RCN: FAIR Facilities And Instruments**

The NSF's Findable Accessible Interoperable Reusable Open Science Research Coordination Networks (RCN) program was granted in 2022 with the goal of fostering catalytic improvements in scientific communities focusing on the FAIR principles. In 2024, the second annual meeting of the FAIROS RCN for FAIR Facilities and Instruments was held at the MagLab. Data management and cyberinfrastructure professionals from universities, major facilities, and non-profit organizations across the country visited Tallahassee to discuss a variety of subjects, including the implementation of PIDs for facilities and instruments. The co-PIs of the RCN compiled the findings of the workshop into a publication[7] which summarizes observations and recommended next steps for research communities and RCN participants. In 2025 the final meeting of the RCN will be held in Boulder, CO and CFOS personnel are expected to attend.

### IMPLEMENTATION OF PERSISTENT IDENTIFIERS FOR INSTRUMENTS

The recommendations of the FAIR Facilities and Instruments RCN, the CI Compass FAIR WG, and various other groups throughout 2024 provided the necessary considerations for the implementation of PIDs for MagLab instruments. These PIDs will allow for easier citation and greatly improved tracking of the products of MagLab research. In 2025, CFOS will with work the FSU Libraries and other stakeholders to finalize and implement a strategy for the assignment of PIDs to instruments and develop guidelines for users to include them in published outputs. The outcomes of this effort will be summarized and reported to the FAIR Facilities and Instruments RCN and published in an appropriate journal.

### IMPLEMENTATION OF PERSISTENT IDENTIFIERS FOR RESEARCHERS

The implementation of PIDs for researchers will be critical to the implementation of research security requirements, providing authenticated access for users of MagLab systems, and tracking the products of MagLab research. In 2024, CFOS began the process of obtaining an ORCID membership for the MagLab. This process will be complete in early 2025 and integration of ORCID into MagLab systems and user program policy can begin in earnest.

### USER SURVEY

The annual MagLab user survey now includes questions related to users' knowledge and implementation of FAIROS practices. By tracking answers to these questions, CFOS will be able to monitor progress on user adoption and implementation of FAIROS practices over time, providing valuable metrics. We intend to modify or add questions over time as appropriate. A separate, more comprehensive survey of internal researchers was conducted in 2022 and will be repeated in 2025 after the implementation of public access requirements by various funding agencies, including the NSF, to ensure that the unique needs of MagLab staff are addressed.

## SCIENCE HIGHLIGHTS

A MagLab science highlight contributed by CFOS and published in May 2024 described how an international group of MagLab users were able to combine their own data with a high-quality dataset of dissolved organic matter in natural waterways collected at the MagLab to improve their analysis. The users applied a technique developed at the MagLab's ICR facility called broadband absorption mode processing to lower the error and improve the signal quality, allowing many more chemical compounds to be identified. The authors of the study analyzed data collected in their own lab and reanalyzed a dataset made publicly available by MagLab researcher Amy McKenna in 2022 using the ICR facility's 21 tesla Fourier transform ion cyclotron resonance mass spectrometer to prove the superiority of this data processing method, paving the way for future dissolved organic matter studies to benefit from these improvements.

**Bibliography**


1. Wilkinson, M. D.; Dumontier, M.; Aalbersberg, Ij. J.; Appleton, G.; Axton, M.; Baak, A.; Blomberg, N.; Boiten, J.-W.; da Silva Santos, L. B.; Bourne, P. E.; Bouwman, J.; Brookes, A. J.; Clark, T.; Crosas, M.; Dillo, I.; Dumon, O.; Edmunds, S.; Evelo, C. T.; Finkers, R.; Gonzalez-Beltran, A.; Gray, A. J. G.; Groth, P.; Goble, C.; Grethe, J. S.; Heringa, J.; 't Hoen, P. A. C.; Hooft, R.; Kuhn, T.; Kok, R.; Kok, J.; Lusher, S. J.; Martone, M. E.; Mons, A.; Packer, A. L.; Persson, B.; Rocca-Serra, P.; Roos, M.; van Schaik, R.; Sansone, S.-A.; Schultes, E.; Sengstag, T.; Slater, T.; Strawn, G.; Swertz, M. A.; Thompson, M.; van der Lei, J.; van Mulligen, E.; Velterop, J.; Waagmeester, A.; Wittenburg, P.; Wolstencroft, K.; Zhao, J.; Mons, B. The FAIR Guiding Principles for Scientific Data Management and Stewardship. *Sci. Data* **2016**, *3* (1), 160018. https://doi.org/10.1038/sdata.2016.18.
2. *NSF Public Access Plan 2.0*. https://www.nsf.gov/pubs/2023/nsf23104/nsf23104.pdf.
3. *Proposal & Award Policies & Procedures Guide (PAPPG) (NSF 23-1)* | *NSF - National Science Foundation*. https://new.nsf.gov/policies/pappg/23-1 (accessed 2024-03-05).
4. Balakireva, L.; Balakirev, F. Making FAIR Practices Accessible and Attractive. In *Linking Theory and Practice of Digital Libraries*; Silvello, G., Corcho, O., Manghi, P., Di Nunzio, G. M., Golub, K., Ferro, N., Poggi, A., Eds.; Lecture Notes in Computer Science; Springer International Publishing: Cham, 2022; pp 417–424. https://doi.org/10.1007/978-3-031-16802-4_41.
5. Baldin, I.; Brower, D.; Butcher, D.; Casey, R.; Clark, C.; Deelman, E.; Flynn, B.; Hasan, M.; Kee, K.; Livny, M.; Mandal, A.; Murillo, A.; Nabrzyski, J.; Pascucci, V.; Petruzza, S.; Romsos, C.; Stanzione, D.; Vahi, K.; Virdone, N. *2024 Cyberinfrastructure for U.S. NSF Major Facilities Workshop Report*; Zenodo, 2024. https://doi.org/10.5281/zenodo.11372561.
6. Mayernik, M.; Johnson, A.; Julian, R.; Murray, M.; Mundoma, C.; Ranganath, A.; Stossmeister, G. Persistent Identifiers for Instruments and Facilities: Current State, Challenges, and Opportunities. *J. EScience Librariansh.* **2024**, *13* (3). https://doi.org/10.7191/jeslib.964.

# 5 PUBLICATIONS

## 5.1 PEER-REVIEWED PUBLICATIONS

The Laboratory continued its strong record of publishing, with **334** articles appearing in peer-reviewed scientific and engineering journals in 2023. Among these, **296** acknowledge NSF support for the operation of the NHMFL, and **149** (45 percent) appeared in significant journals. **Table 5.1.1** provides an overview of NSF-acknowledged peer-reviewed and significant peer-reviewed publications by division then non-NSF-funded units.

***Table 5.1.1.*** *Submitted peer-reviewed publications from the OPMS live database. The point-in-time snapshot was on March 25, 2025. A total number of publications per year should NOT be drawn from this report because a submitter may, as appropriate, link a publication to two or more facilities. We note that the State of Florida contributes significantly to NHMFL and hired faculty at UF and FSU to enhance NHMFL programs. Publications from these professors are included as they significantly enhance the NHMFL research effort and are listed here in the UF physics and CMT/E categories.*

| Facility | Peer Reviewed | Significant Peer Reviewed | Acknowledges Core Grant |
|---|---|---|---|
| AMRIS Facility at UF | 28 | 6 | 22 |
| DC Field Facility at FSU | 71 | 41 | 69 |
| EMR Facility at FSU | 25 | 13 | 25 |
| High B/T Facility at UF | 1 | 1 | 1 |
| ICR Facility at FSU | 44 | 15 | 43 |
| NMR Facility at FSU | 53 | 26 | 53 |
| Pulsed Field Facility at LANL | 29 | 19 | 28 |
| ASC | 16 | 10 | 16 |
| MS & T | 19 | 11 | 19 |
| Education at FSU | 2 | - | 2 |
| CMT/E | 42 | 29 | NA[1] |
| Geochemistry Facility | 5 | - | NA[1] |
| Gypstacks / Rare Earth | 2 | 1 | NA[1] |
| MBI at UF | 34 | - | NA[1] |
| UF Physics | 3 | 1 | NA[1] |

[1]*Research not funded by NSF.*

**Table 5.1.2** summarizes the publications generated by external users and in-house research activities. A detailed list of these publications can be found in **Table 5.1.2.**

***Table 5.1.2.*** *Overview of publications generated by external users and in-house research activities. A total number of publications per year should NOT be drawn from this report because a submitter may, as appropriate, link a publication to two or more facilities.*

| Facility | All Internal Authors | | Internal Corresponding Author(s) with External Co-Authors | | External Corresponding Author(s) with Internal Co-Authors | | All External Authors | | Totals | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NSF Core Grant Cited | NSF Core Grant Not Cited | NSF Core Grant Cited | NSF Core Grant Not Cited | NSF Core Grant Cited | NSF Core Grant Not Cited | NSF Core Grant Cited | NSF Core Grant Not Cited | NSF Core Grant Cited | NSF Core Grant Not Cited | Pubs for (selected period) |
| AMRIS Facility at UF | - | - | 6 | 1 | 12 | 2 | 4 | 3 | 22 | 6 | 28 |
| DC Field Facility at FSU | 3 | - | 6 | - | 59 | 2 | 1 | - | 69 | 2 | 71 |
| EMR Facility at FSU | 2 | - | 3 | - | 20 | - | - | - | 25 | - | 25 |
| High B/T Facility at UF | - | - | 1 | - | - | - | - | - | 1 | - | 1 |
| ICR Facility at FSU | 2 | - | 7 | - | 34 | - | - | 1 | 43 | 1 | 44 |
| NMR Facility at FSU | 5 | - | 8 | - | 38 | - | 2 | - | 53 | - | 53 |
| Pulsed Field Facility at LANL | 1 | - | 13 | - | 14 | 1 | - | - | 28 | 1 | 29 |
| ASC | 8 | - | 4 | - | 4 | - | - | - | 16 | - | 16 |
| MS & T | 4 | - | 10 | - | 5 | - | - | - | 19 | - | 19 |
| Education at FSU | - | - | 2 | - | - | - | - | - | 2 | - | 2 |
| CMT/E[1] | 5 | - | 14 | - | 22 | 1 | - | - | 41 | 1 | 42 |
| Geochemistry Facility[1] | - | - | 3 | - | 2 | - | - | - | 5 | - | 5 |
| Gypstacks /Rare Earth | - | - | - | - | - | - | - | - | - | - | - |
| MBI at UF[1] | - | - | - | 1 | 4 | 6 | 3 | 20 | 7 | 27 | 34 |
| UF Physics[1] | - | - | 3 | - | - | - | - | - | 3 | - | 3 |

[1]*Research not funded by NSF.*

Besides **334** peer-reviewed publications, the following other products have also been published at the MagLab in 2024:

- Disseminations: **14**
- Products: **3**
- M.S. Theses: **5** (1 local; 4 external)
- Ph.D. Theses: **37** (22 local; 15 external)

## PUBLICATIONS GENERATED BY AMRIS AT UF (28)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Al-Awadhi, F.H.; Kokkaliari, S.; Ratnayake, R.; Paul, V.J.; Luesch, H. | *Isolation and Characterization of the Cyanobacterial Macrolide Glycoside Moorenaside, an Anti-Inflammatory Analogue of Aurisides Targeting the Keap1/Nrf2 Pathway* | Journal of Natural Products | 87 | 10 | 2355-2365 | 10.1021/acs.jnatprod.4c00420 | No |
| Alsup, T.A.; Li, Z.; McCadden, C.A.; Jagels, A.; Lomowska-Keehner, D.P.; Marshall, E.M.; Dong, L.; Loesgen, S.; Rudolf, J.D. | *Early-stage biosynthesis of phenalinolactone diterpenoids involves sequential prenylation, epoxidation, and cyclization* | RSC Chemical Biology | 5 | | 1010-1016 | 10.1039/D4CB00138A | Yes |
| Anazia, K.; Koenekoop, L.; Ferré, G.; Petracco, E.; Gutiérrez-de-Terán, H.; Eddy, M.T. | *Interaction networks within disease-associated GαS variants characterized by an integrative biophysical approach* | Journal of Biological Chemistry | 300 | 8 | 107497 | 10.1016/j.jbc.2024.107497 | Yes |
| Bhar, S.; Yoon, C.; Mai, K.; Han, J.; Prajapati, D.V.; Wang, Y.; Steffen, C.L.; Bailey, L.S.; Basso, K.B.; Butcher, R.A. | *An acyl-CoA thioesterase is essential for the biosynthesis of a key dauer pheromone in C. elegans* | Cell Chemical Biology | 31 | 5 | 1011-1022.e6 | 10.1016/j.chembiol.2023.12.006 | Yes |
| Bishop, M.D.; Alappattu, M.J.; Rana, P.; Staud, R.; Boissoneault, J.; Blaes, S.; Joffe, Y.; Robinson, M.E. | *Delayed Recovery After Exercise-Induced Pain in People with Chronic Widespread Muscle Pain Related to Cortical Connectivity* | Brain Sciences | 14 | 11 | | 10.3390/brainsci14111102 | Yes |
| Boloki, O.; Dewitt, S.; Hahnert, E.T.; Smith, Z.; Vasenkov, S. | *Gas self-diffusion in different local environments of mixed-matrix membranes as a function of UiO-66-$NH_2$ metalorganic framework loading* | Microporous and Mesoporous Materials | 378 | | 113249 | 10.1016/j.micromeso.2024.113249 | Yes |
| Criado-Marrero, M.; Ravi, S.; Bhaskar, E.; Barroso, D.; Pizzi, M.A.; Williams, L.; Wellington, C.L.; Febo, M.; Francisco Abisambra, J. | *Age dictates brain functional connectivity and axonal integrity following repetitive mild traumatic brain injuries in mice* | NeuroImage | 298 | | 120764 | 10.1016/j.neuroimage.2024.120764 | Yes |
| Farmer, A.L.; Febo, M.; Wilkes, B.J.; Lewis, M.H. | *Environmental Enrichment Attenuates Repetitive Behavior and Alters the Functional Connectivity of Pain and Sensory Pathways in C58 Mice* | Cell | 13 | 23 | | 10.3390/cells13231933 | Yes |
| Farmer, A.L.; Febo, M.; Wilkes, B.J.; Lewis, M.H. | *Environmental enrichment reduces restricted repetitive behavior by altering gray matter microstructure* | PLoS ONE | 19 | 7 | | 10.1371/journal.pone.0307290 | Yes |
| Febo, M.; Mahar, R.; Rodriguez, N.A.; Buraima, J.; Pompilus, M.; Pinto, A.M.; Grudny, M.M.; Bruijnzeel, A.W.; Merritt, M.E. | *Age-related differences in affective behaviors in mice: possible role of prefrontal cortical-hippocampal functional connectivity and metabolomic profiles* | Frontiers in Aging Neuroscience | 16 | | | 10.3389/fnagi.2024.1356086 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Goetz, A.; Cagmat, J.; Brusko, M.; Brusko, T.M.; Rushin, A.C.; Merritt, M.E.; Garrett, T.; Morel, L.; Dixit, P. | *A global view of T cell metabolism in systemic lupus erythematosus* | Frontiers in Immunology | 15 | | | 10.3389/fimmu.2024.1371708 | Yes |
| Kem, W.R.; Soti, F.; Rocca, J.R.; Johnson, J.V. | *New Pyridyl and Dihydroisoquinoline Alkaloids Isolated from the Chevron Nemertean Amphiporus angulatus* | Marine Drugs | 22 | 4 | 141 | 10.3390/md22040141 | Yes |
| Khattri, R.B.; Batra, A.; White, Z.; Hammers, D.; Ryan, T.E.; Barton, E.R.; Bernatchez, P.; Walter, G.A. | *Comparative lipidomic and metabolomic profiling of mdx and severe mdx-apolipoprotein e-null mice* | Skelet Muscle | 14 | 1 | 36 | 10.1186/s13395-024-00368-w | Yes |
| Kidd, B.M.; Varholick, J.A.; Tuyn, D.M.; Kamat, P.K.; Simon, Z.D.; Liu, L.; Mekler, M.P.; Pompilus, M.; Bubenik, J.L.; Davenport, M.L.; Carter, H.A.; Grudny, M.M.; Barbazuk, W.B.; Doré, S.; Febo, M.; Candelario-Jalil, E.; Maden, M.; Swanson, M.S. | *Stroke-induced neuroplasticity in spiny mice in the absence of tissue regeneration* | Nature Partner Journals (npj) Regenerative Medicine | -9 | -1 | | 10.1038/s41536-024-00386-8 | Yes |
| Kokkaliari, S.; Grauso, L.; Mangoni, A.; Seabra, G.; Paul, V.J.; Luesch, H. | *Isolation, Structure Elucidation, and Biological Activity of the Selective TACR2 Antagonist Tumonolide and its Aldehyde from a Marine Cyanobacterium* | Chemistry A European Journal | 30 | 50 | e202401393 | 10.1002/chem.202401393 | Yes |
| Kundu, S.; Rohokale, R.; Lin, C.; Chen, S.; Biswas, S.; Guo, Z. | *Bifunctional glycosphingolipid (GSL) probes to investigate GSL-interacting proteins in cell membranes* | Journal of Lipid Research | 65 | 7 | 100570 | 10.1016/j.jlr.2024.100570 | No |
| Lakshmanan, R.; Riviere, G.; Mietzsch, M.; Bennett, A.; McKenna, R.; Long, J.R.; Nogueira, M.L.C. | *Backbone NMR resonance assignments for the VP1u N-terminal receptor-binding domain of the human parvovirus pathogen B19* | Biomolecular NMR Assignments | 18 | | 147152 | 10.1007/s12104-024-10181-7 | Yes |
| Marcinko, J.J.; Parker, A.A. | *Spectroscopic Characterization of the Chemical Changes Occurring in Soy Wood Composite Adhesives When Exposed to Moisture* | Forest Products Journal | 74 | 2 | 143-150 | 10.13073/FPJ-D-23-00063 | Yes |
| McLeod, M.; Chang, M.C.; Rushin, A.C.; Ragavan, M.; Mahar, R.; Sharma, G.; Badar, A.; Giacalone, A.; Glanz, M.E.; Malut, V.R.; Graham, D.; Sunny, N.E.; Bankson, J.A.; Cusi, K.; Merritt, M.E. | *Detecting altered hepatic lipid oxidation by MRI in an animal model of MASLD* | Cell Reports Medicine | 5 | 9 | 101714 | 10.1016/j.xcrm.2024.101714 | Yes |
| Ontiveros-Ángel, P.; David Vega-Torres, J.; Simon, T.B.; Williams, V.; Inostroza-Nives, Y.; Alvarado-Crespo, N.; Vega Gonzalez, Y.; Pompolius, M.; Katzka, W.; Lou, J.; Sharafeddin, F.; De la Peña, I.; Dong, T.; Gupta, A.; Viet, C.T.; Febo, M.; Obenaus, A.; Nair, A.; Figuero, J.D. | *Early-life obesogenic environment integrates immunometabolic and epigenetic signatures governing neuroinflammation* | Brain, Behavior, & Immunity - Health | 42 | | 100879 | 10.1016/j.bbih.2024.100879 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Powers, R.; Andersson, E.R.; Bayless, A.L.; Brua, R.B.; Chang, M.C.; Cheng, L.L.; Clendinen, C.S.; Cochran, D.; Copié, V.; Cort, J.R.; Crook, A.A.; Eghbalnia, H.R.; Giacalone, A.; Gouveia, G.J.; Hoch, J.C.; Jeppesen, M.J.; Maroli, A.S.; Merritt, M.E.; Pathmasiri, W.; Roth, H.E.; Rushin, A.C.; Sakallioglu, I.T.; Sarma, S.; Schock, T.B.; Sumner, L.W.; Takis, P.; Uchimiya, M.; Wishart, D.S. | *Best practices in NMR metabolomics: Current state* | TrAC Trends in Analytical Chemistry | 171 | | 117478 | 10.1016/j.trac.2023.117478 | No |
| Ravula, S.; Rodríguez-González, F.E.; Shinde, P.S.; Montero-Alejo, A.L.; Terraza, C.A.; Laxmi, S.; Vasenkov, S.; O'Harra, K.E.; Tundidor-Camba, A.; Bara, J.E. | *Impact of Ionic Modifications on Polyimide Properties for Gas Separation Applications* | Macromolecules | 57 | 23 | 11085-11096 | 10.1021/acs.macromol.4c02315 | Yes |
| Schultz, D.C.; Chávez-Riveros, A.; Goertzen, M.G.; Brummel, B.R.; Paes, R.A.; Santos, N.M.; Tenneti, S.; Abboud, K.A.; Rocca, J.R.; Seabra, G.; Li, C.; Chakrabarti, D.; Huigens, R.W. | *Chloroformate-mediated ring cleavage of indole alkaloids leads to re-engineered antiplasmodial agents* | Organic & Biomolecular Chemistry | 22 | | 8423-8436 | 10.1039/D4OB00853G | Yes |
| Sharafeddin, F.; Sierra, J.; Ghaly, M.; Simon, T.B.; Ontiveros-Ángel, P.; Edelbach, B.; Febo, M.; Labus, J.; Figueroa, J.D. | *Role of the prefrontal cortical protease TACE/ADAM17 in neurobehavioral responses to chronic stress during adolescence* | Brain and Behavior | 14 | 5 | e3482 | 10.1002/brb3.3482 | No |
| Thakur, N.; Prabha Ray, A.; Jin, B.; Pesaran Afsharian, N.; Lyman, E.; Gao, Z.; Jacobson, K.A.; Eddy, M.T. | *Membrane mimetic-dependence of GPCR energy landscapes* | Structure | 32 | 5 | 523-535.e5 | 10.1016/j.str.2024.01.013 | Yes |
| Trachsel, L.; Konar, D.; Hillman, J.D.; Davidson, C.L.; Sumerlin, B.S. | *Diversification of Acrylamide Polymers via Direct Transamidation of Unactivated Tertiary Amides* | Journal of the ACS | 146 | 2 | 1627-1634 | 10.1021/jacs.3c12174 | No |
| Wang, B.; Rocca, J.R.; Hoshika, S.; Chen, C.; Yang, Z.; Esmaeeli, R.; Wang, J.; Pan, X.; Lu, J.; Wang, K.; Cao, Y.; Tan, W.; Benner, S.A. | *A folding motif formed with an expanded genetic alphabet* | Nature Chemistry | | | 1-10 | 10.1038/s41557-024-01552-7 | Yes |
| Yan, X.; Guo, J.; Kundu, S.; Guo, Z. | *A Biotinylated Glycosylphosphatidylinositol (GPI) as the Universal Platform to Access GPI-Anchored Protein Analogues* | Journal of Organic Chemistry | 89 | 2 | 1345-1352 | 10.1021/acs.joc.3c02560 | No |

## PUBLICATIONS GENERATED BY DC FIELD AT FSU (71)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Acharya, G.; Neupane, B.; Hsu, C.; Yang, X.P.; Graf, D.E.; Choi, E.; Pandey, K.; Nabi, M.; Chhetri, S.; Basnet, R.; Rahman, S.; Wang, J.; Hu, Z.; Da, B.; Churchill, H.O.; Chang, G.; Hasan, M.Z.; Wang, Y.; Hu, J. | *Insulator-to-Metal Transition and Isotropic Gigantic Magnetoresistance in Layered Magnetic Semiconductors* | Advanced Materials | 36 | 48 | 2410655 | 10.1002/adma.202410655 | Yes |
| Bag, R.; Xu, S.; Sherman, N.E.; Yadav, L.; Kolesnikov, A.I.; Podlesnyak, A.A.; Choi, E.; da Silva, I.; Moore, J.E.; Haravifard, S. | *Evidence of Dirac Quantum Spin Liquid in YbZn2GaO5* | Physical Review Letters | 133 | 26 | 266703 | 10.1103/PhysRevLett.133.266703 | Yes |
| Bang, J.; Lee, J.; Bradford, G.; Kim, K.; Hu, X.; Abraimov, D.V.; Jaroszynski, J.J.; Polyanskii, A.A.; Noguchi, S.; Hahn, S.; Larbalestier, D.C. | *Evidence that transverse variability of critical current density can greatly mitigate screening current stress in high field REBCO magnets* | Scientific Reports | 14 | 1 | 31703 | 10.1038/s41598-024-81902-0 | Yes |
| Barbosa, V.; Maharaj, D.; Cronkright, Z.; Wang, Y.; Cong, R.; Garcia, E.; Reyes, A.P.; Yan, J.; Ritter, C.; Mitrovic, V.; Gaulin, B.; Greedan, J.; Woodward, P. | *Exploring the Links between Structural Distortions, Orbital Ordering, and Multipolar Magnetic Ordering in Double Perovskites Containing Re(VI) and Os(VII)* | Chemistry of Materials | 36 | | 11478-11489 | 10.1021/acs.chemmater.4c02135 | Yes |
| Benjamin, S.M. | *Pressurization, intercalation, doping, and elements: An empirical study of superconductivity near perturbation onsets* | Superconductivity | 10 | C | 100098 | 10.1016/j.supcon.2024.100098 | Yes |
| Bernbeck, M.G.; Orlova, A.P.; Hilgar, J.D.; Gembicky, M.; Ozerov, M.; Rinehart, J.D. | *Dipolar Coupling as a Mechanism for Fine Control of Magnetic States in ErCOT-Alkyl Molecular Magnets* | Journal of the ACS | 146 | | 7243 | 10.1021/jacs.3c10412 | Yes |
| Blockmon, A.; Lee, M.; Zhang, S.; Manson, Z.; Manson, J.; Zapf, V.; Musfeldt, J. | *High field electrical polarization and magnetoelectric coupling in chiral magnet* $[Cu(pym)(H_2O)_4]\ SiF_6{\cdot}H_2O$ | Inorganic Chemistry | 63 | | 11737 | 10.1021/acs.inorgchem.4c01249 | Yes |
| Bradford, G.; Jaroszynski, J.J.; Murphy, G.W.; Polyanskii, A.A.; Lee, J.; Larbalestier, D.C. | *Property Variations in Modern REBCO Coated Conductors from Multiple Manufacturers* | Advances In Cryogenic Engineering - Materials: Proceedings of The International Cryogenic Materials Conference, Icmc 2023 | 1302 | | 12011 | 10.1088/1757-899X/1302/1/012011 | Yes |
| Brassington, A.; Ma, Q.; Salazar, G.; Kolesnikov, A.I.; Taddei, K.M.; Wu, Y.; Choi, E.S.; Wang, H.; Xie, W.; Macy, J.J.; Zhou, H.D.; Aczel, A.A. | *Magnetic properties of the quasi-XY Shastry-Sutherland magnet Er2Be2SiO7* | Physical Review Materials | 8 | 9 | 94001 | 10.1103/PhysRevMaterials.8.094001 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Channarayappa, S.; Kumar, S.; Vidhyadhiraja, N.S.; Pujari, S.; Saravanan, M.P.; Sebastian, A.; Choi, E.; Chikara, S.; Nambi, D.; Suresh, A.; Lal, S.; Jaiswal-Nagar, D. | *Tomonaga-Luttinger liquid and quantum criticality in spin-12 antiferromagnetic Heisenberg chain C14H18CuN4O10 via Wilson ratio* | PNAS Nexus | 3 | 9 | pgae363 | 10.1093/pnasnexus/pgae363 | Yes |
| Choi, J.; Li, J.; Van Tuan, D.; Dery, H.; Crooker, S. | *Emergence of composite many-body exciton states in $WS_2$ and $MoSe_2$ monolayers* | Physical Review B | 109 | | L041304 | 10.1103/PhysRevB.109.L041304 | Yes |
| Choroba, K.; Palion-Gazda, J.; Machura, B.; Bienko, A.; Bienko, D.; Rajnak, C.; Boca, R.; Ozarowski, A.; Ozerov, M. | *Large Magnetic Anisotropy in Mono- and Binuclear cobalt(II) Complexes: The Role of the Distortion of the Coordination Sphere in Validity of the Spin-Hamiltonian Formalism* | Inorganic Chemistry | 63 | 2 | 1068-1082 | 10.1021/acs.inorgchem.3c03405 | Yes |
| Corti, L.; Hung, I.; Venkatesh, A.; Gan, Z.; Claridge, J.B.; Rosseinsky, M.J.; Blanc, F. | *Cation Distribution and Anion Transport in the $La_3Ga_{5-x}Ge_{1+x}O_{14+0.5x}$ Langasite Structure* | Journal of the ACS | 146 | 20 | 14022-14035 | 10.1021/jacs.4c02324 | Yes |
| Corti, L.; Hung, I.; Venkatesh, A.; Gor'kov, P.L.; Gan, Z.; Claridge, J.B.; Rosseinsky, M.J.; Blanc, F. | *Local Structure in Disordered Melilite Revealed by Ultrahigh Field $^{71}$Ga and $^{139}$La Solid-State Nuclear Magnetic Resonance Spectroscopy* | ChemPhysChem | 25 | 8 | e202300934 | 10.1002/cphc.202300934 | Yes |
| Das, D.; Ma, K.; Jaroszynski, J.J.; Sazgari, V.; Klimczuk, T.; von Rohr, F.O.; Guguchia, Z. | *Ti4Ir2O: A time reversal invariant fully gapped unconventional superconductor* | Physical Review B | 110 | 17 | 174507 | 10.1103/PhysRevB.110.174507 | Yes |
| Devarakonda, A.; Chen, A.; Fang, S.; Graf, D.E.; Kriener, M.; Akey, A.J.; Bell, D.C.; Suzuki, T.; Checkelsky, J.G. | *Evidence of striped electronic phases in a structurally modulated superlattice* | Nature | 631 | 8021 | 526530 | 10.1038/s41586-024-07589-5 | Yes |
| Drichko, I.L.; Smirnov, I.YU.; Suslov, A.; Lidli, D.R.; Gal'perin, Y.M. | *Wigner crystallization in two-dimensional structures in a magnetic field. Acoustic studies* | Proceedings of the 39th Conference on Low Temperature Physics | 166 | | 868-877 | 10.31857/S0044451024120101 | Yes |
| Dubroca, T.; Ozarowski, A.; Sunatsuki, Y.; Telser, J.; Hill, S.; Krzystek, J. | *Benefitting from Magnetic Field-Induced Torquing in Terahertz EPR of a MnIII Coordination Complex* | Applied Magnetic Resonance | 56 | | 137-149 | 10.1007/s00723-024-01706-3 | Yes |
| Eaton, A.G.; Weinberger, T.I.; Popiel, N.J.; Wu, Z.; Hickey, A.J.; Cabala, A.; Pospisil, J.; Prokleska, J.; Haidamak, T.; Bastien, G.; Opletal, P.; Sakai, H.; Haga, Y.; Nowell, R.; Benjamin, S.M.; Sechovský, V.; Lonzarich, G.G.; Grosche, F.M.; Valiska, M. | *Quasi-2D Fermi surface in the anomalous superconductor $UTe_2$* | Nature Communications | 15 | | 223 | 10.1038/s41467-023-44110-4 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Fratello, V.J.; Boatner, L.A.; Dabkowska, H.A.; Dabkowski, A.; Siegrist, T.M.; Wei, K.; Guguschev, C.; Klimm, D.; Brützam, M.; Schlom, D.G.; Subramanian, S. | *Solid solution perovskite substrate materials with indifferent points* | Journal of Crystal Growth | 634 | | 127606 | 10.1016/j.jcrysgro.2024.127606 | Yes |
| Freeman, M.L.; Madathil, P.T.; Pfeiffer, L.N.; Baldwin, K.W.; Chung, Y.J.; Winkler, R.; Shayegan, M.; Engel, L.W. | *Origin of Pinning Disorder in Magnetic-Field-Induced Wigner Solids* | Physical Review Letters | 132 | | 176301 | 10.1103/PhysRevLett.132.176301 | Yes |
| Galeano-Cabral, J.R.; Schundelmier, B.C.; Oladehin, O.; Feng, K.; Ordonez, J.C.; Baumbach, R.; Wei, K. | *Effect of Ni Doping on the Thermoelectric Properties of $YbCo_2Zn_{20}$* | Materials | 17 | 8 | 1906 | 10.3390/ma17081906 | Yes |
| Gu, Y.; Smith, K.; Saha, A.; De, C.; Won, C.; Zhang, Y.; Lin, L.; Cheong, S.; Haule, K.; Ozerov, M.; Birol, T.; Homes, C.; Dagotto, E.; Musfeldt, J. | *Unconventional insulator-to-metal phase transition in $Mn_3Si_2Te_6$* | Nature Communications | 15 | | 8104 | 10.1038/s41467-024-52350-1 | Yes |
| Houard, F.; Olivier, A.; Cucinotta, G.; Galangau, O.; Gautier, M.; Camerel, F.; Guizouarn, T.; Roisnel, T.; Le Guennic, B.; Ozerov, M.; Suffren, Y.; Calvez, G.; Daiguebonne, C.; Guillou, O.; Artzner, F.; Mannini, M.; Bernot, K. | *Investigation and control of metallogel formation for the deposition of supramolecular nanotubes of single-chain magnets* | Journal of Materials Chemistry C | 12 | | 3228 | 10.1039/d3tc03630h | Yes |
| Huang, K.; Fu, H.; Watanabe, K.; Taniguchi, T.; Zhu, J. | *High-temperature quantum valley Hall effect with quantized resistance and a topological switch* | Science | 385 | | 657 | 10.1126/science.adj3742 | Yes |
| Huynh, U.N.; Bodin, R.; Pan, X.; Bailey, P.; Liu, H.; McGill, S.A.; Semenov, D.; Sercel, P.C.; Vardeny, Z.V. | *Magneto-optical studies of hybrid organic/inorganic perovskite: The case of methyl-ammonium lead bromide* | Physical Review B | 109 | | 14316 | 10.1103/PhysRevB.109.014316 | Yes |
| Jain, P.; Sharma, S.; Baumbach, R.; Yogi, A.; Ishant, I.; Majumder, M.; Siegrist, T.M.; Chattopadhyay, M.K.; Lalla, N.P. | *Structural role in temperature-induced magnetization reversal revealed in distorted perovskite Gd1-xYxCrO3* | Physical Review B | 109 | | 94410 | 10.1103/PhysRevB.109.094410 | Yes |
| Jeon, H.; Seo, H.; Seo, J.; Kim, Y.; Choi, E.; Jo, Y.; Lee, H.; Ok, J.; Kim, J. | *Large anomalous Hall conductivity induced by spin chirality fluctuation in an ultraclean frustrated antiferromagnet $PdCrO_2$* | Communications Physics | 7 | 1 | 162 | 10.1038/s42005-024-01652-3 | Yes |
| Klem, M.L.; Mozaffari, S.; Zhang, R.; Casas, B.W.; Koshelev, A.E.; Yi, M.; Balicas, L.; Dai, P.C. | *Nematic superconductivity from selective orbital pairing in iron pnictide single crystals* | Cell Reports Physical Science | 5 | | 101816 | 10.1016/j.xcrp.2024.101816 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Kuszynski, J.E.; Zhong, X.; McGill, S.A.; Dennis, A.M.; Strouse, G.F. | *Iron Intermediate Band Governs Relaxation Kinetics of Bornite Plasmonic Semiconductor Nanocrystals* | ACS Materials Letters | 6 | 8 | 3367-3375 | 10.1021/acsmaterialslett.4c00341 | Yes |
| Kwon, H.; McClain, K.R.; Kragskow, J.G.C.; Staab, J.K.; Ozerov, M.; Meihaus, K.R.; Harvey, B.G.; Choi, E.; Chilton, N.F.; Long, J.R. | *Coercive Fields Exceeding 30 T in the Mixed-Valence Single-Molecule Magnet* $(Cp^{iPr5})_2Ho_2I_3$ | Journal of the ACS | 146 | 27 | 18714-18721 | 10.1021/jacs.4c06250 | Yes |
| Laha, A.; Yoshida, S.; Marques dos Santos Vieira, F.; Yi, H.; Lee, S.; Ayyagari, S.; Guan, Y.; Min, L.; Gonzalez Jimenez, J.; Miao, L.; Graf, D.E.; Sarker, S.; Xie, W.; Alem, N.; Gopalan, V.; Chang, C.; Dabo, I.; Mao, Z. | *High-entropy engineering of the crystal and electronic structures in a Dirac material* | Nature Communications | 15 | 1 | 3532 | 10.1038/s41467-024-47781-9 | Yes |
| Landart, A.; Li, Y.; Ozerov, M.; Krzystek, J.; Palacios, M.A.; Quesada-Moreno, M.M.; Colacio, E. | *Control of the geometry and anisotropy driven by the combination of steric and anion coordination effects in Co(II) complexes with N6-tripodal ligands: The impact of the size of the ligand on the magnetization relaxation time* | Dalton Transactions | 53 | | 12876-12892 | 10.1039/D4DT00622D | Yes |
| Lee, S.; Woods, A.J.; Lee, M.; Zhang, S.; Choi, E.; Scheie, A.O.; Tennant, D.A.; Xing, J.; Sefat, A.S.; Movshovich, R. | *Magnetic field-temperature phase diagram of the spin-½ triangular lattice antiferromagnet* $KYbSe_2$ | Physical Review B | 109 | | 155129 | 10.1103/PhysRevB.109.155129 | Yes |
| Li, N.; Xie, M.T.; Huang, Q.; Zhuo, Z.W.; Zhang, Z.; Choi, E.S.; Wang, Y.Y.; Liang, H.; Sun, Y.; Wu, D.D.; Li, Q.J.; Zhou, H.D.; Chen, G.; Zhao, X.; Zhang, Q.M.; Sun, X.F. | *Thermodynamics and heat transport in the quantum spin liquid candidates NaYb2 and NaYbSe2* | Physical Review B | 110 | 22 | 224414 | 10.1103/PhysRevB.110.224414 | Yes |
| Li, Z.; Jindal, A.; Strasser, A.; He, Y.; Zheng, W.; Graf, D.E.; Taniguchi, T.; Watanabe, K.; Balicas, L.; Dean, C.R.; Qian, X.; Pasupathy, A.N.; Rhodes, D.A. | *Twofold Anisotropic Superconductivity in Bilayer Td-MoTe2* | Physical Review Letters | 133 | | 216002 | 10.1103/PhysRevLett.133.216002 | Yes |
| Madathil, P.T.; Wang, C.; Singh, S.K.; Gupta, A.; Rosales, K.A.; Chung, Y.J.; West, K.W.; Baldwin, K.W.; Pfeiffer, L.N.; Engel, L.W.; Shayegan, M. | *Signatures of Correlated Defects in an Ultraclean Wigner Crystal in the Extreme Quantum Limit* | Physical Review Letters | 132 | | 96502 | 10.1103/PhysRevLett.132.096502 | Yes |
| Mou, B.S.; Zhang, X.; Xiang, L.; Xu, Y.; Zhong, R.; Cava, R.J.; Zhou, H.; Jiang, Z.; Smirnov, D.; Drichko, N.; Winter, S.M. | *Comparative Raman scattering study of crystal field excitations in Co-based quantum magnets* | Physical Review Materials | 8 | | 84408 | 10.1103/PhysRevMaterials.8.084408 | Yes |
| Nagelski, A.L.; Ozerov, M.; Fataftah, M.S.; Krzystek, J.; Greer, S.M.; Holland, P.L.; Telser, J. | *Electronic Structure of Three-Coordinate Fe(II) and Co(II) β-Diketiminate Complexes* | Inorganic Chemistry | 63 | | 4511-4526 | 10.1021/acs.inorgchem.3c03388 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Neubauer, K.J.; Klemm, M.L.; Mozaffari, S.; Jiao, L.; Koshelev, A.E.; Yaresko, A.; Yi, M.; Balicas, L.; Dai, P. | *In-plane anisotropic magnetoresistance in detwinned $BaFe_{2-x}NixAs_2$ (x=0, 0.6)* | Physical Review B | 109 | | 54435 | 10.1103/PhysRevB.109.054435 | Yes |
| Ortega, R.E.; Smith, R.B.; Kuszynski, J.E.; Bayles, A.; McGill, S.A.; Halas, N.J.; Schurko, R.W.; Strouse, G.F. | *Observing Metallic Carriers in Highly Faceted Plasmonic $Cd_2SnO_4$ Inverse Spinel Nanocrystals* | Advanced Optical Materials | 12 | 22 | 2400388 | 10.1002/adom.202400388 | Yes |
| Paidpilli, M.; Goel, C.; Sarangi, B.; Chen, S.; Galstyan, E.; Jaroszynski, J.J.; Bradford, G.; Abraimov, D.V.; Selvamanickam, V. | *40-meter-long REBCO tapes with critical current over 4,000 A/12 mm at 4.2 K and 13 T by advanced MOCVD* | Superconductivity | 9 | | 100081 | 10.1016/j.supcon.2023.100081 | Yes |
| Paudel, N.; Tarantini, C.; Balachandran, S.; Starch, W.L.; Lee, P.J.; Larbalestier, D.C. | *Influence of Nb alloying on Nb recrystallization and the upper critical field of $Nb_3Sn$* | Physical Review Materials | 8 | | 84801 | 10.1103/PhysRevMaterials.8.084801 | Yes |
| Plisson, V.M.; Yao, X.; Wang, Y.; Varnavides, G.; Suslov, A.; Graf, D.E.; Choi, E.; Yang, H.; Wang, Y.; Romanelli, M.; McNamara, G.; Singh, B.; McCandless, G.T.; Chan, J.Y.; Narang, P.; Tafti, F.; Burch, K.S. | *Engineering Anomalously Large Electron Transport in Topological Semimetals* | Advanced Materials | 36 | | 2310944 | 10.1002/adma.202310944 | Yes |
| Posey, V.A.; Turkel, S.; Rezaee, M.; Devarakonda, A.; Kundu, A.K.; Ong, C.S.; Thinel, M.; Chica, D.G.; Vitalone, R.A.; Jing, R.; Xu, S.; Needell, D.R.; Meirzadeh, E.; Feuer, M.L.; Jindal, A.; Cui, X.; Valla, T.; Thunström, P.; Yilmaz, T.; Vescovo, E.; Graf, D.E.; Zhu, X.; Scheie, A.; May, A.F.; Eriksson, O.; Basov, D.N.; Dean, C.R.; Rubio, A.; Kim, P.; Ziebel, M.E.; Millis, A.J.; Pasupathy, A.N.; Roy, X. | *Two-dimensional heavy fermions in the van der Waals metal CeSiI* | Nature | 625 | | 483-488 | 10.1038/s41586-023-06868-x | Yes |
| Povarov, K.Y.; Graf, D.E.; Hauspurg, A.; Zherlitsyn, S.; Wosnitza, J.; Sakurai, T.; Ohta, H.; Kimura, S.; Nojiri, H.; Garlea, V.O.; Zheludev, A.; Paduan, A.; Nicklas, M.; Zvyagin, S.A. | *Pressure-tuned quantum criticality in the large-D antiferromagnet DTN* | Nature Communications | 15 | 1 | 2295 | 10.1038/s41467-024-46527-x | Yes |
| Rehfuss, Z.; Broyles, C.; Graf, D.E.; Li, Y.K.; Tan, H.X.; Zhao, Z.; Liu, J.L.; Zhang, Y.H.; Dong, X.L.; Yang, H.T.; Gao, H.J.; Yan, B.H.; Ran, S. | *Quantum oscillations in kagome metals $CsTi_3Bi_5$ and $RbTi_3Bi_5$* | Physical Review Materials | 8 | 2 | 24003 | 10.1103/PhysRevMaterials.8.024003 | Yes |
| Rutherford, A.; Xing, C.; Zhou, H.; Huang, Q.; Choi, E.; Calder, S. | *Magnetic properties of R2O2CO3 (R = Pr, Nd, Gd, Tb, Dy, Ho, Er, Yb) with a rare earth-bilayer of triangular lattice* | Physical Review Materials | 8 | 11 | 114413 | 10.1103/PhysRevMaterials.8.114413 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Scheie, A.O.; Kamiya, Y.; Zhang, H.; Lee, S.; Woods, A.J.; Ajeesh, M.O.; Gonzalez, M.G.; Bernu, B.; Villanova, J.W.; Xing, J.; Huang, Q.; Zhang, Q.; Ma, J.; Choi, E.; Pajerowski, D.M.; Zhou, H.; Sefat, A.S.; Okamoto, S.; Berlijn, T.; Messio, L.; Movshovich, R.; Batista, C.D.; Tennant, D.A. | *Nonlinear magnons and exchange Hamiltonians of the delafossite proximate quantum spin liquid candidates $KYbSe_2$ and $NaYbSe_2$* | Physical Review B | 109 | 1 | 14425 | 10.1103/PhysRevB.109.014425 | Yes |
| Shafayat Hossain, MD.; Zhang, Q.; Wang, Z.; Dhale, N.; Liu, W.; Litskevich, M.; Casas, B.W.; Shumiya, N.; Yin, J.X.; Cochran, T.A.; Li, Y.; Jiang, Y.X.; Zhang, Y.; Cheng, G.; Cheng, Z.J.; Yang, X.P.; Yao, N.; Neupert, T.; Balicas, L.; Yao, Y.; Lv, B.; Hasan, M.Z. | *Quantum transport response of topological hinge modes* | Nature Physics | 20 | | 776782 | 10.1038/s41567-024-02388-1 | Yes |
| Shao, Y.; Moon, S.; Rudenko, A.N.; Wang, J.; Herzog-Arbeitman, J.; Ozerov, M.; Graf, D.E.; Sun, Z.; Queiroz, R.; Lee, S.; Zhu, Y.; Mao, Z.; Katsnelson, M.I.; Bernevig, B.A.; Smirnov, D.; Millis, A.J.; Basov, D.N. | *Semi-Dirac Fermions in a Topological Metal* | Physical Review X | 14 | | 41057 | 10.1103/PhysRevX.14.041057 | Yes |
| Shcherbakov, D.; Voigt, G.; Memaran, S.; Liu, G.B.; Wang, Q.; Watanabe, K.; Taniguchi, T.; Smirnov, D.; Balicas, L.; Zhang, F.; Lau, C.N. | *Giant Tunability of Intersubband Transitions and Quantum Hall Quartets in Few-Layer InSe Quantum Wells* | ACS Nano Letters | 24 | | | 10.1021/acs.nanolett.3c04121 | Yes |
| Steven, E.; Krstovska, D.; Suarez, D.B.; Berliani, T.; Jobiliong, E.; Choi, E. | *Recyclable organic bilayer piezoresistive cantilever for torque magnetometry at cryogenic temperatures* | Sensors and Actuators A: Physical | 368 | | 115133 | 10.1016/j.sna.2024.115133 | Yes |
| Tang, C.; Ye, G.; Nnokwe, C.; Fang, M.; Xiang, L.; Mahjouri-Samani, M.; Smirnov, D.; Yang, E.; Wang, T.; Zhang, L.; He, R.; Jin, W. | *Exciton-activated effective phonon magnetic moment in monolayer MoS2* | Physical Review B | 109 | | 155426 | 10.1103/PhysRevB.109.155426 | Yes |
| Tian, H.; Codecido, E.; Mao, D.; Zhang, K.; Che, S.; Watanabe, K.; Taniguchi, T.; Smirnov, D.; Kim, E.; Bockrath, M.; Lau, C. | *Dominant 1/3-filling correlated insulator states and orbital geometric frustration in twisted bilayer graphene* | Nature Physics | 20 | 9 | 1407-1412 | 10.1038/s41567-024-02546-5 | Yes |
| Tozer, S.W.; Coniglio, W.A.; Forster, T.; Bonn, D.A.; Hardy, W.N.; Liang, R.; Kampert, E.; Grockowiak, A.D. | *Absence of Fermi surface reconstruction in pressure-driven overdoped YBCO* | Physical Review B | 110 | | 144508 | 10.1103/PhysRevB.110.144508 | Yes |
| Wang, X.; Tan, Q.; Li, T.; Lu, Z.; Cao, J.; Ge, Y.; Zhao, L.; Tang, J.; Kitadai, H.; Guo, M.; Li, Y.; Xu, W.; Cheng, R.; Smirnov, D.; Ling, X. | *Unveiling the spin evolution in van der Waals antiferromagnets via magneto-exciton effects* | Nature Communications | 15 | 1 | 8011 | 10.1038/s41467-024-51643-9 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Wang, Y.X.; Zhao, M.H.; Zhang, J.L.; Wu, W.B.; Li, S.C.; Zhang, Y.; Jiang, W.X.; Joseph, N.B.; Xu, L.C.; Mou, Y.C.; Yang, Y.K.; Leng, P.L.; Zhang, Y.; Pi, L.; Suslov, A.; Ozerov, M.; Wyzula, J.; Orlita, M.; Zhu, F.F.; Zhang, Y.; Kou, H.F.; Zhu, Z.W.; Narayan, A.; Qian, D.; Wen, J.S.; Yuan, X.; Xiu, F.X.; Zhang, C. | *Observation of quantum oscillations near the Mott-Ioffe-Regel limit in* $CaAs_3$ | National Science Review | 11 | | 127 | 10.1093/nsr/nwae127 | Yes |
| Weinberger, T.I.; Wu, Z.; Graf, D.E.; Skourski, Y.; Cabala, A.; Pospisil, J.; Prokleska, J.; Haidamak, T.; Bastien, G.; Sechovsky, V.; Lonzarich, G.G.; Valiska, M.; Grosche, F.M.; Eaton, A.G. | *Quantum Interference between Quasi-2D Fermi Surface Sheets in* $UTe_2$ | Physical Review Letters | 132 | | 266503 | 10.1103/PhysRevLett.132.266503 | Yes |
| Wu, W.B.; Shi, Z.P.; Ozerov, M.; Du, Y.H.; Wang, Y.X.; Ni, X.S.; Meng, X.H.; Jiang, X.Y.; Wang, G.Y.; Hao, C.M.; Wang, X.Y.; Zhang, P.C.; Pan, C.H.; Pan, H.F.; Sun, Z.R.; Yang, R.; Xu, Y.; Hou, Y.S.; Yan, Z.B.; Zhang, C.; Lu, H.Z.; Chu, J.H.; Yuan, X. | *The discovery of three-dimensional Van Hove singularity* | Nature Communications | 15 | | 2313 | 10.1038/s41467-024-46626-9 | Yes |
| Wu, Z.; Weinberger, T.I.; Chen, J.; Cabala, A.; Chichinadze, D.; Shaffer, D.; Pospisil, J.; Prokleska, J.; Haidamak, T.; Bastien, G.; Sechovsky, V.; Hickey, A.J.; Mancera-Ugarte, M.J.; Benjamin, S.; Graf, D.E.; Skourski, Y.; Lonzarich, G.G.; Valiska, M.; Grosche, F.M.; Eaton, A.G. | *Enhanced triplet superconductivity in next-generation ultraclean* $UTe_2$ | Proc. National Academy of Sciences (PNAS) | 121 | 37 | e2403067121 | 10.1073/pnas.2403067121 | Yes |
| Xing, C.; Zhang, S.; Yao, W.; Cui, D.; Huang, Q.; Yang, J.; Pandey, S.; Gong, D.; Hora'k, L.; Xin, Y.; Choi, E.; Zhang, Y.; Zhou, H.; Liu, J. | *Anomalous proximitized transport in metal/quantum magnet heterostructure Bi2Ir2O7/Yb2Ti2O7* | Physical Review Materials | 8 | 11 | 114407 | 10.1103/PhysRevMaterials.8.114407 | Yes |
| Xing, J.; Mudela, S.; Choi, E.; Jin, R. | *Candidate spin-liquid ground state in CsNdSe2 with an effective spin-1/2 triangular lattice* | Communications Materials | 5 | 1 | 45 | 10.1038/s43246-024-00483-7 | Yes |
| Xu, C.Q.; Zhao, C.C.; Shen, Y.; Ratkovski, D.R.; Ma, X.; Zhou, W.; Yin, X.; Lin, B.; Bangura, A.; Chao, C.; Wang, B.; Zhu, Z.; Ke, X.; Qian, D.; Li, S.; Xu, X. | *Multigap nodeless superconductivity in the Dirac intermetallic alloy* $V_2Ga_5$ *with one-dimensional vanadium chains* | Physical Review B | 109 | | L100506 | 10.1103/PhysRevB.109.L100506 | No |
| Yang, E.C.; Tsai, Y.T.; Chang, P.W.; Ozerov, M.; Krzystek, J.; Chien, S.Y.; He, J.X.; Kuo, T.S.; Sheu, H.S. | *Cobalt(II) Single-Ion Magnet Coordinated by Double Deprotonation of 2,2'-Bipyridine-6,6'-diol Ligands* | ACS Omega | 9 | | 26149-26158 | 10.1021/acsomega.4c01576 | Yes |
| Yasuzuka, S.; Uji, S.; Terashima, T.; Konoike, T.; Graf, D.E.; Choi, E.; Brooks, J.S.; Yamamoto, H.M.; Kato, R. | *Interplay between Angular-Dependent Magnetoresistance Oscillation and Charge-Ordered States in the Organic Conductor beta''-(ET)(TCNQ)* | Journal of the Physical Society of Japan | 93 | 9 | 94708 | 10.7566/JPSJ.93.094708 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Zareihassangheshlaghi, A.; Galeano-Cabral, J.R.; Uddin, M.S.; Schundelmier, B.C.; Wei, K.; Baumbach, R.; Latturner, S.E. | *Synthesis of Zintl Phase Metal Silicide Thermoelectric Materials in Magnesium/Zinc Flux* | Inorganic Chemistry | 63 | 43 | 20186 | 10.1021/acs.inorgchem.4c01079 | Yes |
| Zhai, G.; Halperin, W.P.; Reyes, A.P.; Posen, S.; Sung, Z.H.; Tarantini, C.; Brown, M.D.; Larbalestier, D.C. | *Nuclear magnetic resonance investigation of superconducting and normal state* $Nb_3Sn$ | Superconductor Science and Technology | 37 | 8 | 85020 | 10.1088/1361-6668/ad5fbf | Yes |
| Zhang, C.; Bailey, P.; Zhang, S.; Huynh, U.; Jiang, X.; McGill, S.A.; Semenov, D.; Vardeny, Z. | *Thermalization and Spin Relaxation Dynamics of Localized Photocarriers in the Band Tails of Nanocrystalline* $MAPbBr_3$ *Films* | ACS Photonics | 11 | 11 | 4588-4596 | 10.1021/acsphotonics.4c00873 | No |
| Zhang, Y.; Tian, H.; Li, H.; Yoon, C.; Nelson, R.A.; Li, Z.; Watanabe, K.; Taniguchi, T.; Smirnov, D.; Kawakami, R.K.; Goldberger, J.E.; Zhang, F.; Lau, C. | *Quantum octets in high mobility pentagonal two-dimensional* $PdSe_2$ | Nature Communications | 15 | 1 | 761 | 10.1038/s41467-024-44972-2 | Yes |
| Zhao, M.; Zhuang, Z.; Wu, F.; Leng, P.; Joseph, N.; Xie, X.; Ozerov, M.; He, S.; Chen, Y.; Narayan, A.; Liu, Z.; Xiu, F. | *Observation of Type-II Topological Nodal-Line Fermions in ZrSiSeCli* | ACS Nano | 18 | 26 | 16684 | 10.1021/acsnano.4c01633 | Yes |

## PUBLICATIONS GENERATED BY EMR AT FSU (25)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Bhunia, M.; Mohar, J.S.; Sandoval-Pauker, C.; Fehn, D.; Yang, E.S.; Gau, M.; Goicoechea, J.; Ozarowski, A.; Krzystek, J.; Telser, J.; Meyer, K.; Mindiola, D.J. | *Softer Is Better for Titanium: Molecular Titanium Arsenido Anions Featuring Ti≡As Bonding and a Terminal Parent Arsinidene* | Journal of the ACS | 146 | 6 | 3609-3614 | 10.1021/jacs.3c12939 | Yes |
| Bhunia, M.; Pauker, C.S.; Fehn, D.; Grant, L.N.; Gau, M.R.; Ozarowski, A.; Krzystek, J.; Telser, J.; Pinter, B.; Meyer, K.; Mindiola, D.J. | *Divalent Titanium via Reductive N-C Coupling of a TiIV Nitrido with Pi-Acids* | Angewandte Chemie International Edition | 63 | | e20240461 | 10.1002/anie.202404601 | Yes |
| Carnahan, S.L.; Riemersma, K.; Hlova, I.Z.; Dolotko, O.; Kmiec, S.J.; Lamahewage, S.; Martin, S.W.; Wishart, J.F.; Dubroca, T.; Balema, V.P.; Rossini, A.J. | *Formation of Stable Radicals by Mechanochemistry and Their Application for Magic Angle Spinning Dynamic Nuclear Polarization Solid-State NMR Spectroscopy* | Journal of Physical Chemistry A | 128 | 18 | 3635-3645 | 10.1021/acs.jpca.4c00228 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Choroba, K.; Palion-Gazda, J.; Machura, B.; Bienko, A.; Bienko, D.; Rajnak, C.; Boca, R.; Ozarowski, A.; Ozerov, M. | *Large Magnetic Anisotropy in Mono- and Binuclear cobalt(II) Complexes: The Role of the Distortion of the Coordination Sphere in Validity of the Spin-Hamiltonian Formalism* | Inorganic Chemistry | 63 | 2 | 1068-1082 | 10.1021/acs.inorgchem.3c03405 | Yes |
| Dubroca, T.; Ozarowski, A.; Sunatsuki, Y.; Telser, J.; Hill, S.; Krzystek, J. | *Benefitting from Magnetic Field-Induced Torquing in Terahertz EPR of a MnIII Coordination Complex* | Applied Magnetic Resonance | 56 | | 137-149 | 10.1007/s00723-024-01706-3 | Yes |
| Errulat, D.; Harriman, K.L.M.; Gálico, D.A.; Salerno, E.V.; van Tol, J.; Mansikkamäki, A.; Rouzières, M.; Hill, S.; Clérac, R.; Murugesu, M. | *Slow magnetic relaxation in a europium (II) complex* | Nature Communications | 15 | 1 | 3010 | 10.1038/s41467-024-46196-w | Yes |
| Gabbani, A.; Poncet, M.; Pescitelli, G.; Carbonaro, L.; Krzystek, J.; Colacio, E.; Piguet, C.; Pineider, F.; Di Bari, L.; Jimenez, J.R.; Zinna, F. | *Magnetic circularly polarized luminescence from spin flip transitions in a molecular ruby* | Chemical Science | 15 | | 17217-17223 | 10.1039/d4sc04718d | Yes |
| Harrabi, R.; Halbritter, T.; Alarab, S.; Chatterjee, S.; Wolska, M.; Damodaran, K.K.; van Tol, J.; Lee, D.; Paul, S.; Hediger, S.; Sigurdsson, S.; Mentink-Vigier, F.; Paepe, G. | *AsymPol-TEKs as efficient polarizing agents for MAS-DNP in glass matrices of non-aqueous solvents* | Physical Chemistry Chemical Physics | - | | - | 10.1039/D3CP04271E | Yes |
| Jafari, M.G.; Zolnhofer, E.M.; Fehn, D.; Heinemann, F.W.; Opalade, A.A.; Carroll, P.J.; Meyer, K.; Krzystek, J.; Ozarowski, A.; Mindiola, D.J.; Jackon, T.A.; Telser, J. | *Electronic Structure of Trans-[$V^{II}Cl_2(E(CH_3)_2CH_2CH_2E(CH_3)_2)_2$], E = N, P* | European Journal of Inorganic Chemistry | 27 | | e2022400395 | 10.1002/ejic.202400395 | Yes |
| Khatua, J.; Bhattacharya, S.; Strydom, A. M.; Zorko, A.; Lord, J. S.; Ozarowski, A.; Kermarrec, E.; Khuntia, P. | *Magnetic properties and spin dynamics in the spin-orbit driven $J_{eff}$ = 1/2 triangular lattice antiferromagnet $Ba_6Yb_2Ti_4O_{17}$* | Physical Review B | 109 | 24427 | 1-13 | 10.1103/PhysRevB.109.024427 | Yes |
| Kumar, S.; Gabarro Rierra, G.; Hruby, J.; Hill, S.; Bogani, L.; Rubio-Zuazo, J.; Jover, J.; Arauzo, A.; Bartolome, E.; Sanudo, E.C. | *On-surface magnetocaloric effect for a Van der Waals Gd(III) 2D MOF grown on Si* | Journal of Materials Chemistry A | 12 | | 6269-6279 | 10.1039/D3TA06648G | Yes |
| Landart, A.; Li, Y.; Ozerov, M.; Krzystek, J.; Palacios, M.A.; Quesada-Moreno, M.M.; Colacio, E. | *Control of the geometry and anisotropy driven by the combination of steric and anion coordination effects in Co(II) complexes with N6-tripodal ligands: The impact of the size of the ligand on the magnetization relaxation time* | Dalton Transactions | 53 | | 12876-12892 | 10.1039/D4DT00622D | Yes |
| Liu, Y.; Ai, Q.; Ye, Z.; Hrubý, J.; Wang, F.; Orlando, T.; Wang, Y.; Luo, J.; Fang, Q.; Zhang, B.; Zhai, T.; Lin, C.; Xu, C.; Zhu, Y.; Terlier, T.; Hill, S.; Zhu, H.; He, R.; Lou, J. | *Spin-Phonon Coupling in Iron-Doped Ultrathin Bismuth Halide Perovskite Derivatives* | ACS Nano | 18 | 19 | 12560-12568 | 10.1021/acsnano.4c03216 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Marbey, J.; Mailman, A.; Oakley, R.T.; Hill, S.; Winter, S.M. | *Substituent Effects on Exchange Anisotropy in Single- and Multi-Orbital Organic Radical Magnets* | Physical Review Materials | 8 | | 44406 | 10.1103/PhysRevMaterials.8.044406 | Yes |
| Miao, Z.; Scott, F.; van Tol, J.; Bowers, C.R.; Veige, A.S.; Mentink-Vigier, F. | *Soliton Based Dynamic Nuclear Polarization: An Overhauser Effect in Cyclic Polyacetylene at High Field and Room Temperature* | Journal of Physical Chemistry Letters | 15 | | 3369-3375 | 10.1021/acs.jpclett.3c03591 | Yes |
| Nagelski, A.L.; Ozerov, M.; Fataftah, M.S.; Krzystek, J.; Greer, S.M.; Holland, P.L.; Telser, J. | *Electronic Structure of Three-Coordinate Fe(II) and Co(II) β-Diketiminate Complexes* | Inorganic Chemistry | 63 | | 4511-4526 | 10.1021/acs.inorgchem.3c03388 | Yes |
| Ozarowski, A. | *HighField EPR Studies on Three Binuclear μOxoBridged Iron(III) Complexes: $Na_4[Fe(edta)]_2O \cdot 3H_2O$, $[Fe(phen)_2(H_2O)]_2O(NO_3)_4 \cdot 5H_2O$ and $[Fe(salen)]_2O$* | European Journal of Inorganic Chemistry | 2024 | e202400565 | 1-9 | 10.1002/ejic.202400565 | Yes |
| Russel, J.B.; Jafari, M.G.; Kim, J.H.; Pudasaini, B.; Ozarowski, A.; Telser, J.; Baik, M.H.; Mindiola, D.J. | *Ynamide and Azaalleneyl. Acid-Base Promoted Chelotropic and Spin-State Rearrangements in a Versatile Heterocumulene [(Ad)NCC(tBu)]-* | Angewandte Chemie International Edition | 63 | e2024014 | 1-6 | 10.1002/anie.202401433 | Yes |
| Scott, F.; Dubroca, T.; Schurko, R.W.; Hill, S.; Long, J.R.; Mentink-Vigier, F. | *Characterization of dielectric properties and their impact on MAS-DNP NMR applications* | Journal of Magnetic Resonance | 365 | | 107742 | 10.1016/j.jmr.2024.107742 | Yes |
| Smith, P.; Hrubý, J.; Evans, W.; Hill, S.; Minasian, S. | *Identification of an X-band Clock Transition in $Cp'_3Pr^-$ Enabled by a $4f^25d^1$ Configuration* | Journal of the ACS | 146 | 9 | 5781-5785 | 10.1021/jacs.3c12725 | Yes |
| Stewart, R.; Canaj, A.B.; Liu, S.; Regincós Martí, E.; Celmina, A.; Nichol, G.; Cheng, H.P.; Murrie, M.; Hill, S. | *Engineering clock transitions in molecular lanthanide complexes* | Journal of the ACS | 146 | 16 | 11083-11094 | 10.1021/jacs.3c09353 | Yes |
| Toubiana, L.A.; Valaydon-Pillay, A.; Elinburg, J.K.; Bacon, J.W.; Ozarowski, A.; Doerrer, L.H.; Stoian, S.A. | *Spectroscopic and Theoretical Investigation of High-Spin Square-Planar and Trigonal Fe(II) Complexes Supported by Fluorinated Alkoxides* | Inorganic Chemistry | 63 | 5 | 2370-2387 | 10.1021/acs.inorgchem.3c03236 | Yes |
| Vincent, A.H.; Lubert-Perquel, D.V.; Hill, S.; Long, J.R. | *Ferromagnetic Exchange and Slow Magnetic Relaxation in Cobalt Bis(1,2-dithiolene)-Bridged Dilanthanide Complexes* | Inorganic Chemistry | 63 | 51 | 24150-24156 | 10.1021/acs.inorgchem.4c03828 | Yes |
| Wojnar, M.K.; Kundu, K.; Kairalapova, A.; Wang, X.; Ozarowski, A.; Berkelbach, T.C.; Hill, S.; Freedman, D.E. | *Ligand field design enables quantum manipulation of spins in $Ni^{2+}$ complexes* | Chemical Science | 15 | | 1374-1383 | 10.1039/D3SC04919A | Yes |
| Yang, E.C.; Tsai, Y.T.; Chang, P.W.; Ozerov, M.; Krzystek, J.; Chien, S.Y.; He, J.X.; Kuo, T.S.; Sheu, H.S. | *Cobalt(II) Single-Ion Magnet Coordinated by Double Deprotonation of 2,2'-Bipyridine-6,6'-diol Ligands* | ACS Omega | 9 | | 26149-26158 | 10.1021/acsomega.4c01576 | Yes |

## PUBLICATIONS GENERATED BY HIGH B/T AT UF (1)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Makaju, R.; Kassar, H.; Daloglu, S.M.; Huynh, A.; Laroche, D.; Levchenko, A.; Addamane, S.J. | *Nonreciprocal Coulomb drag between quantum wires in the quasi-one-dimensional regime* | Physical Review B | 109 | | 85101 | 10.1103/PhysRevB.109.085101 | Yes |

## PUBLICATIONS GENERATED BY ICR AT FSU (44)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Ajaero, C.; Meulen, I.V.; Heshka, N.E.; Xin, Q.; McMartin, D.W.; Peru, K.M.; Chen, H.; McKenna, A.M.; Reed, K.; Headley, J.V. | *Evaluations of Weathering of Polar and Nonpolar Petroleum Components in a Simulated FreshwaterOil Spill by Orbitrap and Fourier Transform Ion Cyclotron Resonance Mass Spectrometry* | Energy Fuels | 38 | 8 | 6753-6763 | 10.1021/acs.energyfuels.3c04994 | Yes |
| Anderson, L.C.; Bai, D.L.; Blakney, G.T.; Butcher, D.S.; Reser, L.; Shabanowitz, J. | *The Hunt Lab Guide to De Novo Peptide Sequence Analysis by Tandem Mass Spectrometry* | Molecular and Cellular Proteomics | 23 | 12 | 100875 | 10.1016/j.mcpro.2024.100875 | Yes |
| Asefaw, B.K.; Chen, H.; Tang, Y. | *Removal of Selenate from Wastewater Using a Bioelectrochemical Reactor: The Importance of Measuring Selenide and the Role of Competing Anions* | Biochemical Engineering Journal | 212 | | 109531 | 10.1016/j.bej.2024.109531 | Yes |
| Asefaw, B.K.; Chen, H.; Tang, Y. | *Tellurite Reduction and Extracellular Recovery of Tellurium Nanorods Using Bioelectrochemical Reactors* | ACS ES&T Water | 4 | 10 | 4579-4590 | 10.1021/acsestwater.4c00588 | Yes |
| Asefaw, B.K.; Walia, N.; Stroupe, M.E.; Chen, H.; Tang, Y. | *Unraveling Mechanisms of Selenium Recovery by Facultative Anaerobic Bacterium Azospira sp. A9D-23B in Distinct Reactor Configurations* | Environmental Science and Pollution Research | 31 | | 59027-59040 | 10.1007/s11356-024-35140-6 | Yes |
| Benz, P.P.; Zito, P.; Osborn, E.; Goranov, A.; Hatcher, P.G.; Seivert, M.D.; Jeffrey, W.H. | *Effects of Burning and Photochemical Degradation of Macondo Surrogate Oil on its Composition and Toxicity* | Environmental Science: Processes & Impacts | 26 | 7 | 1205-1215 | 10.1039/d4em00023d | Yes |
| Bristol, E.M.; Behnke, M.I.; Spencer, R.G.M.; McKenna, A.M.; Jones, B.M.; Bull, D.L.; McClelland, J.W. | *Eroding Permafrost Coastlines Release Biodegradable Dissolved Organic Carbon to the Arctic Ocean* | Journal of Geophysical Research: Biogeosciences | 129 | 7 | e2024JG008233 | 10.1029/2024JG008233 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Cagle, G.A.; Chen, H.; Fleeger, J.W.; Deis, D.; Lin, Q.; Hou, A. | *Spatial Heterogeneity and Oil Pollution Structured the Soil Microbial Community in Salt Marshes in Barataria Bay, Louisiana, USA, Eight Years After the Deepwater Horizon Oil Spill* | Ecological Indicators | 160 | | 111884 | 10.1016/j.ecolind.2024.111884 | Yes |
| Cakmak, E.; Matthews, J.P.; Wi, S.; Ryder, M.R.; Chacon Patino, M.L.; McKenna, A.M.; Vautard, F.; Mark, A.; Meyers III, H.; Lara-Curzio, E. | *Detailed Characterization of Vitrinite-Rich Subbituminous and Bituminous Coals for Utilization in Carbon Fiber Precursor Production* | Energy Fuels | 38 | 8 | 6774-6789 | 10.1021/acs.energyfuels.3c05200 | Yes |
| Champiny, R.E.; Bacon, A.R.; Brush, I.D.; McKenna, A.M.; Colopietro, D.J.; Lin, Y. | *Unraveling the Persistence of Deep Podzolized Carbon: Insights from Organic Matter Characterization* | Science of the Total Environment | 906 | | 167382 | 10.1016/j.scitotenv.2023.167382 | Yes |
| Chen, H.; McKenna, A.M.; Rodgers, R.P. | *Microcosm Approach to Disentangle Bio-Oxidation and Photo-Oxidation Pathways in Macondo Well Oil: Molecular Characterization and Acute Toxicity Assessment* | Energy Fuels | 38 | 21 | 20462-20469 | 10.1021/acs.energyfuels.4c03951 | Yes |
| Cheng, J.; Robles-Lecompte, A.; McKenna, A.M.; Chang, N.B. | *Deciphering Linkages Between DON and the Microbial Community for Nitrogen Removal Using Two Green Sorption Media in a Surface Water Filtration System* | Chemosphere | 357 | | 142042 | 10.1016/j.chemosphere.2024.142042 | Yes |
| Coffey, N.R.; Dewey, C.; Manning, K.; Corilo, Y.E.; Kew, W.; Babcock-Adams, L.C.; McKenna, A.M.; Stuart, R.K.; Boiteau, R.M. | *Annotation of DOM metabolomes with an ultrahigh resolution mass spectrometry molecular formula library* | Organic Geochemistry | 197 | | 104880 | 10.1016/j.orggeochem.2024.104880 | Yes |
| Cruz-Simbron, R.; Sharma, S.; Arya, A.; Ray, J.; Lozano, A.; Andersen, J.L.; Chen, H.; Cleaves II, H.J. | *Combined Network and High Resolution Mass Spectrometry Analysis of the Formose Reaction Reveals Mechanisms for Emergent Behaviors* | ChemRxiv | | | | 10.26434/chemrxiv-2024-nj0p6 | Yes |
| Holt, A.; McKenna, A.M.; Kellerman, A.M.; Battin, T.I.; Fellman, J.B.; Hood, E.; Peter, H.; Schon, M.; Staercke, V.D.; Styllas, M.; Tolosano, M.; Spencer, R.G.M. | *Gradients of Deposition and In Situ Production Drive Global Glacier Organic Matter Composition* | Global Biogeochemical Cycles | 38 | 9 | e2024GB008212 | 10.1029/2024GB008212 | Yes |
| Hu, Z.; McKenna, A.M.; Wen, K.; Zhang, B.; Mao, H.; Goual, L.; Feng, X.; Zhu, M. | *Controls of Mineral Solubility on Adsorption-induced Molecular Fractionation of Dissolved Organic Matter Revealed by 21 T FT ICR MS* | Environmental Science and Technology | 58 | 5 | 2313-2322 | 10.1021/acs.est.3c08123 | Yes |
| Juyal, P.; Chacon Patino, M.L.; Rodgers, R.P. | *Fractionation and Characterization of Acidic Compounds of Flowline and Separator Asphaltene Deposits from a Gulf of Mexico Field* | Energy Fuels | 38 | 21 | 20361-20373 | 10.1021/acs.energyfuels.4c03528 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Kurek, M.; Wickland, K.P.; Nichols, N.A.; McKenna, A.M.; Anderson, S.M.; Dornblaser, M.M.; Koupaei-Abyazani, N.; Poulin, B.A.; Bansal, S.; Fellman, J.A.; Druschel, G.K.; Bernhardt, E.S.; Spencer, R.G.M. | *Linking Dissolved Organic Matter Composition to Landscape Properties in Wetlands Across the United States of America* | Global Biogeochemical Cycles | 38 | 5 | e2023GB00791 | 10.1029/2023GB007917 | Yes |
| LeClerc, H.O.; Shrestha, R.M.; Cheng, F.; Maag, A.R.; Tompsett, G.A.; Scheidemantle, B.; Zheng, Z.; Schmidt-Rohr, K.; McKenna, A.M.; Niles, S.; Zhang, J.; Foston, M.; Cai, C.M.; Teixeira, A.R.; Timko, M.T. | *Structurereactivity relationships governing hydrothermal liquefaction of lignin from co-solvent enhanced lignocellulosic fractionation (CELF)* | Sustainable Energy and Fuels | 8 | | 5856-5867 | 10.1039/D4SE01294A | Yes |
| Lozano, D.C.P.; Lester, D.W.; Town, J.S.; McKenna, A.M.; Wills, M. | *Assessment of Accelerated Aging Effect of Bio-Oil Fractions Utilizing Ultrahigh-Resolution Mass Spectrometry and k-Means Clustering of van Krevelen Compositional Space* | Energy Fuels | 38 | 17 | 16473-16489 | 10.1021/acs.energyfuels.4c02605 | Yes |
| Mallick, S.P.; Patel, H.V.; Gawande, S.; Wadee, A.; Chen, H.; McKenna, A.M.; Brazil, B.; Yu, W.; Zhao, R. | *Using Landfill Leachate to Indicate the Chemical and Biochemical Activities in Elevated Temperature Landfills* | Journal of Environmental Management | 351 | | 119719 | 10.1016/j.jenvman.2023.119719 | Yes |
| Maqbool, T.; Chen, H.; Wang, Q.; McKenna, A.M.; Jiang, D. | *Transformation of Sedimentary Dissolved Organic Matter in Electrokinetic Remediation Catalogued by FT-ICR Mass Spectrometry* | Water Research | 262 | | 122094 | 10.1016/j.watres.2024.122094 | Yes |
| McKenna, A.M.; Chacon Patino, M.L.; Roth, H.K.; Bahureksa, W.; Young, R.B.; Ippolito, J.A.; Xin, Y.; Borch, T.; Williams, A.J.; Chen, H. | *Effects of Pyrolysis Temperature on the Photooxidation of Water-soluble Fraction of Wheat Straw Biochar Based on 21 T FT-ICR Mass Spectrometry* | Soil & Environmental Health | 2 | 4 | 100114 | 10.1016/j.seh.2024.100114 | Yes |
| Mikawy, N.N.; Ramírez, C.R.; DeFiglia, S.A.; Szot, C.W.; Le, J.; Lantz, C.; Wei, B.; Zenaidee, M.A.; Blakney, G.T.; Nesvizhskii, A.I.; Loo, J.A.; Ruotolo, B.T.; Shabanowitz, J.; Anderson, L.C.; Håkansson, K. | *Are Internal Fragments Observable in Electron Based Top-Down Mass Spectrometry?* | Molecular and Cellular Proteomics | 23 | 9 | 100814 | 10.1016/j.mcpro.2024.100814 | Yes |
| Moore, O.C.; Holt, A.D.; Richards, L.; McKenna, A.M.; Spencer, R.G.M.; Lapworth, D.; Polya, D.A.; Lloyd, J.R.; van Dongen, B.E. | *Characterisation of Dissolved Organic Matter in Two Contrasting Arsenic-prone Sites in Kandal Province, Cambodia* | Organic Geochemistry | 198 | | 104886 | 10.1016/j.orggeochem.2024.104886 | Yes |
| Oliveira, P.R.B.; Leyva, D.; Tose, L.V.; Weisbrod, C.; Kozhinov, A.N.; Nagirnov, K.O.; Tsybin, Y.O.; Fernandez-Lima, F. | *Revisiting Dissolved Organic Matter Analysis Using High-Resolution Trapped Ion Mobility and FT-ICR Mass Spectrometry* | Journal of the American Society for Mass Spectrometry | 35 | 10 | 2400-2407 | 10.1021/jasms.4c00232 | Yes |
| Ouyang, T.; McKenna, A.M.; Wozniak, A.S. | *Storm-driven Hydrological, Seasonal, and Land Use/Land Cover Impact on Dissolved Organic Matter Dynamics in Mid-Atlantic, USA Coastal Plain River System Characterized by 21 T FT-ICR Mass Spectrometry* | Frontiers of Environmental Science & Engineering | 12 | | 1-20 | 10.3389/fenvs.2024.1379238 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Podgorski, D.C.; Walley, J.; Shields, M.; Hebert, D.; Harsha, M.L.; Spencer, R.G.M.; Tarr, M.; Zito, P. | *Dispersant-Enhanced Photodissolution of Macondo Crude Oil: A Molecular Perspective* | Journal of Hazardous Materials | 461 | | 132558 | 10.1016/j.jhazmat.2023.132558 | Yes |
| Robles-Lecompte, A.; Cheng, J.; McKenna, A.M.; Chang, N.B. | *Linking Pattern Shifts of Dissolved Organic Nitrogen Fractional Removal with Microbial Species Richness in a Cascade Upflow Biofiltration Process* | Water Research | 264 | | 122130 | 10.1016/j.watres.2024.122130 | Yes |
| Ruiz, W.; Gascon, G.; Chacon Patino, M.L.; Rodgers, R.P.; Dayton, D.C.; Barrère-Mangote, C.; Giusti, P.; Bouyssiere, B. | *Ultrasound-Assisted Sequential Extraction for Lignocellulose Pyrolysis Bio-Oil Fractionation. Part I: Method Development* | Energy Fuels | 38 | 18 | 1768717696 | 10.1021/acs.energyfuels.4c01959 | Yes |
| Schneider, E.; Neumann, A.; Chacon Patino, M.L.; Somero, M.; Ruppel, M.; Ihalainen, M.; Köster, K.; Sippula, O.; Czech, H.; Rüger, C.P.; Zimmermann, R. | *Accessing the Low-polar Molecular Composition of Boreal and Arctic Peat Burning Organic Aerosol via Thermal Analysis and Ultrahigh-Resolution Mass Spectrometry: Structural Motifs and Their Formation* | Journal of the American Society for Mass Spectrometry | 35 | 8 | 1713-1725 | 10.1021/jasms.4c00120 | Yes |
| Schneider, E.; Rüger, C.P.; Chacon Patino, M.L.; Somero, M.; Ruppel, M.M.; Ihalainen, M.; Köster, K.; Sippula, O.; Czech, H.; Zimmermann, R. | *The Complex Composition of Organic Aerosols Emitted During Burning Varies Between Arctic and Boreal Peat* | Communication Earth Environment | 5 | 1 | 137 | 10.1038/s43247-024-01304-y | Yes |
| Starr, S.F.; Frey, K.E.; Smith, L.C.; Kellerman, A.M.; McKenna, A.M.; Spencer, R.G.M. | *Peatlands Versus Permafrost: Landscape Features as Drivers of Dissolved Organic Matter Composition in West Siberian Rivers* | Journal of Geophysical Research Biogeosciences | 129 | 2 | e2023JG007797 | 10.1029/2023JG007797 | Yes |
| Tesfamariam, E.G.; Ssekimpi, D.; Hoque, S.S.; Chen, H.; Howe, J.D.; Zhou, C.; Zhen, Y.X.; Tang, Y. | *Isolation and Characterization of Pure Cultures for Metabolizing 1,4-dioxane in Oligotrophic Environments* | Water Science & Technology | 89 | 9 | 2440-2456 | 10.2166/wst.2024.139 | Yes |
| Tiemann, O.; Ruger, C.P.; Schwalb, L.; Chacon Patino, M.L.; Groger, T.; Zimmermann, R. | *Rock-to-Pharma: Characterization of Shale Oil-Based Nonbiological Complex Drugs along the Production Process by High-Resolution Mass Spectrometry* | Analytical Chemistry | 96 | 32 | 13050-13060 | 10.1021/acs.analchem.4c01288 | Yes |
| Ureel, Y.; Chacon Patino, M.L.; Kusenberg, M.; Ginzburg, A.; Rodgers, R.P.; Sabbe, M.K.; Geem, K.M.V. | *Compositional Analysis of Oxygenates and Hydrocarbons in Waste and Virgin Polyolefin Pyrolysis Oils by Ultrahigh-Resolution Fourier Transform Ion Cyclotron Resonance Mass Spectrometry* | Energy Fuels | 39 | 2 | 1283-1295 | 10.1021/acs.energyfuels.4c03835 | Yes |
| Ureel, Y.; Chacon Patino, M.L.; Kusenberg, M.; Rodgers, R.P.; Sabbe, M.K.; Geem, K.M.V. | *Characterization of PP and PE Waste Pyrolysis Oils by Ultrahigh-Resolution Fourier Transform Ion Cyclotron Resonance Mass Spectrometry* | Energy Fuels | 38 | 12 | 11148-11160 | 10.1021/acs.energyfuels.4c01954 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| VanderRoest, J.P.; Fowler, J.A.; Rhoades, C.C.; Roth, H.K.; Broeckling, C.D.; Fegel, T.S.; McKenna, A.M.; Bechtold, E.K.; Boot, C.M.; Wilkins, M.J.; Borch, T. | *Fire Impacts on the Soil Metabolome and Organic Matter Biodegradability* | Environmental Science and Technology | 58 | 9 | 4167-4180 | 10.1021/acs.est.3c09797 | Yes |
| Wang, Y.; Wang, Y.; Han, L.; McKenna, A.M.; Kellerman, A.M.; Spencer, R.G.M.; Yang, Y.; Xu, Y. | *Concentration and Compositional Controls on Degradation of Permafrost-derived Dissolved Organic Matter on the Qinghai-Tibetan Plateau* | Limnology and Oceanography Letters | 9 | 5 | 5630572 | 10.1002/lol2.10388 | Yes |
| Weisbrod, C.; McKenna, A.M.; Hendrickson, C.L. | *Selective Gas-Phase Depletion of Chemical Contaminants in Dissolved Organic Matter Increases Compositional Coverage by FT-ICR Mass Spectrometry* | Journal of the American Society for Mass Spectrometry | 35 | 10 | 2465-2471 | 10.1021/jasms.4c00261 | Yes |
| Yalcin, Y.S.; Gichuki, S.; Chen, H.; Asumanayagam, A.S.; Malwalage, S.M.; Sitther, V. | *Comparative Lipidome and Transcriptome Provide Novel Insights Into Zero-Valent Iron Nanoparticle-Treated Fremyella Diplosiphon* | Scientific Reports | 14 | 1 | 29380 | 10.1038/s41598-024-79780-7 | Yes |
| Yvin, O.M.; Kurek, M.R.; McKenna, A.M.; Hawkins, J.R.; Spencer, R.G.M. | *Comparison of Dissolved Organic Matter Composition from Various Sorbents Using Ultra-High Resolution Mass Spectrometry* | Organic Geochemistry | 196 | | 104846 | 10.1016/j.orggeochem.2024.104846 | Yes |
| Zeller, M.A.; Dam, B.R.V.; Lopes, C.; McKenna, A.M.; Osburn, C.L.; Fourgurean, J.W.; Kominoski, J.S.; Böttcher, M.E. | *The Unique Biogeochemical Role of Carbonate-Associated Organic Matter in a Subtropical Seagrass Meadow* | Communication Earth Environment | 5 | | 681 | 10.1038/s43247-024-01832-7 | Yes |
| Zhang, X.; Meng, Z.; Beusch, C.M.; Gharibi, H.; Cheng, Q.; Lyu, H.; Stefano, L.D.; Wang, J.; Saei, A.A.; Vegvari, A.; Geatani, M.; Zubarev, R.A. | *Ultralight Ultrafast Enzymes* | Angewandte Chemie International Edition | 63 | 3 | e20231648 | 10.1002/anie.202316488 | No |

## PUBLICATIONS GENERATED BY NMR AT FSU (53)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Aliakseyeu, A.; Truong, E.; Hu, Y.; Sayko, R.; Dobrynin, A.V.; Sukhishvili, S.A. | *Self-Diffusion of Star and Linear Polyelectrolytes in Salt-Free and Salt Solutions* | Macromolecules | 58 | 1 | 240-248 | 10.1021/acs.macromol.4c01374 | Yes |
| Bastos, R.; Marín-Montesinos, I.; Ferreira, S.S.; Mentink-Vigier, F.; Sardo, M.; Mafra, L.; Coimbra, M.A.; Coelho, E. | *Covalent connectivity of glycogen in brewer's spent yeast cell walls revealed by enzymatic approaches and dynamic nuclear polarization NMR* | Carbohydrate Polymers | 324 | | 121475 | 10.1016/j.carbpol.2023.121475 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Bepler, T.; Barrera, M.D.; Rooney, M.T.; Xiong, Y.; Kuang, H.; Goodell, E.; Goodwin, M.J.; Harbron, E.; Fu, R.; Mihailescu, M.; Narayanan, A.; Cotten, M.L. | *Antiviral activity of the host defense peptide piscidin 1: investigating a membrane-mediated mode of action* | Frontiers in Chemistry | 12 | | 1379192 | 10.3389/fchem.2024.1379192 | Yes |
| Cakmak, E.; Matthews, J.P.; Wi, S.; Ryder, M.R.; Chacon Patino, M.L.; McKenna, A.M.; Vautard, F.; Mark, A.; Meyers III, H.; Lara-Curzio, E. | *Detailed Characterization of Vitrinite-Rich Subbituminous and Bituminous Coals for Utilization in Carbon Fiber Precursor Production* | Energy Fuels | 38 | 8 | 6774-6789 | 10.1021/acs.energyfuels.3c05200 | Yes |
| Chatterjee, S.; Venkatesh, A.; Sigurdsson, S.T.; Mentink-Vigier, F. | *Role of Protons in and around Strongly Coupled Nitroxide Biradicals for Cross-Effect Dynamic Nuclear Polarization* | Journal of Physical Chemistry Letters | 15 | 8 | 2160-2168 | 10.1021/acs.jpclett.3c03472 | Yes |
| Chen, B. | *ASAP: an automatic sequential assignment program for congested multidimensional solid state NMR spectra* | Journal of Magnetic Resonance | 361 | | 107664 | https://doi.org/10.1016/j.jmr.2024.107664 | Yes |
| Chen, S.; Zhang, Z.; Chen, W.; Lucier, B.E.; Chen, M.; Zhang, W.; Zhu, H.; Hung, I.; Zheng, A.; Gan, Z.; Lei, D.; Huang, Y. | *Understanding water reaction pathways to control the hydrolytic reactivity of a Zn metal-organic framework* | Nature Communications | 15 | 1 | 10776 | 10.1038/s41467-024-54493-7 | Yes |
| Chen, Y.; Wang, P.; Truong, E.; Ogbolu, B.; Jin, Y.; Oyekunle, I.; Liu, H.; Islam, M.M.; Poudel, T.P.; Huang, C.; Hung, I.; Gan, Z.; Hu, Y. | *Superionic Conduction in $K_3SbS_4$ Enabled by Cl-Modified Anion Lattice* | Angewandte Chemie International Edition | 136 | 35 | e202408574 | 10.1002/ange.202408574 | Yes |
| Cheng, Q.; Dickwella Widanage, M.C.; Yarava, J.; Ankur, A.; Latgé, J.; Wang, P.; Wang, T. | *Molecular architecture of chitin and chitosan-dominated cell walls in zygomycetous fungal pathogens by solid-state NMR* | Nature Communications | 15 | 1 | 8295 | 10.1038/s41467-024-52759-8 | Yes |
| Corti, L.; Hung, I.; Venkatesh, A.; Gan, Z.; Claridge, J.B.; Rosseinsky, M.J.; Blanc, F. | *Cation Distribution and Anion Transport in the $La_3Ga_{5-x}Ge_{1+x}O_{14+0.5x}$ Langasite Structure* | Journal of the ACS | 146 | 20 | 14022-14035 | 10.1021/jacs.4c02324 | Yes |
| Corti, L.; Hung, I.; Venkatesh, A.; Gor'kov, P.L.; Gan, Z.; Claridge, J.B.; Rosseinsky, M.J.; Blanc, F. | *Local Structure in Disordered Melilite Revealed by Ultrahigh Field $^{71}$Ga and $^{139}$La Solid-State Nuclear Magnetic Resonance Spectroscopy* | ChemPhysChem | 25 | 8 | e202300934 | 10.1002/cphc.202300934 | Yes |
| Costello, W.N.; Xiao, Y.; Mentink-Vigier, F.; Kragelj, J.; Frederick, K. | *DNP-assisted solid-state NMR enables detection of proteins at nanomolar concentrations in fully protonated cellular milieu* | Journal of Biomolecular NMR | | | | 10.1007/s10858-024-00436-9 | Yes |
| Deck, M.J.; Chien, P.; Poudel, T.P.; Jin, Y.; Liu, H.; Hu, Y. | *Oxygen-Induced Structural Disruption for Improved $Li^+$ Transport and Electrochemical Stability of $Li_3PS_4$* | Advanced Energy Materials | 14 | | 2302785 | 10.1002/aenm.202302785 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Dickwella Widanage, M.C.; Gautam, I.; Sarkar, D.; Mentink-Vigier, F.; Vermaas, J.V.; Ding, S.; Lipton, A.S.; Fontaine, T.; Latgé, J.; Wang, P.; Wang, T. | *Adaptative survival of Aspergillus fumigatus to echinocandins arises from cell wall remodeling beyond β−1,3-glucan synthesis inhibition* | Nature Communications | 15 | 1 | 6382 | 10.1038/s41467-024-50799-8 | Yes |
| Dwivedi, N.; Patra, B.; Mentink-Vigier, F.; Wi, S.; Sinha, N. | *Unveiling Charge-Pair Salt-Bridge Interaction Between GAGs and Collagen Protein in Cartilage: Atomic Evidence from DNP-Enhanced ssNMR at Natural Isotopic Abundance* | Journal of the ACS | | | | 10.1021/jacs.4c05539 | Yes |
| Fleischer III, C.H.; Holmes, S.T.; Levin, K.; Veinberg, S.L.; Schurko, R.W. | *Characterization of Ephedrine HCl and Pseudoephedrine HCl Using Quadrupolar NMR Crystallography Guided Crystal Structure Prediction* | Faraday Discussions | In | | Press | 10.1039/D4FD00089G | Yes |
| Fu, R.; Ramamoorthy, A. | *$^{17}O$ Solid-State NMR Spectroscopy of Lipid Membranes* | Journal of Physical Chemistry B | 128 | | 3527-3537 | 10.1021/acs.jpcb.4c01016 | Yes |
| Goldberga, I.; Hung, I.; Sarou-Kanian, V.; Gervais, C.; Gan, Z.; Novak-Spackova, J.; Métro, T.; Leroy, C.; Berthomieu, D.; van der Lee, A.; Bonhomme, C.; Laurencin, D. | *High-Resolution $^{17}O$ Solid-State NMR as a Unique Probe for Investigating Oxalate Binding Modes in Materials: The Case Study of Calcium Oxalate Biominerals* | Inorganic Chemistry | 63 | 22 | 1017910193 | 10.1021/acs.inorgchem.4c00300 | Yes |
| Harrabi, R.; Halbritter, T.; Alarab, S.; Chatterjee, S.; Wolska, M.; Damodaran, K.K.; van Tol, J.; Lee, D.; Paul, S.; Hediger, S.; Sigurdsson, S.; Mentink-Vigier, F.; Paepe, G. | *AsymPol-TEKs as efficient polarizing agents for MAS-DNP in glass matrices of non-aqueous solvents* | Physical Chemistry Chemical Physics | - | | - | 10.1039/D3CP04271E | Yes |
| Helsper, S.; Yuan, X.; Jeske, R.J.; Bhagu, J.; Esmonde, C.; Duke, L.; Sun, L.; Li, Y.; Grant, S.C. | *Superparamagnetic Iron Oxide Nanoparticle-Labeled Extracellular Vesicles for Magnetic Resonance Imaging of Ischemic Stroke* | ACS Applied Nano Materials | 7 | 20 | 24160-24171 | 10.1021/acsanm.4c04888 | Yes |
| Holmes, S.; Boley, C.M.; Dewicki, A.; Gardner, Z.T.; Vojvodin, C.; Iuliucci, R.J.; Schurko, R.W. | *Carbon-13 chemical shift tensor measurements for nitrogen-dense compounds* | Magnetic Resonance in Chemistry | 62 | 3 | 179189 | 10.1002/mrc.5422 | Yes |
| Holmes, S.T.; Schoenzart, J.; Philips, A.B.; Kimball, J.J.; Termos, S.; Altenhof, A.R.; Xu, Y.; O'Keefe, C.A.; Autschbach, J.; Schurko, R.W. | *Structure and bonding in rhodium coordination compounds: a 103Rh solid-state NMR and relativistic DFT study* | Chemical Science | 15 | 6 | 21812196 | 10.1039/d3sc06026h | Yes |
| Hu, C.; Kuhn, L.; Makurvet, F.D.; Knorr, E.S.; Lin, X.; Kawade, R.K.; Mentink-Vigier, F.; Hanson, K.; Alabugin, I.V. | *Tethering Three Radical Cascades for Controlled Termination of Radical Alkyne peri-Annulations: Making Phenalenyl Ketones without Oxidants* | Journal of the ACS | 0 | 0 | null | 10.1021/jacs.3c13371 | Yes |
| Joo, T.; Lee, T. H.; Kaser, S. J.; Wu, W. N.; Wi, S.; Yeo, J. Y.; Smith, Z. P. | *Free Volume Manipulation and In Situ Oxidative Crosslinking of Amine-Functionalized Microporous Polymer Membranes* | Chemistry of Materials | 36 | 9 | 4275-4290 | 10.1021/acs.chemmater.3c03190 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Kharel, K.; Fu, R.; Ingram, E.; Clark, C.; Gunaydin Sen, O. | *Thermal and spectroscopic (IR, NMR) studies of bulk ammonia borane - Polyethylene oxide composites: A potential hydrogen storage system* | Journal of Physics and Chemistry of Solids | 193 | | 112177 | 10.1016/j.jpcs.2024.112177 | Yes |
| Li, Y.C.; Zhou, T.G.; Wu, Z.; Peng, P.; Zhang, S.Y.; Fu, R.; Zhang, R.; Zheng, W.; Zhang, P.F.; Zhai, H.; Peng, X.H. | *Emergent universal quench dynamics in randomly interacting spin models* | Nature Physics | 20 | | 1966 | 10.1038/s41567-024-02664-0 | Yes |
| Liu, C.; Sun, L.; Worden, H.; Ene, J.; Zeng, O.; Bhagu, J.; Grant, S.C.; Bao, X.; Jung, S.; Li, Y. | *Profiling biomanufactured extracellular vesicles of human forebrain spheroids in a Vertical Wheel bioreactor* | Journal of Extracellular Biology | 3 | 9 | e70002 | 10.1002/jex2.70002 | Yes |
| Miao, Z.; Scott, F.; van Tol, J.; Bowers, C.R.; Veige, A.S.; Mentink-Vigier, F. | *Soliton Based Dynamic Nuclear Polarization: An Overhauser Effect in Cyclic Polyacetylene at High Field and Room Temperature* | Journal of Physical Chemistry Letters | 15 | | 3369-3375 | 10.1021/acs.jpclett.3c03591 | Yes |
| Nir-Arad, O.; Fialkov, A.B.; Shlomi, D.H.; Manukovsky, N.; Mentink-Vigier, F.; Kaminker, I. | *High-field pulsed EPR spectroscopy under magic angle spinning* | Science Advances | 10 | 35 | eadq6073 | 10.1126/sciadv.adq6073 | Yes |
| Ogbolu, B.; Poudel, T.P.; Dikella, T.; Truong, E.; Chen, Y.; Hou, D.; Li, T.; Liu, Y.; Gabriel, E.; Xiong, H.; Huang, C.; Hu, Y. | *Tailoring Ion Transport in $Li_{3-3y}Ho_{1+y}Cl_{6-x}Br_x$ via Transition-Metal Free Structural Planes and Charge Carrier Distribution* | Advanced Science | 12 | 7 | 2409668 | 10.1002/advs.202409668 | Yes |
| Ortega, R.E.; Smith, R.B.; Kuszynski, J.E.; Bayles, A.; McGill, S.A.; Halas, N.J.; Schurko, R.W.; Strouse, G.F. | *Observing Metallic Carriers in Highly Faceted Plasmonic $Cd_2SnO_4$ Inverse Spinel Nanocrystals* | Advanced Optical Materials | 12 | 22 | 2400388 | 10.1002/adom.202400388 | Yes |
| Pang, Z.; Sheberstov, K.; Rodin, B.A.; Lumsden, J.; Banerjee, U.; Abergel, D.; Mentink-Vigier, F.; Bodenhausen, G.; Tan, K. | *Hypershifted spin spectroscopy with dynamic nuclear polarization at 1.4 K* | Science Advances | 10 | 50 | eadr7160 | 10.1126/sciadv.adr7160 | Yes |
| Peach, A.; Fleischer III, C.; Levin, K.; Holmes, S.; Sanchez, J.; Schurko, R.W. | *Quadrupolar NMR Crystallography Guided Crystal Structure Prediction (QNMRX-CSP)* | CrystEngComm | In | | press | 10.1039/D3CE01306E | Yes |
| Poudel, T.P.; Truong, E.; Oyekunle, I.P.; Deck, M.J.; Ogbolu, B.; Chen, Y.; Ojha, P.K.; Gamaralalage, T.N.; Patel, S.V.; Jin, Y.; Hou, D.; Huang, C.; Li, T.; Liu, Y.; Xiong, H.; Hu, Y. | *Sliceable, Moldable, and Highly Conductive Electrolytes for All-Solid-State Batteries* | ACS Energy Letters | 10 | 1 | 4047 | 10.1021/acsenergylett.4c02788 | Yes |
| Poulhazan, A.; Arnold, A.A.; Mentink-Vigier, F.; Muszynski, A.; Azadi, P.; Halim, A.; Vakhrushev, S.Y.; Joshi, H.; Wang, T.; Warschawski, D.E.; Marcotte, I. | *Molecular-level architecture of Chlamydomonas reinhardtii's glycoprotein-rich cell wall* | Nature Communications | 15 | 1 | 986 | 10.1038/s41467-024-45246-7 | Yes |
| Rassolov, P.V.; Ali, J.N.; Siegrist, T.M.; Humayun, M.; Mohammadigoushki, H. | *Magnetophoresis of paramagnetic metal ions in porous media* | Soft Matter | 20 | 11 | 2496--2508 | 10.1039/D3SM01607B | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Reichert, S.; Schepkin, V.D.; Kleimaier, D.; Zollner, F.G.; Schad, L.R. | *Comparison of triple quantum (TQ) TPPI and inversion recovery TQ TPPI pulse sequences at 9.4 and 21.1 T* | NMR in Biomedicine | 5106 | | 1-15 | 10.1002/nbm.5106 | Yes |
| Reichert, S.; Schepkin, V.D.; Kleimaier, D.; Zollner, F.G.; Schad, L.R. | *Sodium triple quantum MR signal extraction using a single-pulse sequence with single quantum time efficiency* | Magnetic Resonance in Medicine | 92 | 3 | 900915 | 10.1002/mrm.30107 | Yes |
| Scott, F.; Dubroca, T.; Schurko, R.W.; Hill, S.; Long, J.R.; Mentink-Vigier, F. | *Characterization of dielectric properties and their impact on MAS-DNP NMR applications* | Journal of Magnetic Resonance | 365 | | 107742 | 10.1016/j.jmr.2024.107742 | Yes |
| Scott, F.; Eddy, S.; Gullion, T.; Mentink-Vigier, F. | *Sorbitol-Based Glass Matrices Enable Dynamic Nuclear Polarization beyond 200 K* | Journal of Physical Chemistry Letters | | | 8743--8751 | 10.1021/acs.jpclett.4c02054 | Yes |
| Sen, S.; Lancelotti, R.F.; Hung, I.; Gan, Z. | *Characterization of the Pb Coordination Environment and Its Connectivity in Lead Silicate Glasses: Results from 2D $^{207}$Pb NMR Spectroscopy* | Journal of Physical Chemistry B | 128 | 11 | 28112820 | 10.1021/acs.jpcb.3c08307 | Yes |
| Stirk, A.J.; Holmes, S.; Souza, F.E.S.; Hung, I.; Gan, Z.; Britten, J.F.; Rey, A.W.; Schurko, R.W. | *An Unusual Ionic Cocrystal of Ponatinib Hydrochloride: Characterization by Single-Crystal X-ray Diffraction and Ultra-High Field NMR Spectroscopy* | CrystEngComm | 26 | | 1219-1233 | 10.1039/D3CE01062G | Yes |
| Venkatesh, A.; Casano, G.; Wei, R.; Rao, Y.; Lingua, H.; Karoui, H.; Yulikov, M.; Ouari, O.; Emsley, L. | *Rational Design of Dinitroxide Polarizing Agents for Dynamic Nuclear Polarization to Enhance Overall NMR Sensitivity* | Angewandte Chemie International Edition | 63 | 9 | e202317337 | 10.1002/anie.202317337 | Yes |
| Verma, R.; Singhvi, C.; Venkatesh, A.; Polshettiwar, V. | *Defects tune the acidic strength of amorphous aluminosilicates* | Nature Communications | 15 | 1 | 6899 | 10.1038/s41467-024-51233-9 | Yes |
| Vugmeyster, L.; Fu, R.; Ostrovsky, D. | *$^{17}$O NMR relaxation measurements for investigation of molecular dynamics in static solids, using sodium nitrate as a model compound* | Solid State Nuclear Magnetic Resonance | 134 | | 101976 | 10.1016/j.ssnmr.2024.101976 | Yes |
| Vugmeyster, L.; Ostrovsky, D.; Fu, R. | *Carbon-detected deuterium solid-state NMR rotating frame relaxation measurements for protein methyl groups under magic angle spinning* | Solid State Nuclear Magnetic Resonance | 130 | | 101922 | 10.1016/j.ssnmr.2024.101922 | Yes |
| Vugmeyster, L.; Ostrovsky, D.; Rodgers, A.; Gwin, K.; Smirnov, S.L.; Mcknight, C.J.; Fu, R. | *Persistence of Methionine Side Chain Mobility at Low Temperatures in a Nine-Residue Low Complexity Peptide, as Probed by 2H Solid-State NMR* | ChemPhysChem | 25 | | 2202300565 | 10.1002/cphc.202300565 | Yes |
| Wang, P.; Liu, H.; Patel, S.; Roberts, J.E.; Chen, Y.; Ogbolu, B.; Francisco, B.E.; Hu, Y. | *Dual Polyanion Mechanism for Superionic Transport in $BH_4$-Based Argyrodites* | Advanced Energy Materials | 14 | | 202401549 | 10.1002/aenm.202401549 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Wang, P.; Patel, S.; Roberts, J.E.; Francisco, B.E.; Hu, Y. | *Enhanced Ion Conduction via a Diverse Cl-$PS_4$ Anion Lattice in $Li_3PS_4xLiCl$* | ACS Materials Letters | 6 | | 2059-2064 | 10.1021/acsmaterialslett.4c00488 | Yes |
| Wi, S.; Lee, C.; Kim, W.Y.; Hou, J.; Lim, J.H. | *The relationship between chemical structure of perfluorinated sulfonic acid ionomers and their membrane properties for PEMEC application* | International Journal of Hydrogen Energy | 49 | | 794-804 | 10.1016/j.ijhydene.2023.09.131 | Yes |
| Wu, G.; Dai, Y.; Hung, I.; Gan, Z.; Terskikh, V. | *$^{1}H/^{17}O$ Chemical Shift Waves in Carboxyl-Bridged Hydrogen Bond Networks in Organic Solids* | Journal of Physical Chemistry A | 128 | 21 | 42884296 | 10.1021/acs.jpca.4c01866 | Yes |
| Yoo, P.; JUng, G. S.; Ryder, M. R.; Vautard, F.; Cakmak, E.; Wi, S.; Weisenberger, M. C.; Lara-Curzio, E.; Mathews, J. P.; Irle, S. | *Large-scale atomistic model construction of subbituminous and bituminous coals for solvent extraction simulations with reactive molecular dynamics* | Carbon | 222 | | 118939 | 10.1016/j.carbon.2024.118939 | Yes |
| Zhao, W.; Thomas, E.C.; Debnath, D.; Scott, F.; Mentink-Vigier, F.; White, J.R.; Cook, R.L.; Wang, T. | *Enriched Molecular-Level View of Saline Wetland Soil Carbon by Sensitivity-Enhanced Solid-State NMR* | Journal of the ACS | | | | 10.1021/jacs.4c11830 | Yes |

## PUBLICATIONS GENERATED BY PULSED FIELD AT LANL (29)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Bhardwaj, A.; Guvvala, N.; Nguyen, L.N.; Kim, C.H.; Cheetham, P.; Nguyen, D.N.; Pamidi, S.V. | *Modeling and Measurements of Ramping Losses in HTS Coils for Pulsed Power Applications of SMES* | IEEE Transactions on Applied Superconductivity | 34 | 3 | 1-7 | 10.1109/TASC.2024.3356427 | Yes |
| Blockmon, A.; Lee, M.; Zhang, S.; Manson, Z.; Manson, J.; Zapf, V.; Musfeldt, J. | *High field electrical polarization and magnetoelectric coupling in chiral magnet $[Cu(pym)(H_2O)_4]\ SiF_6{\cdot}H_2O$* | Inorganic Chemistry | 63 | | 11737 | 10.1021/acs.inorgchem.4c01249 | Yes |
| Boebinger, G.S.; Chubukov, A.V.; Fisher, I.R.; Grosche, F.M.; Hirschfeld, P.J.; Julian, S.R.; Keimer, B.; Kivelson, S.A.; Mackenzie, A.P.; Maeno, Y.; Orenstein, J.; Ramshaw, B.; Sachdev, S.; Schmalian, J.; Vojta, M. | *Hydride superconductivity is here to stay* | Nature Review Physics | | | | 10.1038/s42254-024-00794-1 | No |
| Choi, J.; Li, J.; Van Tuan, D.; Dery, H.; Crooker, S. | *Emergence of composite many-body exciton states in $WS_2$ and $MoSe_2$ monolayers* | Physical Review B | 109 | | L041304 | 10.1103/PhysRevB.109.L041304 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Coak, M.J.; Gotze, K.; Northam De La Fuente, T.; Catelnovo, C.; Tidey, J.P.; Singleton, J.; Boothroyd, A.T.; Prabhakaran, D.; Goddard, P. | *Magnetotransport of $Sm_2Ir_2O_7$ across the pressure-induced quantum-critical phase boundary* | Nature Partner Journals (npj) Quantum Materials | 9 | | 17 | 10.1038/s41535-024-00624-8 | Yes |
| Du, F.; Balakirev, F.F.; Minkov, V.S.; Smith, G.A.; Maiorov, B.A.; Kong, P.P.; Drozdov, A.P.; Eremets, M.I.; Du, F.; Balakirev, F.F.; Minkov, V.S.; Smith, G.A.; Maiorov, B.A.; Kong, P.P.; Drozdov, A.P.; Eremets, M.I. | *Tunneling Spectroscopy at Megabar Pressures: Determination of the Superconducting Gap in Sulfur* | Physical Review Letters | 133 | | 36002 | 10.1103/PhysRevLett.133.036002 | Yes |
| Frank, C.E.; Lewin, S.K.; Salas, G.S.; Czajka, P.; Hayes, I.M.; Yoon, H.; Metz, T.; Paglione, J.; Singleton, J.; Butch, N.P. | *Orphan high field superconductivity in non-superconducting uranium ditelluride* | Nature Communications | 15 | | 3378 | 10.1038/s41467-024-47090-1 | Yes |
| He, K.; Bian, M.; Seddon, S.D.; Jagadish, K.; Mucchietto, A.; Ren, H.; Kirstein, J.E.; Asadi, R.; Bai, J.; Yao, C.; Pan, S.; Yu, J.; Milde, P.; Huai, C.; Hui, H.; Zang, J.; Sabirianov, R.; Cheng, X.M.; Miao, G.; Xing, H.; Shao, Y.; Crooker, S.; Eng, L.; Hou, Y.; Bird, J.P.; Zeng, H. | *Unconventional Anomalous Hall Effect Driven by Self-Intercalation in Covalent 2D Magnet Cr2Te3* | Advanced Science | 12 | 2 | 2407625 | 10.1002/advs.202407625 | Yes |
| Jeon, S.; Wulferding, D.; Choi, Y.; Lee, S.; Nam, K.; Kim, K. H.; Lee, M.; Jang, T.H.; Park, J.H.; Lee, S.; Choi, S.; Nojiri, H.; Choi, K.Y. | *One-ninth magnetization plateau stabilized by spin entanglement in a kagome antiferromagnet* | Nature Physics | 20 | | 435-441 | 10.1038/s41567-023-02318-7 | Yes |
| Jiang, Q.; Palmstrom, J.C.; Singleton, J.; Chikara, S.; Graf, D.E.; Wang, C.; Shi, Y.; Malinowski, P.; Wang, A.; Lin, Z.; Shen, L.; Xu, X.; Xiao, D.; Chu, J.H. | *Revealing Fermi surface evolution and Berry curvature in an ideal type-II Weyl semimetal* | Nature Communications | 15 | | 2310 | 10.1038/s41467-024-46633-w | Yes |
| Kim, J.; Banerjee, S.; Kim, J.; Lee, M.; Son, S.; Kim, J.; Jung, T.; Sim, K.; Park, J.; Kim, J. | *Spin and lattice dynamics of the two-dimensional van der Waals ferromagnet $CrI_3$* | Nature Partner Journals (npj) Quantum Materials | 9 | | 55 | 10.1038/s41535-024-00666-y | Yes |
| Malick, S.; Swiatek, H.; Blawat, J.; Singleton, J.; Klimczuk, T. | *Large magnetoresistance and first-order phase transition in antiferromagnetic single-crystalline EuAg 4 Sb 2* | Physical Review B | 110 | 16 | 165149 | 10.1103/PhysRevB.110.165149 | Yes |
| Michel, J.R.; Betts, S.B.; Lucero, J.D.; Bhardwaj, A.; Nguyen, L.N.; Nguyen, D.N. | *Design and Construction of the New 85T Duplex Magnet at NHMFL-Los Alamos* | IEEE Transactions on Applied Superconductivity | 34 | 5 | 1-5 | 10.1109/TASC.2023.3338580 | Yes |
| Miura, M.; Eley, S.; Iida, K.; Hanzawa, K.; Matsumoto, J.; Hiramatsu, H.; Ogimoto, Y.; Suzuki, T.; Kobayashi, T.; Ozaki, T.; Kurokawa, H.; Sekiya, N.; Yoshida, R.; Kato, T.; Okada, T.; | *Quadrupling the depairing current density in the iron-based superconductor SmFeAsO1xHx* | Nature Materials | 23 | | 1378 | 10.1038/s41563-024-01952-7 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Okazaki, H.; Yamaki, T.; Hänisch, J.; Awaji, S.; Maeda, A.; Maiorov, B.A.; Hosono, H. | | | | | | | |
| Mizzi, C.A.; Kushwaha, S.K.; Rosa, P.F.S.; Phelan, W.A.; Arellano, D.C.; Pressley, L.A.; McQueen, T.M.; Chan, M.K.; Harrison, N. | *The reverse quantum limit and its implications for unconventional quantum oscillations in YbB12* | Nature Communications | 15 | 1 | 1607 | 10.1038/s41467-024-45801-2 | Yes |
| Mizzi, C.A.; Maiorov, B.A. | *Enabling resonant ultrasound spectroscopy in high magnetic fields* | Journal of the Acoustical Society of America | 155 | 5 | 3505-3520 | http://doi.org/10.1121/10.0026124 | Yes |
| Rai, B. K.; Maiorov, B.A.; Gofryk, K.; O'Rourke, P.; Housley, C.; Ajo, H.; Sawon, A.; Pathak, A.K.; Poudel, N.; Zhang, Q.; Williams, T. J.; Frontzek, M. | *Structure and properties of $NdCuGa_3$ single crystals* | Journal of Magnetism and Magnetic Materials | 589 | | 171515 | 10.1016/j.jmmm.2023.171515 | Yes |
| Rubi, K.; Candido, D.R.; Dumen, M.; Zeng, S.; Ammerlaan, A.; Bangma, F.; Chan, M.K.; Goiran, M.; Ariando, A.; Chakraverty, S.; Escoffier, W.; Zeitler, U.; Harrison, N. | *Unconventional quantum oscillations and evidence of nonparabolic electronic states in quasi-two-dimensional electron system at complex oxide interfaces* | Physical Review Research | 6 | | 43231 | 10.1103/PhysRevResearch.6.043231 | Yes |
| Schönemann, R.; Rosa, P.; Thomas, S.; Lai, Y.; Nguyen, D.N.; Singleton, J.; Brosha, E.; McDonald, R.; Zapf, V.; Maiorov, B.A.; Jaime, M. | *Sudden adiabaticity signals reentrant bulk superconductivity in $UTe_2$* | PNAS Nexus | 3 | 1 | pgad428 | 10.1093/pnasnexus/pgad428 | Yes |
| Stanley, M.; Li, Y.; Palmstrom, J.C.; Thompson, J.L.; Halanayake, K.D.; Reifsnyder Hickey, D.; McDonald, R.; Crooker, S.; Trivedi, N.; Samarth, N. | *Temperature dependence and limiting mechanisms of the upper critical field of FeSe thin films* | Physical Review B | 109 | | 94514 | 10.1103/PhysRevB.109.094514 | Yes |
| Stavinoha, M.; Huang, C.; Phelan, W.; Hallas, A.M.; Loganathan, V.; Michiardi, M.; Falke, J.; Zhdanovich, S.; Takegami, D.; Liu, C.; Tsuei, K.D.; Chen, C.T.; Qian, L.; Ng, N.J.; Lynn, J.W.; Huang, Q.; Weickert, F.; Zapf, V.; Larsen, K.R.; Sparks, P.D.; Eckert, J.C.; Puthirath, A.B.; Kung, H.; Pedersen, T.M.; Gorovikov, S.; Damascelli, A.; Tjeng, L.H.; Hooley, C.; Nevidomskyy, A.H.; Morosan, E. | *Conductive surface states and Kondo exhaustion in insulating $YbIr_3Si_7$* | Physical Review B | 109 | | 35112 | 10.1103/PhysRevB.109.035112 | Yes |
| Torres, J.R.; Mizzi, C.A.; Rehn, D.A.; Smith, T.; Widgeon Paisner, S.; Terricabras, A.J.; Parkison, D.M.; Vogel, S.C.; Kohnert, C.A.; Hayne, M.L.; Nizolek, T.J.; Torrez, M.A.; Munroe, T.; Maiorov, B.A.; Saleh, T.A.; Shivprasad, A.P. | *High-temperature structure, elasticity, and thermal expansion of ε-ZrH1.8* | Journal of Nuclear Materials | 603 | | 155437 | 10.1016/j.jnucmat.2024.155437 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Vaidya, S.; Coak, M.J.; Mayoh, D.A.; Lees, M.R.; Balakrishnan, G.; Singleton, J.; Goddard, P.A. | *Direct evidence from high-field magnetotransport for a dramatic change of quasiparticle character in van der Waals ferromagnet* $Fe_{3-x}GeTe_2$ | Physical Review Research | 6 | | L032008 | 10.1103/PhysRevResearch.6.L032008 | Yes |
| Vaidya, S.; Hernandez-Melian, A.; Tidey, J.P.; Curley, S.P.; Sharma, S.; Manuel, P.; Wang, C.; Hannaford, G.L.; Blundell, S.J.; Manson, Z.E.; Manson, J.L.; Singleton, J.; Lancaster, T.; Johnson, R.D.; Goddard, P.A. | *Pseudo-easy-axis anisotropy in antiferromagnetic $S=1$ diamond-lattice systems* | Physical Review B | 110 | | 174438 | 10.1103/PhysRevB.110.174438 | Yes |
| Wampler, J.; Liu, S.; Mondal, D. J.; Owczarek, M.; Zhang, S.; Wang, P.; Gakiya-Teruya, M.; Lee, M.; Cheng, H.P.; Shatruk, M.; Zapf, V. | *Magnetoelectric coupling in a* $Mn_4Na$*-organic complex under pulsed magnetic fields up to 73 T* | Journal of the ACS | 4c07759 | | 1 | 10.1021/jacs.4c07759 | Yes |
| Yi, H.; Zhao, Y.; Chan, Y.; Cai, J.; Mei, R.; Wu, X.; Yan, Z.; Zhou, L.; Zhang, R.; Wang, Z.; Paolini, S.; Xiao, R.; Wang, K.E.; Richardella, A.R.; Singleton, J.; Winter, L.E.; Prokscha, T.; Salman, Z.; Suter, A.; Balakrishnan, P.P.; Grutter, A.J.; Chan, M.; Samarth, N.; Xu, X.; Wu, W.; Liu, C.; Chang, C. | *Interface-induced superconductivity in magnetic topological insulators* | Science | 383 | 6683 | 634-639 | 10.1126/science.adk1270 | Yes |
| Yip, K.; Wang, L.; Poon, T.; Yu, K.; Lam, S.; Lai, K.; Singleton, J.; Balakirev, F.; Goh, S.K. | *Shubnikovde Haas oscillations of biaxial-strain-tuned superconductors in pulsed magnetic field up to 60 T* | APL Materials | 12 | 2 | 21124 | 10.1063/5.0191185 | Yes |
| Yuan, W.; Yan, Z.; Yi, H.; Wang, Z.; Paolini, S.; Zhao, Y.; Zhou, L.; Wang, A.G.; Wang, K.; Prokscha, T.; Salman, Z.; Suter, A.; Balakrishnan, P.P.; Grutter, A.J.; Winter, L.; Singleton, J.; Chan, M.; Chang, C. | *Coexistence of Superconductivity and Antiferromagnetism in Topological Magnet MnBi2Te4 Films* | Nano Letters | 24 | 26 | 7962-7971 | 10.1021/acs.nanolett.4c01407 | Yes |
| Zhang, S.; Lee, S.; Brosha, E.; Huang, Q.; Zhou, H.; Zapf, V.; Lee, M. | *Out-of-plane magnetic phase diagram of the Kitaev quantum magnet* $Na_2Co_2TeO_6$ | Physical Review B | 110 | | 144431 | 10.1103/PhysRevB.110.144431 | Yes |

## PUBLICATIONS GENERATED BY ASC (16)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Balachandran, S.; Walker, B.; Lee, P.J.; Starch, W.L.; Tarantini, C.; Larbalestier, D.C. | *Comparative drawability and recrystallization evaluation of Nb4Ta and Nb4Ta1Hf alloys, and the beneficial influence of Hf on developing finer $Nb_3Sn$ grain size* | Journal of Alloys and Compounds | 984 | | 173985 | 10.1016/j.jallcom.2024.173985 | Yes |
| Bang, J. | *A FEM Simulation Model to Calculate Local Currents and Voltages of NI REBCO Coil With Both Screening Current and Transverse Current Considered* | IEEE Transactions on Applied Superconductivity | 34 | 6 | 4904907 | 10.1109/TASC.2024.3409147 | Yes |
| Bang, J.; Bradford, G.; Kim, K.; Lee, J.; Polyanskii, A.A.; Larbalestier, D.C. | *Elastic-plastic conductor damage evaluation at over 0.4% strain using a high-stress REBCO coil* | Superconductor Science and Technology | 37 | | 95011 | 10.1088/1361-6668/ad6a9d | Yes |
| Bang, J.; Bradford, G.; Lee, J.; Abraimov, D.V. | *An experimental study to investigate magnetic field and winding force-dependent contact resistance of NI REBCO coil* | Superconductor Science and Technology | 37 | | 25008 | 10.1088/1361-6668/ad1a46 | Yes |
| Bang, J.; Kim, K.L.; Bradford, G.; Lee, J.; Abraimov, D.V.; Mato, T.; Noguchi, S.; Hahn, S.; Larbalestier, D.C. | *The Effect of Field-Dependent -Value on Screening Current, Voltage, and Magnetic Field of REBCO Coil* | IEEE Transactions on Applied Superconductivity | 34 | | 4902105 | 10.1109/TASC.2024.3357472 | Yes |
| Bang, J.; Lee, J.; Bradford, G.; Kim, K.; Hu, X.; Abraimov, D.V.; Jaroszynski, J.J.; Polyanskii, A.A.; Noguchi, S.; Hahn, S.; Larbalestier, D.C. | *Evidence that transverse variability of critical current density can greatly mitigate screening current stress in high field REBCO magnets* | Scientific Reports | 14 | 1 | 31703 | 10.1038/s41598-024-81902-0 | Yes |
| Bhardwaj, A.; Guvvala, N.; Nguyen, L.N.; Kim, C.H.; Cheetham, P.; Nguyen, D.N.; Pamidi, S.V. | *Modeling and Measurements of Ramping Losses in HTS Coils for Pulsed Power Applications of SMES* | IEEE Transactions on Applied Superconductivity | 34 | 3 | 1-7 | 10.1109/TASC.2024.3356427 | Yes |
| Bradford, G.; Jaroszynski, J.J.; Murphy, G.W.; Polyanskii, A.A.; Lee, J.; Larbalestier, D.C. | *Property Variations in Modern REBCO Coated Conductors from Multiple Manufacturers* | Advances In Cryogenic Engineering - Materials: Proceedings of thr International Cryogenic Materials Conference, Icmc 2023 | 1302 | | 12011 | 10.1088/1757-899X/1302/1/012011 | Yes |
| Kametani, F.; Su, Y.; Tarantini, C.; Hellstrom, E.; Matsumoto, A.; Kumakura, H.; Togano, K.; Huang, H.; Ma, Y. | *On the mechanisms of Jc increment and degradation in high-Jc Ba122 tapes made by different processing methods* | Applied Physics Express | 17 | | 13004 | 10.35848/1882-0786/ad1891 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Khanal, B.D.; Balachandran, S.; Chetri, S.; Barron, M.; Mullinix, R.W.; Williams, A.L.; Xu, P.; Ingrole, A.; Lee, P.J.; Ciovati, G.; Dhakal, P. | *Role of microstructure on flux expulsion of superconducting radio frequency cavities* | Superconductor Science and Technology | 38 | 1 | 15015 | 10.1088/1361-6668/ad9ad7 | Yes |
| Paidpilli, M.; Goel, C.; Sarangi, B.; Chen, S.; Galstyan, E.; Jaroszynski, J.J.; Bradford, G.; Abraimov, D.V.; Selvamanickam, V. | *40-meter-long REBCO tapes with critical current over 4,000 A/12 mm at 4.2 K and 13 T by advanced MOCVD* | Superconductivity | 9 | | 100081 | 10.1016/j.supcon.2023.100081 | Yes |
| Paudel, N.; Tarantini, C.; Balachandran, S.; Starch, W.L.; Lee, P.J.; Larbalestier, D.C. | *Influence of Nb alloying on Nb recrystallization and the upper critical field of $Nb_3Sn$* | Physical Review Materials | 8 | | 84801 | 10.1103/PhysRevMaterials.8.084801 | Yes |
| Qin, D.; Guo, Z.; Tarantini, C.; Hata, S.; Naito, M.; Yamamoto, A. | *Superconducting (Ba,K)$Fe_2As_2$ epitaxial films on single and bicrystal $SrTiO_3$ substrates* | Applied Physics Letters | 125 | | 182601 | 10.1063/5.0233645 | Yes |
| Tarantini, C.; Barua, S.; Oloye, A.; Kametani, F.; Jiang, J.; Hellstrom, E.; Larbalestier, D.C. | *Variation of effective filament diameter, irreversibility field, anisotropy, and pinning efficiency in Bi-2212 round wires* | Superconductor Science and Technology | 37 | | 15021 | 10.1088/1361-6668/ad13b2 | Yes |
| Xu, A.; Jiang, J.; Tarantini, C.; Kametani, F.; Hellstrom, E.; Larbalestier, D.C. | *Flux Pinning Enhancement of Bi-2212 Tapes by Increasing Sr Content* | IEEE Transactions on Applied Superconductivity | 34 | 3 | 1-5 | 10.1109/TASC.2023.3345293 | Yes |
| Zhai, G.; Halperin, W.P.; Reyes, A.P.; Posen, S.; Sung, Z.H.; Tarantini, C.; Brown, M.D.; Larbalestier, D.C. | *Nuclear magnetic resonance investigation of superconducting and normal state $Nb_3Sn$* | Superconductor Science and Technology | 37 | 8 | 85020 | 10.1088/1361-6668/ad5fbf | Yes |

## PUBLICATIONS GENERATED BY MS&T (19)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Alihosseini, Y.; Oghabneshin, Y.; Rezazad Bari, A.; Moslemi, S.; Reza Roozbehi, A.; Zabetian Targhi, M.; Guo, W. | *Performance of high-concentration photovoltaic cells cooled by a hybrid microchannel heat sink* | Applied Thermal Engineering | 238 | | 122206 | 10.1016/j.applthermaleng.2023.122206 | Yes |
| Alihosseini, Y.; Oghabneshin, Y.; Rezazad Bari, A.; Moslemi, S.; Zabetian Targhi, M.; Guo, W.; Mashhadian, A. | *Oblique microchannel merged with circle micro pin-fin as a novel hybrid heat sink for cooling of electronic devices* | Case Studies in Thermal Engineering | 53 | | 103888 | 10.1016/j.csite.2023.103888 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Bird, M.D. | *Superconducting magnet technology for the outer coils of resistive-superconducting hybrid magnets* | Superconductor Science and Technology | 37 | 12 | 123003 | 10.1088/1361-6668/ad8af0 | Yes |
| Gavrilin, A.V.; Bosque, E.; Marshall, W.S.; Kim, K.; Kolb-Bond, D.; Xu, P.; Dixon, I.R.; Suetomi, Y.; Bird, M.D.; Bai, H. | *Comparison Between Results of Quench Simulation and Tests of a 13T REBCO Coil in a Strong Background Magnetic Field* | IEEE Transactions on Applied Superconductivity | 34 | 5 | 1-4 | 10.1109/TASC.2024.3362762 | Yes |
| Han, K.; Toplosky, V.J.; Niu, R.; Lu, J. | *Internal Stress in High-Strength CuAg Conductor* | IEEE Transactions on Applied Superconductivity | 34 | | 7000105 | 10.1109/TASC.2024.3368396 | Yes |
| Kanai, T.; Jin, D.; Guo, W. | *Single-Electron Qubits Based on Quantum Ring States on Solid Neon Surface* | Physical Review Letters | 132 | | 250603 | 10.1103/PhysRevLett.132.250603 | Yes |
| Khanal, B.D.; Balachandran, S.; Chetri, S.; Barron, M.; Mullinix, R.W.; Williams, A.L.; Xu, P.; Ingrole, A.; Lee, P.J.; Ciovati, G.; Dhakal, P. | *Role of microstructure on flux expulsion of superconducting radio frequency cavities* | Superconductor Science and Technology | 38 | 1 | 15015 | 10.1088/1361-6668/ad9ad7 | Yes |
| Lu, J.; Xin, Y.; Toplosky, V.J.; Levitan, J.W.; Han, K.; Wadhams, J.A.; Humayun, M.; Abraimov, D.V.; Bai, H.; Zhang, Y. | *Characterization of residual-resistance-ratio of Cu stabilizer in commercial REBCO tapes* | Cryogenics | 141 | | 103901 | 10.1016/j.cryogenics.2024.103901 | Yes |
| Marshall, W.S.; Abraimov, M.; Lu, J.; Gavin, N. | *REBCO soldered lap joint resistance vs. length and tape manufacturer* | IEEE Transactions on Applied Superconductivity | Early Access | | 1-4 | 10.1109/TASC.2024.3499969 | Yes |
| Matos Pimentel, H.; Xin, Y.; Wu, K.; Cooley, J.; Imhoff, S.; Vargas, V.; Robison, J.; Montalvoand, J.; Han, K. | *Study of a CuAg Alloy from Microscale to Atomic Scale* | Microscopy and Microanalysis | 30 | Supplement_1 | ozae044.1005 | 10.1093/mam/ozae044.1005 | Yes |
| Matos Pimentel, H.; Zha, M.; Bishop, N.S.; Mao, K.; Kvitkovic, J.; Lu, J.; Levitan, J.W.; Abraimov, D.V. | *Use of SEM/FIB and Machine Learning to Characterize REBCO Conductors* | Microscopy and Microanalysis | 30 | Supplement_1 | ozae044.217 | 10.1093/mam/ozae044.217 | Yes |
| Matsushita, T.; Kiuchi, M.; Masuda, T.; Mukoyama, S.; Funaki, K.; Choi, J.; Lu, J.; Raine, M.J.; Quéval, L.; Trillaud, F.; Zhang, G.; Song, M.; Zheng, J.; Chen, Z.; Li, J. | *International Round Robin Test of Critical Current of Superconducting Cable Sample* | IEEE Transactions on Applied Superconductivity | 9 | | 1-6 | 10.1109/TASC.2024.3438251 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Niu, R.; Han, K. | *Effect of Notch Geometry on the Plastic Behavior of Cu-Ag Composites* | IEEE Transactions on Applied Superconductivity | 34 | 5 | 5 | 10.1109/TASC.2024.3350589 | Yes |
| Ren, J.; Teng, Y.; Liu, X.; Xu, X.; Li, H.; Han, K.; Zhai, Q.J. | *In-situ observation and analysis of high temperature behavior of carbides in GCr15 bearing steel by confocal laser scanning microscopy* | Journal of Iron and Steel Research International | 10 | | 1-9 | 10.1007/s42243-024-01347-7 | Yes |
| Skaggs, C.M.; Ryu, D.C.; Bhandari, H.; Xin, Y.; Kang, C.J.; Lapidus, S.H.; Siegfried, P.E.; Ghimire, N.J.; Tan, X.Y. | *Ba4RuMn2O10: A Noncentrosymmetric Polar Crystal Structure with Disordered Trimers* | Chemistry of Materials | 36 | | 6053−6061 | 10.1021/acs.chemmater.4c00586 | Yes |
| Xiang, Z.; wang, E.G.; Wang, T.; An, B.L.; Xin, Y.; Lu, J.; Niu, R.; Mi, Z.; Wei, W.; Sun, B.; Han, K.; Li, X. | *Improvement of magnetic properties and hardness by alloying Mo to a FeCrCo alloy* | Acta Materialia | 281 | | 120388 | 10.1016/j.actamat.2024.120388 | Yes |
| Xiang, Z.; Zhang, L.; An, B.; Xin, Y.; Niu, R.; Goddard, R.; Wang, T.; Wang, E.; Han, K. | *Effect of Co on spinodal decomposition and magnetic properties in* $Fe_{(67-X)}Cr_{31}Co_XSi_2$ *(X= 9, 14, 19, 24) medium entropy alloys* | Scripta Materialia | 238 | | 115756 | 10.1016/j.scriptamat.2023.115756 | Yes |
| Xing, C.; Zhang, S.; Yao, W.; Cui, D.; Huang, Q.; Yang, J.; Pandey, S.; Gong, D.; Hora'k, L.; Xin, Y.; Choi, E.; Zhang, Y.; Zhou, H.; Liu, J. | *Anomalous proximitized transport in metal/quantum magnet heterostructure Bi2Ir2O7/Yb2Ti2O7* | Physical Review Materials | 8 | 11 | 114407 | 10.1103/PhysRevMaterials.8.114407 | Yes |
| Zhong, H.G.; Zhou, L.; Yuan, H.; Han, K.; Han, Q.; Xu, Z.; Li, L.; Zhang, F.; Huang, J.; Li, R.; Zhai, Q. | *A Homogenization Technology for Heavy Ingots: Hot-Top Pulsed Magneto-Oscillation* | Metallurgical and Materials Transactions B | 2 | | 1-15 | 10.1007/s11663-024-03019-z | Yes |

## PUBLICATIONS GENERATED BY EDUCATION AT FSU (2)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Hughes, R.; Baptiste, A.; Hall-Mills, S. | *Cultivating STEM Engagement Among African American Youth: An Exploration of Secondary Students' Voices* | Discover Education | 3 | 129 | 1-30 | 10.1007/s44217-024-00227-2 | Yes |
| Hughes, R.; Ibourk, A.; Jones, K.; Crawford, S.; Wagner, L. | *#Resilienceisnotenough: Counter-storied identities of two young Black women becoming a STEM person* | Journal of Research on Science Teaching | 61 | 4 | 744-971 | 10.1002/tea.21925 | Yes |

## PUBLICATIONS GENERATED BY CMT/E (42)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Alihosseini, Y.; Oghabneshin, Y.; Rezazad Bari, A.; Moslemi, S.; Reza Roozbehi, A.; Zabetian Targhi, M.; Guo, W. | *Performance of high-concentration photovoltaic cells cooled by a hybrid microchannel heat sink* | Applied Thermal Engineering | 238 | | 122206 | 10.1016/j.applthermaleng.2023.122206 | Yes |
| Alihosseini, Y.; Oghabneshin, Y.; Rezazad Bari, A.; Moslemi, S.; Zabetian Targhi, M.; Guo, W.; Mashhadian, A. | *Oblique microchannel merged with circle micro pin-fin as a novel hybrid heat sink for cooling of electronic devices* | Case Studies in Thermal Engineering | 53 | | 103888 | 10.1016/j.csite.2023.103888 | Yes |
| Anthony-Petersen, R.; Biekert, A.; Bunker, R.; Chang, C.L.; Chang, Y.; Chaplinsky, L.; Fascione, E.; Fink, C.W.; Garcia-Sciveres, M.; Germond, R.; Guo, W.; Hertel, S.A.; Hong, Z.; Kurinsky, N.; Li, X.; Lin, J.; Lisovenko, M.; Mahapatra, R.; Mayer, A.; McKinsey, D.; Mehrotra, S.; Mirabolfathi, N.; Neblosky, B.; Page, W.A.; Patel, P.K.; Penning, B.; Douglas Pinckney, H.; Platt, M.; Pyle, M.; Reed, M.; Romani, R.K.; Santana Queiroz, H.; Sadoulet, B.; Serfass, B.; Smith, R.; Sorensen, P.F.; Suerfu, B.; Suzuki, A.; Underwood, R.; Velan, V.; Wang, G.; Wang, Y.; Watkins, S.L.; Williams, M.R.; Yefremenko, V.; Zhang, J. | *A stress-induced source of phonon bursts and quasiparticle poisoning* | Nature Communications | 15 | | 6444 | 10.1038/s41467-024-50173-8 | Yes |
| Anthony-Petersen, R.; Biekert, A.; Chang, C.L.; Changming, Y.; Chaplinsky, L.; Dushkin, A.; Fink, C.W.; Garcia-Sciveres, M.; Guo, W.; Hertel, S.A.; Li, X.; Lin, J.; Mahapatra, R.; Matava, W.; McKinsey, D.N.; Osterman, D.Z.; Patel, P.K.; Penning, B.; Pinckney, H.D.; Platt, M.; Pyle, M.; Qi, Y.; Reed, M.; Rischbieter, G.; Romani, R.K.; Serafin, A.; Serfass, B.; Smith, R.J.; Sorensen, P.; Suerfu, B.; Suzuki, A.; Velan, V.; Wang, G.; Wang, Y.; Watkins, S.L.; Williams, M.R.; Wuko, J.K. | *Demonstration of the HeRALD superfluid helium detector concept* | Physical Review D | 110 | | 72006 | 10.1103/PhysRevD.110.072006 | Yes |
| Bao, S.; Tang, Y.; Rababah, Q.G.; Guo, W. | *Freeze range of a condensing gas propagating in a liquid helium-cooled tube* | Thermal Science and Engineering Progress | 47 | | 102328 | 10.1016/j.tsep.2023.102328 | Yes |
| Barbosa, V.; Maharaj, D.; Cronkright, Z.; Wang, Y.; Cong, R.; Garcia, E.; Reyes, A.P.; Yan, J.; Ritter, C.; Mitrovic, V.; Gaulin, B.; Greedan, J.; Woodward, P. | *Exploring the Links between Structural Distortions, Orbital Ordering, and Multipolar Magnetic Ordering in Double Perovskites Containing Re(VI) and Os(VII)* | Chemistry of Materials | 36 | | 11478-11489 | 10.1021/acs.chemmater.4c02135 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Chen, S.; Chaudhary, S.; Refael, G.; Lewandowski, C.K. | *Enhancing shift current response via virtual multiband transitions* | Communications Physics | 7 | 1 | - | 10.1038/s42005-024-01729-z | Yes |
| Chichinadze, D. V.; Zhang, N. J.; Lin, J.X.; Wang, X.; Watanabe, K.; Taniguchi, T.; Vafek, O.; Li, J.I.A. | *Observation of giant nonlinear Hall conductivity in Bernal bilayer graphene* | arXiv | 2411 | | 11156 | 10.48550/arXiv.2411.11156 | Yes |
| Collaboration, I.; Virdi, P.; Guo, W.; Cattafesta, L.; Cheetham, P.; Cooley, L.; Gladin, J.; Heeg, J.; Ionel, D.; Kim, C.; Li, H.; Ordonez, J.C.; Pamidi, S.V.; Zheng, J. | *Liquid hydrogen storage and transfer-control system for integrated zero emission aviation (IZEA)* | IOP Conference Series: Materials Science and Engineering | 1302 | 1 | 12024 | 10.1088/1757-899X/1302/1/012024 | Yes |
| Cui, S.; Jiang, C.; Zhang, Z.; Wilson, T.A.; Zhang, N.; Xie, X.; Yuan, S.; Wang, H.; Lewandowski, C.K.; Ni, G. | *Nanoscale Optical Conductivity Imaging of Double-Moiré Twisted Bilayer Graphene* | Nano Letters | 24 | 37 | 1149011496 | 10.1021/acs.nanolett.4c02841 | Yes |
| Das, D.; Ma, K.; Jaroszynski, J.J.; Sazgari, V.; Klimczuk, T.; von Rohr, F.O.; Guguchia, Z. | *Ti4Ir2O: A time reversal invariant fully gapped unconventional superconductor* | Physical Review B | 110 | 17 | 174507 | 10.1103/PhysRevB.110.174507 | Yes |
| Deng, H.; Mendoza, L.; Bonesteel, N.E. | *Pairing and pair breaking by gauge fluctuations in bilayer composite fermion metals* | Physical Review B | 109 | | 85134 | 10.1103/PhysRevB.109.085134 | Yes |
| Herzog-Arbeitman, J.; Wang, Y.; Liu, J.; Tam, P.; Qi, Z.; Jia, Y.; Efetov, D.K.; Vafek, O.; Regnault, N.; Weng, H.; Wu, Q.; Bernevig, B.; Yu, J. | *Moir\'e fractional Chern insulators. II. First-principles calculations and continuum models of rhombohedral graphene superlattices* | Physical Review B | 109 | | 205122 | 10.1103/PhysRevB.109.205122 | No |
| Ho, W.D.; Zhang, P.; Haule, K.; Jackson, J.; Dobrosavljevic, V.; Dobrosavljevic, V. | *Quantum critical phase of FeO spans conditions of Earth's lower mantle* | Nature Communications | 15 | 1 | 3461 | 10.1038/s41467-024-47489-w | Yes |
| Hossain, MD.S.; Schindler, F.; Islam, R.; Muhammad, Z.; Jiang, Y.X.; Cheng, Z.J.; Zhang, Q.; Hou, T.; Chen, H.; Litskevich, M.; Casas, B.W.; Yin, J.X.; Cochran, T.A.; Yahyavi, M.; Yang, X.P.; Balicas, L.; Chang, G.; Zhao, W.; Hasan, M.Z. | *A hybrid topological quantum state in an elemental solid* | Nature | 628 | | 527533 | 10.1038/s41586-024-07203-8 | Yes |
| Hu, Z.; Yang, K. | *Exciton crystal melting and destruction by disorder in a bilayer quantum Hall system with a total filling factor of one* | Physical Review B | 110 | | 195307 | 10.1103/PhysRevB.110.195307 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Kanai, T.; Jin, D.; Guo, W. | *Single-Electron Qubits Based on Quantum Ring States on Solid Neon Surface* | Physical Review Letters | 132 | | 250603 | 10.1103/PhysRevLett.132.250603 | Yes |
| Lee, Y.C.; Chichinadze, D. V.; Chubukov, A. V. | *Crossover from ordinary to higher order Van Hove singularity in a honeycomb system: A parquet renormalization group analysis* | Physical Review B | 109 | | 155118 | 10.1103/PhysRevB.109.155118 | Yes |
| Li, Z.; Jindal, A.; Strasser, A.; He, Y.; Zheng, W.; Graf, D.E.; Taniguchi, T.; Watanabe, K.; Balicas, L.; Dean, C.R.; Qian, X.; Pasupathy, A.N.; Rhodes, D.A. | *Twofold Anisotropic Superconductivity in Bilayer Td-MoTe2* | Physical Review Letters | 133 | | 216002 | 10.1103/PhysRevLett.133.216002 | Yes |
| Ma, K.W.N.A.; Changlani, H.J. | *Locally controlled arrested thermalization* | Physical Review B: Rapid Comm/Letters | 109 | | L180301 | 10.1103/PhysRevB.109.L180301 | Yes |
| Mahato, C.; Yang, K.; Ghosal, A. | *Pinning of vortices by impurities in unconventional superconductors* | Physical Review B | 110 | | 94513 | 10.1103/PhysRevB.110.094513 | Yes |
| Melendrez, R.; Mukherjee, B.; Sharma, P.; Pal, A.; Changlani, H.J. | *Real-space thermalization of locally driven quantum magnets* | Physical Review B | 110 | | 104304 | 10.1103/PhysRevB.110.104304 | Yes |
| Moller, G.J.; Sullivan, C.M.; Cantrell, A.P.; Mardani, M.; Bieber, A.S.; Siegrist, T.M.; Nienhaus, L. | *Upconversion at Solid/Liquid Interfaces Using Perovskite Single Crystal Triplet Sensitizers* | Chemistry of Materials | 36 | 4 | 1941-1946 | 10.1021/acs.chemmater.3c02778 | Yes |
| Moon, A.; Li, Y.; McKeever, C.; Casas, B.W.; Bravo, M.; Zheng, W.; Macy, J.J.; Petford-Long, A.; McCandless, G.T.; Chan, J.Y.; Phatak, C.; Santos, E.J.G.; Balicas, L. | *Writing and Detecting Topological Charges in Exfoliated $Fe_{5-x}GeTe_2$* | ACS Nano | 18 | | 42164228 | 10.1021/acsnano.3c09234 | Yes |
| Mou, B.S.; Zhang, X.; Xiang, L.; Xu, Y.; Zhong, R.; Cava, R.J.; Zhou, H.; Jiang, Z.; Smirnov, D.; Drichko, N.; Winter, S.M. | *Comparative Raman scattering study of crystal field excitations in Co-based quantum magnets* | Physical Review Materials | 8 | | 84408 | 10.1103/PhysRevMaterials.8.084408 | Yes |
| Mukherjee, B.; Melendrez, R.; Szyniszewski, M.; Changlani, H.J.; Pal, A. | *Emergent strong zero mode through local Floquet engineering* | Physical Review B | 109 | | 64303 | 10.1103/PhysRevB.109.064303 | Yes |
| Neubauer, K.J.; Klemm, M.L.; Mozaffari, S.; Jiao, L.; Koshelev, A.E.; Yaresko, A.; Yi, M.; Balicas, L.; Dai, P. | *In-plane anisotropic magnetoresistance in detwinned $BaFe_{2-x}Ni_xAs_2$ (x=0, 0.6)* | Physical Review B | 109 | | 54435 | 10.1103/PhysRevB.109.054435 | Yes |
| Shafayat Hossain, MD.; Zhang, Q.; Wang, Z.; Dhale, N.; Liu, W.; Litskevich, M.; Casas, B.W.; Shumiya, N.; Yin, J.X.; Cochran, T.A.; Li, Y.; Jiang, Y.X.; Zhang, Y.; Cheng, G.; Cheng, Z.J.; Yang, X.P.; Yao, N.; Neupert, T.; Balicas, L.; Yao, Y.; Lv, B.; Hasan, M.Z. | *Quantum transport response of topological hinge modes* | Nature Physics | 20 | | 776782 | 10.1038/s41567-024-02388-1 | Yes |
| Shaffer, D.; Chichinadze, D.V.; Levchenko, A. | *Superconducting diode effect in multiphase superconductors* | Physical Review B | 110 | | 184509 | 10.1103/PhysRevB.110.184509 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Shcherbakov, D.; Voigt, G.; Memaran, S.; Liu, G.B.; Wang, Q.; Watanabe, K.; Taniguchi, T.; Smirnov, D.; Balicas, L.; Zhang, F.; Lau, C.N. | *Giant Tunability of Intersubband Transitions and Quantum Hall Quartets in Few-Layer InSe Quantum Wells* | ACS Nano Letters | 24 | | | 10.1021/acs.nanolett.3c04121 | Yes |
| Sie, E.J.; Othman, M.A.K.; Nyby, C.M.; Pemmaraju, D.; Garcia, C.A.C.; Wang, Y.; Guzelturk, B.; Xia, C.; Xiao, J.; Poletayev, A.; Ofori-Okai, B.K.; Hoffmann, M.C.; Park, S.; Shen, X.; Yang, J.; Li, R.; Reid, A.H.; Weathersby, S.; Muscher, P.; Finney, N.; Rhodes, D.A.; Balicas, L.; Nanni, E.; Hone, J.; Chueh, W.; Devereaux, T.P.; Narang, P.; Heinz, T.F.; Wang, X.; Lindenberg, A.M. | *Giant Terahertz Birefringence in an Ultrathin AnisotropicSemimetal* | ACS Nano Letters | 24 | | 60316037 | 10.1021/acs.nanolett.4c00758 | Yes |
| Singh, K.; Chew, A.; Herzog-Arbeitman, J.; Bernevig, B.; Vafek, O. | *Topological heavy fermions in magnetic field* | Nature Communications | 15 | 1 | 5257 | 10.1038/s41467-024-49531-3 | Yes |
| Tang, C.; Ye, G.; Nnokwe, C.; Fang, M.; Xiang, L.; Mahjouri-Samani, M.; Smirnov, D.; Yang, E.; Wang, T.; Zhang, L.; He, R.; Jin, W. | *Exciton-activated effective phonon magnetic moment in monolayer MoS2* | Physical Review B | 109 | | 155426 | 10.1103/PhysRevB.109.155426 | Yes |
| Teklu, A.; Kern, N.; Kuthirummal, N.; Tidwell, J.; Rabe, M.; Gong, Y.; Zheng, W.; Balicas, L. | *Experimental Analysis of the Elastic Moduli of Atomically Thin Transition Metal Dichalcogenides* | Journal of Physical Chemistry C | 128 | | 2033320342 | 10.1021/acs.jpcc.4c03861 | Yes |
| Tian, H.; Codecido, E.; Mao, D.; Zhang, K.; Che, S.; Watanabe, K.; Taniguchi, T.; Smirnov, D.; Kim, E.; Bockrath, M.; Lau, C. | *Dominant 1/3-filling correlated insulator states and orbital geometric frustration in twisted bilayer graphene* | Nature Physics | 20 | 9 | 1407-1412 | 10.1038/s41567-024-02546-5 | Yes |
| Wang, X.; Tan, Q.; Li, T.; Lu, Z.; Cao, J.; Ge, Y.; Zhao, L.; Tang, J.; Kitadai, H.; Guo, M.; Li, Y.; Xu, W.; Cheng, R.; Smirnov, D.; Ling, X. | *Unveiling the spin evolution in van der Waals antiferromagnets via magneto-exciton effects* | Nature Communications | 15 | 1 | 8011 | 10.1038/s41467-024-51643-9 | Yes |
| Wang, X.; Vafek, O. | *Theory of Correlated Chern Insulators in Twisted Bilayer Graphene* | Physical Review X | 14 | | 21042 | 10.1103/PhysRevX.14.021042 | Yes |
| Wu, Z.; Weinberger, T. I.; Hickey, A. J.; Chichinadze, D. V.; Shaffer, D.; Cabala, A.; Chen, H.; Long, M.; Brumm, T. J.; Xie, W.; Lin, Y.; Skourski, Y.; Zengwei, Z.; Graf, D.E.; Sechovsky, V.; Lonzarich, G. G.; Valiska, M.; Grosche, F. M.; Eaton, A. G. | *Quantum critical fluctuations generate intensely magnetic field-resilient superconductivity in* $UTe_2$ | arXiv | 2403 | | 2535 | 10.48550/arXiv.2403.02535 | Yes |
| Wu, Z.; Weinberger, T.I.; Chen, J.; Cabala, A.; Chichinadze, D.; Shaffer, D.; Pospisil, J.; Prokleska, J.; Haidamak, T.; Bastien, G.; Sechovsky, V.; Hickey, A.J.; Mancera-Ugarte, M.J.; Benjamin, S.; Graf, D.E.; Skourski, Y.; Lonzarich, G.G.; Valiska, M.; Grosche, F.M.; Eaton, A.G. | *Enhanced triplet superconductivity in next-generation ultraclean* $UTe_2$ | Proc. National Academy of Sciences (PNAS) | 121 | 37 | e2403067121 | 10.1073/pnas.2403067121 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Yu, J.; Herzog-Arbeitman, J.; Wang, M.; Vafek, O.; Bernevig, B.; Regnault, N. | *Fractional Chern insulators versus nonmagnetic states in twisted bilayer $MoTe_2$* | Physical Review B | 109 | | 45147 | 10.1103/PhysRevB.109.045147 | Yes |
| Zhang, N. J.; Lin, J.X.; Chichinadze, D.; Wang, Y.; Watanabe, K.; Taniguchi, T.; Fu, L.; Li, J.I.A. | *Angle-resolved transport non-reciprocity and spontaneous symmetry breaking in twisted trilayer graphene* | Nature Materials | 23 | | 356362 | 10.1038/s41563-024-01809-z | Yes |
| Zhang, Y.; Tian, H.; Li, H.; Yoon, C.; Nelson, R.A.; Li, Z.; Watanabe, K.; Taniguchi, T.; Smirnov, D.; Kawakami, R.K.; Goldberger, J.E.; Zhang, F.; Lau, C. | *Quantum octets in high mobility pentagonal two-dimensional $PdSe_2$* | Nature Communications | 15 | 1 | 761 | 10.1038/s41467-024-44972-2 | Yes |

## PUBLICATIONS GENERATED BY GEOCHEMISTRY FACILITY (5)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Su, D.F.; Kelley, J.; Flynn, L.J.; Ji, X.P.; Deng, C.L.; Deng, T.; Li, P.; Li, Z.; Sanders, W.J.; Stidham, T.A.; Sun, F.; Wang, X.; Wang, Y.; Wu, Z.; Youlatos, D.; Jablonski, N.G. | *Paleoecology and paleobiogeography of the latest Miocene site of Shuitangba, Zhaotong, China* | Palaeogeography, Palaeoclimatology, Palaeoecology | 641 | | 112112 | 10.1016/j.palaeo.2024.112112 | Yes |
| Wang, Y.; Jahan, S.; Burnett, W.C.; Wu, Z.; Elsner, J.; Means, G.H.; Liu, J.; Jiang, S. | *Late Holocene Tropical Cyclones Linked to Climatic and Solar Variability* | Quaternary Science Reviews | 334 | | 108710 | 10.1016/j.quascirev.2024.108710 | Yes |
| Yang, S.; Humayun, M.; Righter, K. | *Mineralogy of the Martian mantle inferred from bulk chemical compositions.* | Meteoritics and Planetary Science | 59 | | 2545-2564 | 10.1111/maps.14235 | Yes |

## PUBLICATIONS GENERATED BY GYPSTACKS / RARE EARTH (2)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Lu, J.; Xin, Y.; Toplosky, V.J.; Levitan, J.W.; Han, K.; Wadhams, J.A.; Humayun, M.; Abraimov, D.V.; Bai, H.; Zhang, Y. | *Characterization of residual-resistance-ratio of Cu stabilizer in commercial REBCO tapes* | Cryogenics | 141 | | 103901 | 10.1016/j.cryogenics.2024.103901 | Yes |
| Rassolov, P.V.; Ali, J.N.; Siegrist, T.M.; Humayun, M.; Mohammadigoushki, H. | *Magnetophoresis of paramagnetic metal ions in porous media* | Soft Matter | 20 | 11 | 2496--2508 | 10.1039/D3SM01607B | Yes |

## PUBLICATIONS GENERATED BY MBI AT UF (34)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Britton, M.K.; Colverson, A.; Cohen, R.A.; Velez, X.; Lamb, D.G.; Porges, E.C.; Williamson, J.B. | *Frontal GABA levels associate with musical rhythm production in healthy aging adults* | Brain and Cognition | 182 | | 106230 | 10.1016/j.bandc.2024.106230 | No |
| Bruno, K.A.; Fradley, M.G.; Brown, S.; Guha, A.; Cousin, L.; Guo, Y.I.; O'Dell, W.G.; Smuder, A.J.; Yang, S.; Braithwaite, D.; Pepine, C.J.; Gong, Y. | *Racial/ethnic disparities, artificial intelligence, and cutting-edge research: Proceedings from the 2023 Florida cardio-oncology symposium* | American Heart Journal Plus: Cardiology Research and Practice | 46 | | 100469 | 10.1016/j.ahjo.2024.100469 | No |
| Bruno, K.A.; O'Dell, W.G.; Tantawy, M.; Casson, C.L.; Ferrall-Fairbanks, M.C.; DeRemer, D.L.; Dungan, J.R.; Nguyen, B.L.; Roumi, N.H.; Shabnaz, S.; Smuder, A.J.; Vilaro, M.J.; Norton, N.; Fairweather, D.; Gong, Y. | *Research summary of poster presentations at the 2023 Florida cardio-oncology symposium* | American Heart Journal Plus: Cardiology Research and Practice | 37 | | 100348 | 10.1016/j.ahjo.2023.100348 | No |
| Cook, R.; Richards, V.; Gullett, J.; Lerner, B.; Zhou, Z.; Porges, E.; Wang, Y.; Kahler, C.; Barnett, N.; Li, Z.; Pallikkuth, S.; Thomas, E.; Rodriguez, A.; Bryant, K.; Ghare, S.; Barve, S.; Govind, V.; Dévieux, J.; Cohen, R. | *Experimentally Induced Reductions in Alcohol Consumption and Brain, Cognitive, and Clinical Outcomes in Older Persons With and Those Without HIV Infection (30-Day Challenge Study): Protocol for a Nonrandomized Clinical Trial* | JMIR Res Protoc | 13 | | e53684 | 10.2196/53684 | No |
| Dean, D.C.; Tisdall, M.D.; Wisnowski, J.L.; Feczko, E.; Gagoski, B.; Alexander, A.L.; Edden, R.A.; Gao, W.; Hendrickson, T.J.; Howell, B.R.; Huang, H.; Humphreys, K.L.; Riggins, T.; Sylvester, C.M.; Weldon, K.B.; Yacoub, E.; Ahtam, B.; Beck, N.; Banerjee, S.; Boroday, S.; Caprihan, A.; Caron, B.; Carpenter, S.; Chang, Y.L.; Chung, A.W.; Cieslak, M.; Clarke, W.T.; Dalesandro, A.; Das, S.; Davies-Jenkins, C.W.; Dufford, A.J.; Evans, A.C.; Fesselier, L.; Ganji, S.K.; Gilbert, G.; Graham, A.M.; Gudmundson, A.T.; Macgregor-Hannah, M.; Harms, M.P.; Hilbert, T.; Hui, S.C.; Irfanoglu, M.O.; Kecskemeti, S.; Kober, T.; Kuperman, J.M.; Lamichhane, B.; Landman, B.A.; Lecour-Bourcher, X.; Lee, E.G.; Li, X.; MacIntyre, L.; Madjar, C.; Manhard, M.K.; Mayer, A.R.; Mehta, K.; Moore, L.A.; Murali-Manohar, S.; Navarro, C.; Nebel, M.B.; Newman, S.D.; Newton, A.T.; Noeske, R.; Norton, E.S.; Oeltzschner, G.; Ongaro-Carcy, R.; Ou, X.W.; Ouyang, M.H.; Parrish, T.B.; Pekar, J.J.; Pengo, T.; Pierpaoli, C.; Poldrack, R.A.; Rajagopalan, V.; Rettmann, D.W.; Rioux, P.; Rosenberg, J.T.; Salo, T.; Satterthwaite, T.D.; Scott, | *Quantifying brain development in the HEALthy Brain and Child Development (HBCD) Study: The magnetic resonance imaging and spectroscopy protocol* | Developmental Cognitive Neuroscience | 70 | | | 10.1016/j.dcn.2024.101452 | No |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| L.S.; Shin, E.; Simegn, G.; Simmons, W.K.; Song, Y.L.; Tikalsky, B.J.; Tkach, J.; van Zijl, P.C.; Vannest, J.; Versluis, M.; Zhao, Y.S.; Zöllner, H.J.; Fair, D.A.; Smyser, C.D.; Elison, J.T. | | | | | | | |
| Domenico, L.H.; Tanner, J.J.; Mickle, A.M.; Terry, E.L.; Garvan, C.; Lai, S.; Deshpande, H.; Staud, R.; Redden, D.; Price, C.C.; Goodin, B.R.; Fillingim, R.B.; Sibille, K.T. | *Environmental and sociocultural factors are associated with pain-related brain structure among diverse individuals with chronic musculoskeletal pain: intersectional considerations* | Scientific Reports | 14 | 1 | | 10.1038/s41598-024-58120-9 | Yes |
| Elton, A.; Lewis, B.; Nixon, S.J. | *The effects of adverse life events on brain development in the ABCD study®: a propensity-weighted analysis* | Molecular Psychiatry | | | | 10.1038/s41380-024-02850-9 | No |
| Garcia, A.; Cohen, R.A.; Langer, K.G.; O'Neal, A.G.; Porges, E.C.; Woods, A.J.; Williamson, J.B. | *Semantic processing in older adults is associated with distributed neural activation which varies by association and abstractness of words* | Geroscience | 46 | | 61956212 | 10.1007/s11357-024-01216-x | No |
| Ho, B.D.; Gullett, J.M.; Anton, S.; Franchetti, M.K.; Bharadwaj, P.K.; Raichlen, D.A.; Alexander, G.E.; Rundek, T.; Levin, B.; Visscher, K.; Woods, A.J.; Cohen, R.A. | *Associations between physical exercise type, fluid intelligence, executive function, and processing speed in the oldest-old (85+)* | Geroscience | 46 | 1 | 491-503 | 10.1007/s11357-023-00885-4 | No |
| Hwang, J.; Liu, C.; Winesett, S.P.; Chatterjee, S.A.; Swanson, C.W.; Manini, T.M.; Hass, C.J.; Seidler, R.D.; Ferris, D.P.; Roy, A.; Clark, D.J.; Gruber, A.D. | *Prefrontal cortical activity during uneven terrain walking in younger and older adults* | Frontiers in Aging Neuroscience | 16 | | | 10.3389/fnagi.2024.1389488 | No |
| Jacobsen, N.A.; Ferris, D.P. | *Electrocortical theta activity may reflect sensory prediction errors during adaptation to a gradual gait perturbation* | Peerj | 12 | | | 10.7717/peerj.17451 | No |
| Jacobsen, N.A.; Ferris, D.P. | *Exploring Electrocortical Signatures of Gait Adaptation: Differential Neural Dynamics in Slow and Fast Gait Adapters* | eNeuro | 11 | 7 | | 10.1523/ENEURO.0515-23.2024 | No |
| Jenkins, B.M.; Dixon, L.D.; Kokesh, K.J.; Zingariello, C.D.; Vandenborne, K.H.; Walter, G.A.; Barnard, A.M. | *Skeletal muscle symptoms and quantitative MRI in females with dystrophinopathy* | Muscle and Nerve | 70 | 5 | 988-999 | 10.1002/mus.28235 | Yes |
| Kotlarz, P.; Febo, M.; Nino, J.C. | *Brain Network Modularity and Resilience Signaled by Betweenness Centrality Percolation Spiking* | Applied Sciences-Basel | 14 | 10 | | 10.3390/app14104197 | No |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Kraft, J.N.; Indahlastari, A.; Boutzoukas, E.M.; Hausman, H.K.; Hardcastle, C.; Albizu, A.; O'Shea, A.; Evangelista, N.D.; Van Etten, E.J.; Bharadwaj, P.K.; Song, H.Y.; Smith, S.G.; DeKosky, S.T.; Hishaw, G.A.; Wu, S.; Marsiske, M.; Cohen, R.; Alexander, G.E.; Porges, E.; Woods, A.J. | *The impact of a tDCS and cognitive training intervention on task-based functional connectivity* | Geroscience | 46 | | 33253339 | 10.1007/s11357-024-01077-4 | No |
| Liang, Y.; Bo, K.E.; Meyyappan, S.; Ding, M. | *Decoding fMRI data with support vector machines and deep neural networks* | Journal of Neuroscience Methods | 401 | | 110004 | 10.1016/j.jneumeth.2023.110004 | No |
| Liang, Y.; Zhao, Q.; Neubert, J.K.; Ding, M. | *Causal interactions in brain networks predict pain levels in trigeminal neuralgia* | Brain Research Bulletin | 211 | | 110947 | 10.1016/j.brainresbull.2024.110947 | No |
| Lin, T.; Rana, M.; Liu, P.W.; Polk, R.; Heemskerk, A.; Weisberg, S.M.; Bowers, D.; Sitaram, R.; Ebner, N.C. | *Real-Time fMRI Neurofeedback Training of Selective Attention in Older Adults* | Brain Sciences | 14 | 9 | | 10.3390/brainsci14090931 | No |
| Liu, C.; Downey, R.J.; Salminen, J.S.; Arvelo Rojas, S.; Richer, N.; Pliner, E.M.; Hwang, J.; Cruz-Almeida, Y.; Manini, T.M.; Hass, C.J.; Seidler, R.D.; Clark, D.J.; Ferris, D.P. | *Electrical brain activity during human walking with parametric variations in terrain unevenness and walking speed* | Imaging Neuroscience | 2 | | 1-33 | 10.1162/imag_a_00097 | No |
| Liu, P.; Lin, T.; Fischer, H.; Feifel, D.; Ebner, N.C. | *Effects of four-week intranasal oxytocin administration on large-scale brain networks in older adults* | Neuro-pharmacology | 260 | | 110130 | 10.1016/j.neuropharm.2024.110130 | Yes |
| Lopez, F.V.; O'Shea, A.; Huo, Z.G.; Dekosky, S.T.; Trouard, T.P.; Alexander, G.E.; Woods, A.J.; Bowers, D. | *Frontal-temporal regional differences in brain energy metabolism and mitochondrial function using $^{31}$P MRS in older adults* | Geroscience | 46 | | 31853195 | 10.1007/s11357-023-01046-3 | No |
| Moore, A.; Lewis, B.; Elton, A.; Squeglia, L.M.; Jo Nixon, S. | *An investigation of multimodal predictors of adolescent alcohol initiation* | Drug and Alcohol Dependence | 265 | | 112491 | 10.1016/j.drugalcdep.2024.112491 | No |
| O'Dell, W.G.; Siva Kumar, S.; Klassen, C.L.; Rutenberg, M.S.; Mailhot Vega, R.B.; Mendenhall, N.P.; Okunieff, P.G.; Bradley, J.A. | *Measuring early changes in heart function due to radiation treatment in breast cancer patients* | American Heart Journal Plus: Cardiology Research and Practice | 38 | | 100349 | 10.1016/j.ahjo.2023.100349 | No |
| Petit, E.; Park, Y.W.; du Montcel, S.T.; Joers, J.M.; DuBois, J.M.; Arnold, H.M.; Povazan, M.; Banan, G.; Valabregue, R.; Ehses, P.; Faber, J.; Coupé, P.; Onyike, C.U.; Barker, P.B.; Schmahmann, J.D.; Ratai, E.M.; Subramony, S.H.; Mareci, T.H.; Bushara, K.O.; Paulson, H.; Klockgether, T.; Durr, A.; Ashizawa, T.; Lenglet, C.; Öz, G.; Rezende, T.J.R. | *Sensitivity of Advanced Magnetic Resonance Imaging to Progression over Six Months in Early Spinocerebellar Ataxia* | Movement Disorders | 39 | 10 | 1856-1867 | 10.1002/mds.29934 | Yes |

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Savoie, F.A.; Arpin, D.J.; Vaillancourt, D.E. | *Magnetic Resonance Imaging and Nuclear Imaging of Parkinsonian Disorders: Where do we go from here?* | Current Neuro-pharmacology | 22 | 10 | 1583-1605 | 10.2174/1570159X21666230801140648 | No |
| Spilseth, B.; Fogel, E.L.; Toledo, F.G.; Campbell-Thompson, M. | *Imaging abnormalities of the pancreas in diabetes: implications for diagnosis and treatment* | Current Opinion in Gastroenterology | 40 | 5 | 381-388 | 10.1097/MOG.0000000000001054 | No |
| Stolte, S.E.; Indahlastari, A.; Chen, J.; Albizu, A.; Dunn, A.; Pedersen, S.; See, K.B.; Woods, A.J.; Fang, R. | *Precise and rapid whole-head segmentation from magnetic resonance images of older adults using deep learning* | Imaging Neuroscience | 2 | | 1-21 | 10.1162/imag_a_00090 | No |
| Strath, L.; Peterson, J.; Meng, L.; Rani, A.; Huo, Z.; Foster, T.; Fillingim, R.; Cruz-Almeida, Y. | *Socioeconomic Status, Knee Pain, And Epigenetic Aging In Community-Dwelling Middle-To-Older Age Adults* | Journal of Pain | 25 | 2 | 293-301 | 10.1016/j.jpain.2023.06.002 | Yes |
| Studnicki, A.; Ferris, D.P. | *Dual-layer electroencephalography data during real-world table tennis* | Data in Brief | 52 | | 110024 | 10.1016/j.dib.2023.110024 | No |
| Tobin, E.; Arpin, D.; Schauder, M.; Higgonbottham, M.; Chen, R.; Lou, X.; Berry, R.; Christou, E.; Jaffee, M.; Vaillancourt, D. | *Functional and free-water imaging in rapid eye movement behaviour disorder and Parkinson's disease* | Brain Communications | 6 | 5 | fcae344 | 10.1093/braincomms/fcae344 | No |
| Valdes-Hernandez, P.A.; Johnson, A.J.; Montesino-Goicolea, S.; Laffitte Nodarse, C.; Bashyam, V.; Davatzikos, C.; Fillingim, R.B.; Cruz-Almeida, Y. | *Accelerated Brain Aging Mediates the Association Between Psychological Profiles and Clinical Pain in Knee Osteoarthritis* | Journal of Pain | 25 | 5 | 104423 | 10.1016/j.jpain.2023.11.006 | Yes |
| Willcocks, R.J.; Barnard, A.M.; Daniels, M.J.; Forbes, S.C.; Triplett, W.T.; Brandsema, J.F.; Finanger, E.L.; Rooney, W.D.; Kim, S.I.; Wang, D.J.; Lott, D.J.; Senesac, C.R.; Walter, G.A.; Sweeney, H.L.; Vandenborne, K.H. | *Clinical importance of changes in magnetic resonance biomarkers for Duchenne muscular dystrophy* | Annals of Clinical and Translational Neurology | 11 | 1 | 67-78 | 10.1002/acn3.51933 | Yes |
| Xiao, S.; Ebner, N.C.; Manzouri, A.; Li, T.; Cortes, D.S.; Månsson, K.; Fischer, H. | *Age-dependent effects of oxytocin in brain regions enriched with oxytocin receptors* | Psychoneuro-endocrinology | 160 | | 106666 | 10.1016/j.psyneuen.2023.106666 | No |
| Yoon, D.Y.; Daniels, M.J.; Willcocks, R.J.; Triplett, W.T.; Morales, J.F.; Walter, G.A.; Rooney, W.D.; Vandenborne, K.H.; Kim, S.I. | *Five multivariate Duchenne muscular dystrophy progression models bridging six-minute walk distance and MRI relaxometry of leg muscles* | Journal of Pharmacokinetics and Pharmaco-dynamics | 51 | | 671-683 | 10.1007/s10928-024-09910-1 | No |

## PUBLICATIONS GENERATED BY UF PHYSICS (3)

| Authors | Title | Journal Name | Vol | Issue | Pages | DOI | Cites NSF Core Grant |
|---|---|---|---|---|---|---|---|
| Cain, J.M.; He, W.; Meisel, M.W.; Talham, D.R. | *The Effect of the Surrounding Matrix on Spin Transition Nanoparticles: How Shell Characteristics Alter Core Elastic Properties in Core-Shell Particles* | European Journal of Inorganic Chemistry | 27 | 35 | e202400446 | 10.1002/ejic.202400446 | Yes |
| Jo, M.; Amanyazova, B.; Yergeshbayeva, S.; Gakiya-Teruya, M.; Üngör, Ö.; Lopez Rivera, P.; Jen, N.; Lukyanenko, E.; Kurkin, A.V.; Erkasov, R.; Meisel, M.W.; Hauser, A.; Chakraborty, P.; Shatruk, M. | *Light-induced spin-state switching in Fe(ii) spin-crossover complexes with thiazole-based chelating ligands* | Dalton Transactions | 53 | | 10511-10520 | 10.1039/D4DT00308J | Yes |
| Makaju, R.; Kassar, H.; Daloglu, S.M.; Huynh, A.; Laroche, D.; Levchenko, A.; Addamane, S.J. | *Nonreciprocal Coulomb drag between quantum wires in the quasi-one-dimensional regime* | Physical Review B | 109 | | 85101 | 10.1103/PhysRevB.109.085101 | Yes |

## 5.2 INTERNET DISSEMINATION (14)

| Authors | Title | Facilities |
|---|---|---|
| Bławat, J.; Chajewski, G.; Gnida, D.; Singleton, J.; Valenzuela, O.; Kaczorowski, D.; McDonald, R.D. | *Competing electronic ground states in the heavy-fermion superconductor CeRh2As2* | https://arxiv.org/abs/2412.18068 |
| Bärtschi, A.;Caravelli, F.; Coffrin, C.; Colina, J.; Eidenbenz, S.; Jayakumar, A.; Lawrence, S.; Lee, M.; Lokhov, A. Y.; Mishra, A.; Misra, S.; Morrell, Z.; Mughal, Z.; Neill, D.; Piryatinski, A.; Scheie, A.; Vuffray, M.; Zhang, Y. | *Potential Applications of Quantum Computing at Los Alamos National Laboratory* | https://arxiv.org/abs/2406.06625 |
| Day, R.P.; Yamakawa, K.; Pritchard-Cairns, L.; Singleton, J.; Allen, M.; Moore, J.E.; Analytis, J.G. | *Magnetoresistance and Anisotropic Spin Dynamics in Antiferromagnetic Semiconductor Eu5Sn2As6* | https://arxiv.org/abs/2407.06185 |
| Han, T.; McKenzie, R.; Blawat, J.; Slade, T.; Lee, Y.; Pajerowski, D.; Singleton, J.; Li, B.; Canfield, P.C.; Ke, L.; McDonald, R.D.; Flint, R.; McQueeney, R.J. | *Proximity to quantum criticality in the Ising ferromagnet TbV6Sn6* | https://arxiv.org/abs/2412.02010 |
| Keenan, B. | *Research demonstrates material's quantum topological potential* | https://discover.lanl.gov/news/0122-material-quantum-topological-potential/ |
| Lewin, S.K.; Czajka, P.; Frank, C.E.; Saucedo-Salas, G.; Yoon, H.; Eo, Y.S.; Paglione, J.; Nevidomskyy, A.H.; Singleton, J.; Butch, N. | *High-Field Superconducting Halo in UTe2* | https://arxiv.org/abs/2402.18564 |
| Malick, S.; Świątek, H.; Bławat, J.; Singleton, J.; Klimczuk, T. | *Large magnetoresistance and first-order phase transition in antiferromagnetic single-crystalline EuAg4Sb2* | https://arxiv.org/abs/2406.18252 |
| Schmidt, A.C.; Singleton, J. | *A Practical Superluminal Polarization CurrentAntenna: Theory, Design, and Construction* | https://www.usnc-ursi-archive.org/nrsm/2024/papers/1213.pdf |
| Vaidya, S.; Curley, S.; Manuel, P.; Stewart, J.R.; Le, M.D.; Balz, C.; Shiroka, T.; Blundell, S.J.; Wheeler, K.; Calderon-Lin, I.; Manson, Z.E.; Manson, J.L.; Singleton, J.; Lancaster, T.; Johnson, R.D.; Goddard, P.A. | *Magnetic properties of a staggered S=1 chain Ni(pym)(H2O)2(NO3)2 with an alternating single-ion anisotropy direction* | https://arxiv.org/abs/2407.17894 |

| Authors | Title | Facilities |
|---|---|---|
| Vaidya, S.; Hernandez-Melian, A.; Tidey, J.P.; Curley, S.; Sharma, S.; Manuel, P.; Wang, C.; Hannaford, G.; Blundell, S.J.; Manson, Z.E.; Manson, J.L.; Singleton, J.; Lancaster, T.; Johnson, R.D.; Goddard, P.A. | *Pseudo-easy-axis anisotropy in antiferromagnetic S=1 diamond-lattice systems NiX2(pym)2* | https://arxiv.org/abs/2405.15623 |
| Wei Yuan, Zi-Jie Yan, Hemian Yi, Zihao Wang, Stephen Paolini, Yi-Fan Zhao, Ling-Jie Zhou, Annie G. Wang, Ke Wang, Thomas Prokscha, Zaher Salman, Andreas Suter, Purnima P. Balakrishnan, Alexander J. Grutter, Laurel E. Winter, John Singleton, Moses H. W. Chan, Cui-Zu Chang | *Coexistence of Superconductivity and Antiferromagnetism in Topological Magnet MnBi2Te4 Films* | https://arxiv.org/abs/2402.09208 |
| Yan, Z.; Chan, Y.; Yuan, W.; Wang, A.; Yi, H.; Wang, Z.; Zhou, L.; Rong, H.; Zhuo, D.; Wang, K.; Singleton, J.; Winter, L.E.; Wu, W.; Chang, C.; | *Meissner Effect and Nonreciprocal Charge Transport in Superconducting 1T-CrTe2/FeTe Heterostructures* | https://arxiv.org/abs/2412.09354 |
| Yip, K.; Wang, L.; Poon, T.F.; Yu, K.H.; Lam, S.T.; Lai, K.T.; Singleton, J.; Balakirev, F.F.; Goh, S.K. | *Shubnikov-de Haas oscillations of biaxial-strain-tuned superconductors in pulsed magnetic field up to 60 T* | https://arxiv.org/abs/2402.14534 |
| Zheng, G.; Zhang, D.; Zhu, Y.; Chen, K.; Chan, A.; Jenkins, K.; Kang, B.; Zeng, Z.; Xu, A.; Ratkovski, D.; Blawat, J.; Bangura, A.; Singleton, J.; Lee, P.A.; Li, S.; Li, L. | *Thermodynamic evidence of fermionic behavior in the vicinity of one-ninth plateau in a kagome antiferromagnet* | https://arxiv.org/abs/2409.05600 |
| Bławat, J.; Chajewski, G.; Gnida, D.; Singleton, J.; Valenzuela, O.; Kaczorowski, D.; McDonald, R.D. | *Competing electronic ground states in the heavy-fermion superconductor CeRh2As2* | https://arxiv.org/abs/2412.18068 |
| Bärtschi, A.;Caravelli, F.; Coffrin, C.; Colina, J.; Eidenbenz, S.; Jayakumar, A.; Lawrence, S.; Lee, M.; Lokhov, A. Y.; Mishra, A.; Misra, S.; Morrell, Z.; Mughal, Z.; Neill, D.; Piryatinski, A.; Scheie, A.; Vuffray, M.; Zhang, Y. | *Potential Applications of Quantum Computing at Los Alamos National Laboratory* | https://arxiv.org/abs/2406.06625 |

## 5.3 PRODUCTS (3)

| Authors | Title | Product Information | Facilities |
|---|---|---|---|
| Bowers, C.R.; Ferrer, M.-J. | *Methods and systems for producing hyperpolarized fluid samples* | US Patent Application number 18567084. UCGP Supported | AMRIS Facility at UF |
| Bowers, C.R.; Zhao, W. | *Methods and systems for producing, using, and administering hyperpolarized fluids* | US Patent App. 16/753,875. UCGP Supported | AMRIS Facility at UF |
| Jaroszynski, J.; Constantinescu, A. M.; Larbalestier, D. and Miller, G. | *Magnetometer For Large Magnetic Moments with Strong Magnetic Anisotropy* | US Patent No. 12,181,540 | DC Field Facility, Applied Superconductivity Center |

## 5.4 DEGREES

### M.S. DEGREES (1 LOCAL/4 EXTERNAL)

| Authors | Titles | MagLab Facilities | University | Department | Degrees |
|---|---|---|---|---|---|
| Tietsworth, John | *Understanding the Cu-Sn mixing heat treatment and its effects on the formation of Nb3Sn in Rod-In-Tube wires of varying Cu:Sn ratios* | Applied Superconductivity Center | FSU | Applied Superconductivity Center | M.S. (local) |
| Bonite, Megan | *Characterization of Dissolved Organic Matter Released from Decomposing Wood in Denitrifying Bioreactors: An FT-ICR MS Study* | ICR Facility | Cornell University | Department of Chemistry & Chemical Biology | M.S. (external) |
| Cheng, Jinxiang | *Exploring the Removal Potential of Multi-pollutants from Water Matrices with Innovative Speciality Adsorbents in a Field-scale Filtration System* | ICR Facility | University of Central Florida | Department of Civil, Environmental, and Construction Engineering | M.S. (external) |
| Montreal, Patrick | *Large Pool of Organic Ligands Supports Iron Bioavailability and Reduces Copper Toxicity in Whale Excrement* | ICR Facility | University of Washington | School of Oceanography | M.S. (external) |
| Son, Hyebin | *Magnetotransport Property of Molecular Beam Epitaxy grown Dirac semimetal (Cd1-xZnx)3As2* | DC Field Facility | Sogang University | Physics | M.S. (external) |

### PH.D. DEGREES (22 LOCAL/15 EXTERNAL)

| Authors | Titles | MagLab Facilities | University | Department | Degrees |
|---|---|---|---|---|---|
| Alsup, Tyler | *Discovery, Biosynthesis, and Engineering of Bacterial Diterpenoids* | AMRIS Facility at UF | UF | Chemistry | Ph.D. (local) |
| Anazia, Kara | *Effects of Mutations on the Structural Dynamics and Nucleotide Interactions of G Proteins* | AMRIS Facility at UF | UF | Chemistry | Ph.D. (local) |
| Barua, Shaon | *Critical Current Distributions in Multifilamentary Bi2Sr2CaCu2O8+x Round Wires* | Applied Superconductivity Center | FSU | Applied Superconductivity Center | Ph.D. (local) |
| Bradford, Griffin | *Investigations into the Deoxygenation of Rare Earth* | Applied Superconductivity Center | FSU | Applied Superconductivity Center | Ph.D. (local) |

| Authors | Titles | MagLab Facilities | University | Department | Degrees |
|---|---|---|---|---|---|
| | *Barium Copper Oxide Coated Conductors and its Implications for Solenoid Magnet Design* | | | | |
| Diodati, Alex | *Design and Synthesis of Molecular Magnetic Quantum Materials* | EMR Facility | UF | Chemistry | Ph.D. (local) |
| Forrer, Heather | *Investigating Biological Carbon Pump Variability and Functionality: The Application of Old and New Conceptual Frameworks Across Spatial and Temporal Scales* | ICR Facility | FSU | Earth, Ocean and Atmospheric Science Department | Ph.D. (local) |
| Forrer, Heather | *Investigating Biological Carbon Pump Variability and Functionality: The Application of Old and New Conceptual Frameworks across Spatial and Temporal Scales* | ICR Facility | FSU | Department of Earth, Atmospheric and Environmental Sciences | Ph.D. (local) |
| Galeano-Cabral, Jorge | *Performance Enhancement of Thermoelectric Devices: Synthesis of Novel Materials and Thermal Evaluations* | DC Field Facility | FSU | Mechanical Engineering | Ph.D. (local) |
| Grimm, Brittany | *Electron Paramagnetic Resonance Study of Metalorganic Spin Crossover Complexes as Molecular Magnetoelectric Candidates* | DC Field Facility, EMR Facility | FSU | Physics | Ph.D. (local) |
| Hanabe Subramanya, Manoj Vinayaka | *n Population Control in Molecular Qudits using Wideband Chirped Pulses* | EMR Facility | FSU | Physics | Ph.D. (local) |
| Holt, Amy | *The Source and Composition of Glacier Dissolved Organic Matter* | ICR Facility | FSU | Phys. Env. Sci. | Ph.D. (local) |
| Hunt, Tyler | *Visual field reconstructions in extant and fossil vertebrates* | MS & T | FSU | Biological Science | Ph.D. (local) |
| Limon, Shah Alam | *Effects of Synthesis Parameters on Superconducting Properties of Polycrystalline K-Doped Ba-122* | Applied Superconductivity Center | FSU | Applied Superconductivity Center | Ph.D. (local) |
| Makaju, Rebika | *Probing electron-electron interactions in one dimensional systems via Coulomb drag* | High B/T Facility at UF, UF Physics | UF | Physics | Ph.D. (local) |
| Melendrez, Ronald | *Nonequilibrium Dynamics of Strongly Correlated Magnetic Systems* | CMT/E | FSU | Physics | Ph.D. (local) |
| Moon, Alex | *Magnetotransport Properties of a Two-Dimensional* | CMT/E | FSU | Physics | Ph.D. (local) |

| Authors | Titles | MagLab Facilities | University | Department | Degrees |
|---|---|---|---|---|---|
| | *Centrosymmetric Ferromagnet and its Heterostructures* | | | | |
| Peng, Emily | *Characterization of Amyloidogenic C-Terminal Domains of Adhesin P1 from Streptococcus Mutans using NMR Spectroscopy* | AMRIS Facility at UF | UF | Biochemistry and Molecular Biology | Ph.D. (local) |
| Petracco, Enzo | *Atomic resolution analysis of G protein-coupled receptors through NMR spectroscopy to unveil in situ mechanisms for green fragment-based drug design* | AMRIS Facility at UF | UF | Chemistry | Ph.D. (local) |
| Poudel, Tej | *Development of Sulfide- and Halide-Based Fast-Ion Conductors* | NMR Facility | FSU | Materials Science and Engineering | Ph.D. (local) |
| Starr, Sommer | *Carbon Dynamics in a Changing Arctic Landscape: Characterizing Dissolved Organic Matter Across Multiple Scales* | ICR Facility | FSU | Department of Earth, Ocean and Atmospheric Sciences | Ph.D. (local) |
| Stewart, Robert | *Massive Spin-Clock Transitions in Molecular Lanthanide Qubits* | EMR Facility | FSU | Physics | Ph.D. (local) |
| Tesfamariam, Ermias | *Co-metabolic Degradation of 1,4-dioxane* | ICR Facility | FSU | Department of Civil and Environmental Engineering | Ph.D. (local) |
| Anderson-Sanchez, Lauren | *Understanding the Role of Steric Factors in the Successful Isolation of Low Oxidation State Lanthanide and Actinide Organometallic Complexes* | EMR Facility | University of California Irvine | Chemistry | Ph.D. (external) |
| Bare, William | *Development and Application of Pinewood Biochar to Remove Phosphorous and Nitrogen from Aquaculture Effluents* | ICR Facility | University of Idaho | Biological Engineering | Ph.D. (external) |
| Bone, Alexandria Nicole | *Investigation of Magnetic, Spectroscopic, and Structural Properties of Molecular Metal Compounds* | EMR Facility | University of Tennessee | Chemistry | Ph.D. (external) |
| Corti, Lucia | *Local Structure and Dynamics in Oxide Ion Conductors from Solid-State NMR Spectroscopy* | DC Field Facility | University of Liverpool | Department of Chemistry | Ph.D. (external) |
| Gabarró Riera, Guillem | *Synthesis, deposition and characterization of magnetic molecules on surfaces* | EMR Facility | Universitat de Barcelona | Chemistry | Ph.D. (external) |
| Huang, Ke | *Transport Studies of the Topological States in Bernal-Stacked Bilayer Graphene* | DC Field Facility, High B/T Facility at UF | Penn State University | Physics | Ph.D. (external) |

| Authors | Titles | MagLab Facilities | University | Department | Degrees |
|---|---|---|---|---|---|
| Kaser, Samuel | *Small Molecule Motion Within and Through Organic Nanomaterials: an Anthology* | AMRIS Facility at UF | Massachusetts Institute of Technology | Chemistry | Ph.D. (external) |
| Moore, Shawn | *Mn and Ti Perfluorinated Alkoxide Complexes Including HAA by {Mn(III)OH} and Models for n-TiO2* | EMR Facility | Boston University | Chemistry | Ph.D. (external) |
| Reichert, Simon | *Advancing Sodium Triple Quantum (TQ) Nuclear Magnetic Resonance (NMR) Spectroscopy and Imaging* | NMR Facility | Heidelberg University, Mannheim, Germany | Medical Faculty Mannhein | Ph.D. (external) |
| Rocha, Megan | *Understanding the Structure and Stability of Post-Translationally Modified γS-Crystallin* | AMRIS Facility at UF | UC Irvine | Chemistry | Ph.D. (external) |
| Schannong Manvell, Anna | *Exploring Magnetocaloric Effects and Magnetic Properties in Lanthanide-Organic Frameworks* | EMR Facility | Technical University of Denmark | Chemistry | Ph.D. (external) |
| Sharafeddin, Fransua | *Role of the prefrontal cortical protease TACE/ADAM17 in neurobehavioral responses to chronic stress during adolescence* | AMRIS Facility at UF | Loma Linda University | School of Medicine | Ph.D. (external) |
| Simon, Timothy | *Shifts in naturalistic behaviors induced by early social isolation stress are associated with adult binge-like eating in female rats* | AMRIS Facility at UF | Loma Linda University | School of Medicine | Ph.D. (external) |
| Whatt, Yasmin | *Spectroscopic Analysis of Molecular Magnetic Materials* | EMR Facility | University of Manchester | Chemistry | Ph.D. (external) |
| Williams, Ethan | *Probing central spin decoherence dynamics of electronic point defects in diamond and silicon* | EMR Facility | Dartmouth | Department of Physics and Astronomy | Ph.D. (external) |

# APPENDICES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# APPENDIX 1 - PERSONNEL

Data as of January 5, 2025

## MAGLAB AT FSU (837)

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Abuzar | Ahmed | Graduate Research Assistant | Graduate Student | ASC |
| Bradford | Griffin | Graduate Research Assistant | Graduate Student | ASC |
| Delong | Adam | Graduate Research Assistant | Graduate Student | ASC |
| Jani | Rafsun | Graduate Research Assistant | Graduate Student | ASC |
| Juliao | Andre | Graduate Research Assistant | Graduate Student | ASC |
| Lazarte | Santiago | Laboratory Assistant / Technician | Graduate Student | ASC |
| Lee | Jonathan | Graduate Research Assistant | Graduate Student | ASC |
| Mandal | Manish | Graduate Research Assistant | Graduate Student | ASC |
| Martin | Emma | Graduate Research Assistant | Graduate Student | ASC |
| Murphy | Garfield | Graduate Research Assistant | Graduate Student | ASC |
| Shuvo | Tanmay Sarker | Graduate Research Assistant | Graduate Student | ASC |
| Hruda | Simone | Associate Professor | Other Professional | ASC |
| Linville | Connie | Senior Administrative Specialist | Other Professional | ASC |
| Linville | Caitlynn | Research Assistant | Other Professional | ASC |
| Miller | George | Scientific Research Specialist | Other Professional | ASC |
| Polyanskii | Anatolii | Magneto Optical Research Specialist | Other Professional | ASC |
| Rogers | Felicia | Administrative Specialist | Other Professional | ASC |
| West | Kayla | Senior Admin Specialist | Other Professional | ASC |
| Bang | Jeseok | Postdoctoral Associate | Postdoc | ASC |
| Barua | Shaon | Postdoctoral Associate | Postdoc | ASC |
| Chetri | Santosh | Postdoctoral Associate | Postdoc | ASC |
| Ries | Rastislav | Postdoctoral Associate | Postdoc | ASC |
| Abraimov | Dmytro | Research Faculty III | Senior Personnel | ASC |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Balachandran | Shreyas | Visiting Research Faculty I | Senior Personnel | ASC |
| Bosque | Ernesto | Research Faculty II | Senior Personnel | ASC |
| Cheggour | Najib | Research Faculty III | Senior Personnel | ASC |
| Cooley | Lance | Professor | Senior Personnel | ASC |
| Davis | Daniel | Research Faculty I | Senior Personnel | ASC |
| Griffin | Van | Sr. Research Associate | Senior Personnel | ASC |
| Hahn | Seungyong | Professor | Senior Personnel | ASC |
| Hellstrom | Eric | Professor | Senior Personnel | ASC |
| Jiang | Jianyi | Research Faculty III | Senior Personnel | ASC |
| Kametani | Fumitake | Assistant Professor | Senior Personnel | ASC |
| Kim | Youngjae | Research Faculty II | Senior Personnel | ASC |
| Kvitkovic | Jozef | Visiting Assistant In Research | Senior Personnel | ASC |
| Larbalestier | David | Professor | Senior Personnel | ASC |
| Lee | Peter | Visiting Research Faculty III | Senior Personnel | ASC |
| Pamidi | Sastry | Associate Professor | Senior Personnel | ASC |
| Park | Wan Kyu | Research Faculty III | Senior Personnel | ASC |
| Starch | William | Sr. Research Associate | Senior Personnel | ASC |
| Tarantini | Chiara | Research Faculty III | Senior Personnel | ASC |
| Trociewitz | Ulf | Research Faculty III | Senior Personnel | ASC |
| Xu | Aixia | Visiting Scientist/Researcher | Senior Personnel | ASC |
| Elling | Jade | Administrative Specialist | Support Staff - Secretarial/Clerical | ASC |
| Brady | Cindonia | Research Assistant | Support Staff - Technical/Managerial | ASC |
| English | Charles | Scientific Research Specialist | Support Staff - Technical/Managerial | ASC |
| Almanza-Enriquez | Adonay | Laboratory Assistant II | Undergraduate Student | ASC |
| Boritz | Trent | Laboratory Assistant / Technician | Undergraduate Student | ASC |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Brown | Jamia | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Cadavid | Nikolya | Laboratory Assistant / Technician II | Undergraduate Student | ASC |
| Carter | Sophie | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Devoux | Madison | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Higgs | Gavin | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Hoolihan | Aidan | Laboratory Assistant / Technician II | Undergraduate Student | ASC |
| Hudson | Isabella | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Irausquin | Claudia | Laboratory Assistant / Technician II | Undergraduate Student | ASC |
| Jones | JaKeyvan | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Jones | Shamil | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Kametani | Nonoko | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| King | Wren | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Kunstmann | Alexander | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Molitor | Nicholas | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Morillo | Emilio | Laboratory Assistant II | Undergraduate Student | ASC |
| Quarterman | Quenton | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Richardson | Jerry | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Shvartsman | Logan | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Valdez | Alexandro | Laboratory Assistant / Technician II | Undergraduate Student | ASC |
| Watson | Gabriel | Laboratory Assistant / Technician II | Undergraduate Student | ASC |
| Youngman | Juliana | Laboratory Assistant / Technician | Undergraduate Student | ASC |
| Alford | Kellie | Accounting Specialist | Other Professional | Budget Administration |
| Nelson | Samantha | Budget Analyst | Other Professional | Budget Administration |
| Bickett | Karol | Assistant Director, Budget and Business Systems | Senior Personnel | Budget Administration |
| Mozolic | Kimberly | Sr Administrative Specialist | Other Professional | CIMAR |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Villa | Carlos | Outreach Coordinator | Other Professional | CIRL |
| Hughes | Roxanne | Associate Professor | Senior Personnel | CIRL |
| Johnson | Kawana | Research Faculty II | Senior Personnel | CIRL |
| Adegboyega | Samuel | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Ahangarfirouzjaei | Faezeh | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Alihosseini | Yousef | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Anjum | Nafiza | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Campbell | Ian | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Cantrell | Andrew | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Carswell | Briona | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Ekuase | Okunzuwa | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Fabiano | Catherine | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Fuller | Jessica | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Gregory | Tyler | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Gupta | Arijit | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Guzman | Clemente | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Hossain | Md. Alamgir | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Hulse | Mikai | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Irfan | Mohammad | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Kaplan | Mehmet | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Karullithodi | Shyam Raj | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Kim | Sangsoo | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Kurilich | Matthew | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Li | Victoria | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Mao | Yating | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Mardani | Masoud | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| McNamara | Dillon | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Mei | Lingrui | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Moon | Alex | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Neu | Jennifer | Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Pokharel | Bal | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Rababah | Qutadah | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Ramirez | Camilo | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Raza | Ahmad | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Rede | Milan | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Roubos | Alexander | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Sasi Kumar | Govind | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Scutte | Annie | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Shahriari | Leila | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Shiravi | Hossein | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Sijuade | Ayomide | Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Sullivan | Colette | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Torino | Sergio | Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Virdi | Parmit | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Wadsworth | Matthew | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Wang | Yuxin | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Wilson | Ty | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Yhdego | Tsegai | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Zareihassangheshlaghi | Amirhossein | Graduate Research Assistant | Graduate Student | Condensed Matter / Experimental |
| Arce | Stephen | Visiting Scientist/Researcher | Other Professional | Condensed Matter / Experimental |
| Li | Yan | Visiting Scientist/Researcher | Other Professional | Condensed Matter / Experimental |
| Stanley | Lily | Research Assistant | Other Professional | Condensed Matter / Experimental |
| Wu | Huixuan | Research Assistant | Other Professional | Condensed Matter / Experimental |
| Chakraborty | Shantanu | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| da Silva | Romario | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Dridi | Narjes | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Dusanowski | Lukasz | Visiting Scientist/Researcher | Postdoc | Condensed Matter / Experimental |
| Elattar | Amr | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Gnanasekar | Pitchaimari | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Hayati | Leili | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Inui | Sosuke | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Katuri | Jaideep | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| kaur | Navneet | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Mozaffari | Shirin | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Nelson | William | Provost Postdoctoral Fellowship | Postdoc | Condensed Matter / Experimental |
| Plautz Ratkovski | Gabriela | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Qi | Yinghe | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Reid | Jennifer | Crow - Schuler Postdoctoral Fellow | Postdoc | Condensed Matter / Experimental |
| Sharma | Shivani | Visiting Scientist/Researcher | Postdoc | Condensed Matter / Experimental |
| Terzic | Jasminka | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Xing | Yiming | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Zhang | Naipeng | Postdoctoral Associate | Postdoc | Condensed Matter / Experimental |
| Albrecht-Schmitt | Thomas | Professor | Senior Personnel | Condensed Matter / Experimental |
| Ali | Jamel | Assistant Professor | Senior Personnel | Condensed Matter / Experimental |
| Andrei | Petru | Associate Professor | Senior Personnel | Condensed Matter / Experimental |
| Beekman | Christianne | Associate Professor | Senior Personnel | Condensed Matter / Experimental |
| Cao | Jianming | Professor | Senior Personnel | Condensed Matter / Experimental |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Chiorescu | Irinel | Professor | Senior Personnel | Condensed Matter / Experimental |
| Gao | Hanwei | Assistant Professor | Senior Personnel | Condensed Matter / Experimental |
| Gapud | Albert | Research Faculty III | Senior Personnel | Condensed Matter / Experimental |
| Guo | Wei | Professor | Senior Personnel | Condensed Matter / Experimental |
| Irianto | Jerome | Professor | Senior Personnel | Condensed Matter / Experimental |
| Kulichenko | Vadym | Visiting Scientist/Researcher | Senior Personnel | Condensed Matter / Experimental |
| Ni | Guangxin | Assistant Professor | Senior Personnel | Condensed Matter / Experimental |
| Nienhaus | Lea | Assistant Professor | Senior Personnel | Condensed Matter / Experimental |
| Oates | William | Assistant Professor | Senior Personnel | Condensed Matter / Experimental |
| Park | Jin Gyu | Sr. Research Associate | Senior Personnel | Condensed Matter / Experimental |
| Ramakrishnan | Subramanian | Associate Professor | Senior Personnel | Condensed Matter / Experimental |
| Ratkovski | Danilo | Visiting Research Faculty I | Senior Personnel | Condensed Matter / Experimental |
| Schlueter | John | Visiting Scientist/Researcher | Senior Personnel | Condensed Matter / Experimental |
| Shatruk | Mykhailo | Professor | Senior Personnel | Condensed Matter / Experimental |
| Siegrist | Theo | Professor | Senior Personnel | Condensed Matter / Experimental |
| Xiong | Peng | Professor | Senior Personnel | Condensed Matter / Experimental |
| Yu | Zhibin | Assistant Professor | Senior Personnel | Condensed Matter / Experimental |
| Zeng | Changchun | Assistant Professor | Senior Personnel | Condensed Matter / Experimental |
| Zhang | Mei | Associate Professor | Senior Personnel | Condensed Matter / Experimental |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Guarda | Mark Rynel | Research Assistant | Support Staff - Technical/Managerial | Condensed Matter / Experimental |
| Huber | Robert | Research Assistant | Support Staff - Technical/Managerial | Condensed Matter / Experimental |
| Arca | Nicole | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Baxley | Martha | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Blanzaco | Catalina | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Bolles | Sarah | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Bourne | Piper | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Brigman | Kira | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Castelli | Juliana | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Castro | Melanie | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Cearlock | Kennedie | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Chonillo | Michael | Laboratory Assistant / Technician | Undergraduate Student | Condensed Matter / Experimental |
| Cornelius | Allison | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Couch | William | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Dadey | Sarah | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Donohoe | Colby-Ann | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Dotson | Amber | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Duran | Sophia | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Escalona | Arianna | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Fernandez | Ana | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Gaither | Dayona | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Germanton | Gary | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Gonzalez | Aaron | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Hutley | Aliza | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Javate | Emilie | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Jermyn | Sophie | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Jolley | Sofia | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Jones | Brandee | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Kowalik | Izabela | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Kutter | Emmie | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Levisman | Toni | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Lipe | Kristina | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Magee | Lauren | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Mashraqi | Naoum | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Mehta | Roshani | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Mooers | Adam | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Muhammad | Aaliyah | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Naem | Rama | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Oliva | Madeline | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Olsson | Jesse | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Omeke | Samuel | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Plasencia | Elizabeth | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Prieto | Jasmine | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Ramakrishnan | Bhavya | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Ramudo | Alyssa | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Santiago Rivera | Nellymar | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Santisteban | Natalie | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Savannah | Alexyss | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Savitsky | Mary Jean | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Sesay | Kaden | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Sogbesan | Taiwo | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Spettel | William | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Tillman | Anya | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Tindall | Sydney | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Walker | Amaya | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Wang | Qi | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Wefel | Brianne | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Wetherton | Nora | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Williams | Cianna | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Williams | Patrick | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Witte | Ingalls | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Workman | Amelia | Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Yates | Lauren | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Young | Stephanie | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Zacher | Vivienne | Undergraduate Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Zheng | Tiffany | High School Research Assistant | Undergraduate Student | Condensed Matter / Experimental |
| Ho | Wai-Ga | Graduate Research Assistant | Graduate Student | Condensed Matter / Theory |
| Hu | Zhengfei | Graduate Research Assistant | Graduate Student | Condensed Matter / Theory |
| Ibrahim Hammam | Mohammed | Graduate Research Assistant | Graduate Student | Condensed Matter / Theory |
| Janardhanan | Ananya | Graduate Research Assistant | Graduate Student | Condensed Matter / Theory |
| Ma | Huiyang | Graduate Research Assistant | Graduate Student | Condensed Matter / Theory |
| Melendrez | Ronald | Graduate Research Assistant | Graduate Student | Condensed Matter / Theory |
| Sherif | Sogoud | Graduate Research Assistant | Graduate Student | Condensed Matter / Theory |
| Singh | Keshav | Graduate Research Assistant | Graduate Student | Condensed Matter / Theory |
| Chichinadze | Dmitry | Postdoctoral Associate | Postdoc | Condensed Matter / Theory |
| Joy | Sandeep | Postdoctoral Associate | Postdoc | Condensed Matter / Theory |
| Kumar | Abhishek | Postdoctoral Associate | Postdoc | Condensed Matter / Theory |
| Kumar | Aman | Postdoctoral Research Associate | Postdoc | Condensed Matter / Theory |
| Padayasi | Jaychandran | Postdoctoral Associate - FSU Quantum Postdoctoral Fellowship | Postdoc | Condensed Matter / Theory |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Vo | Phong | Postdoctoral Associate | Postdoc | Condensed Matter / Theory |
| Bonesteel | Nicholas | Professor | Senior Personnel | Condensed Matter / Theory |
| Changlani | Hitesh | Assistant Professor | Senior Personnel | Condensed Matter / Theory |
| Dobrosavljevic | Vladimir | Professor | Senior Personnel | Condensed Matter / Theory |
| Huang | Chen | Assistant Professor | Senior Personnel | Condensed Matter / Theory |
| Lewandowski | Cyprian | Assistant Professor | Senior Personnel | Condensed Matter / Theory |
| Schlottmann | Pedro | Professor | Senior Personnel | Condensed Matter / Theory |
| Vafek | Oskar | Associate Professor | Senior Personnel | Condensed Matter / Theory |
| Wang | Xiaoyu | Visiting Research Faculty I | Senior Personnel | Condensed Matter / Theory |
| Yang | Kun | Professor | Senior Personnel | Condensed Matter / Theory |
| Peng | Ran | Graduate Research Assistant | Graduate Student | Condensed Matter Science |
| Lawrence | Garry | Senior Administrative Specialist | Other Professional | Condensed Matter Science |
| Van Sciver | Steven | Visiting Research Faculty | Senior Personnel | Condensed Matter Science |
| Berhalter | James | Assistant Director, Technology | Senior Personnel | CSG |
| Kent | Grayson | Linux System Admin | Support Staff - Technical/Managerial | CSG |
| O'Steen-Mann | Gabriel | Technical Support Analyst | Support Staff - Technical/Managerial | CSG |
| Rettig | Andrew | Windows System Admin. | Support Staff - Technical/Managerial | CSG |
| Ghafoor | Mehak | Graduate Research Assistant | Graduate Student | DC Field CMS |
| Hua | Zhenqi | Research Assistant | Graduate Student | DC Field CMS |
| Islam | Md Sazedul | Graduate Research Assistant | Graduate Student | DC Field CMS |
| Lerner | Mark | Laboratory Assistant / Technician | Graduate Student | DC Field CMS |
| Oh | Gwansuk | Visiting Scientist/Researcher | Graduate Student | DC Field CMS |
| Pazoki | Ali | Graduate Research Assistant | Graduate Student | DC Field CMS |
| Schundelmier | Benny | Graduate Research Assistant | Graduate Student | DC Field CMS |
| Luallen | Renee | Program Coordinator | Other Professional | DC Field CMS |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Schiano | Jeffrey | Visiting Scientist/Researcher | Other Professional | DC Field CMS |
| Wang | Xiaoling | Visiting Scientist/Researcher | Other Professional | DC Field CMS |
| Dissanayake | Charuni | Postdoctoral Research Associate | Postdoc | DC Field CMS |
| Lee | Sang-Eon | Postdoctoral Associate | Postdoc | DC Field CMS |
| Xiang | Li | Postdoctoral Associate | Postdoc | DC Field CMS |
| Balicas | Luis | Research Faculty III | Senior Personnel | DC Field CMS |
| Bangura | Alimamy | Research Faculty III | Senior Personnel | DC Field CMS |
| Benjamin | Shermane | Research Faculty I | Senior Personnel | DC Field CMS |
| Choi | Eun Sang | Research Faculty III | Senior Personnel | DC Field CMS |
| Cong | Rong | Research Faculty I | Senior Personnel | DC Field CMS |
| Engel | Lloyd | Research Faculty III | Senior Personnel | DC Field CMS |
| Graf | David | Research Faculty III | Senior Personnel | DC Field CMS |
| Jaroszynski | Jan | Research Faculty III | Senior Personnel | DC Field CMS |
| McGill | Stephen | Research Faculty III | Senior Personnel | DC Field CMS |
| Murphy | Timothy | Research Faculty III | Senior Personnel | DC Field CMS |
| Ozerov | Mykhaylo | Research Faculty II | Senior Personnel | DC Field CMS |
| Popovic | Dragana | Research Faculty III | Senior Personnel | DC Field CMS |
| Reyes | Arneil | Research Faculty III | Senior Personnel | DC Field CMS |
| Smirnov | Dmitry | Research Faculty III | Senior Personnel | DC Field CMS |
| Smith | Julia | Research Faculty II | Senior Personnel | DC Field CMS |
| Stern | Raivo | Fulbright Visiting Scholar | Senior Personnel | DC Field CMS |
| Suslov | Alexey | Research Faculty III | Senior Personnel | DC Field CMS |
| Thirunavukkuarasu | Komalavalli | Assistant Professor | Senior Personnel | DC Field CMS |
| Tozer | Stanley | Research Faculty III | Senior Personnel | DC Field CMS |
| Wei | Kaya | Research Faculty I | Senior Personnel | DC Field CMS |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Woods | Andrew | Research Faculty I | Senior Personnel | DC Field CMS |
| Centers | Abigail | Application Developer/Designer | Support Staff - Technical/Managerial | DC Field CMS |
| Barrett | Nicolas | Undergraduate Research Assistant | Undergraduate Student | DC Field CMS |
| Bennett | Sarah | Research Assistant | Undergraduate Student | DC Field CMS |
| Frank | Noah | Research Assistant | Undergraduate Student | DC Field CMS |
| Rider | Jonathan | Undergraduate Research Assistant | Undergraduate Student | DC Field CMS |
| Sealey | Isabelle | Research Assistant | Undergraduate Student | DC Field CMS |
| Shumnyk | Victor | Laboratory Assistant / Technician | Undergraduate Student | DC Field CMS |
| Gordon | Larry | Scientific Research Specialist | Support Staff - Technical/Managerial | DC Field Control Room |
| Hicks | Michael | Scientific Research Specialist | Support Staff - Technical/Managerial | DC Field Control Room |
| Issitt | Donald | Technical/Research Designer | Support Staff - Technical/Managerial | DC Field Control Room |
| Piotrowski | Joel | Scientific Research Specialist | Support Staff - Technical/Managerial | DC Field Control Room |
| Thomas | Christopher | Scientific Research Specialist | Support Staff - Technical/Managerial | DC Field Control Room |
| Freeman | Daniel | Scientific Research Specialist | Support Staff - Technical/Managerial | DC Field Hybrid & Cryogenic Operations |
| Jiang | Zhiyi | Cryogenic Research Engineer | Support Staff - Technical/Managerial | DC Field Hybrid & Cryogenic Operations |
| Torres Camacho | Jesus | Scientific Research Specialist | Support Staff - Technical/Managerial | DC Field Hybrid & Cryogenic Operations |
| McIntosh | Daniel | Scientific Research Specialist | Other Professional | DC Field Machine Shop |
| Rubes | Edward | Research Engineer | Other Professional | DC Field Machine Shop |
| Brehm | William | Scientific Research Specialist | Support Staff - Technical/Managerial | DC Field Machine Shop |
| France | Justin | Research Engineering Support Specialist | Support Staff - Technical/Managerial | DC Field Machine Shop |
| Melendez | Jonathan | Scientific Research Specialist | Support Staff - Technical/Managerial | DC Field Machine Shop |
| Sloan | David | Scientific Research Specialist | Support Staff - Technical/Managerial | DC Field Machine Shop |
| Boenig | Heinrich | Engineer | Other Professional | DC Field User Technical Support |
| Brumm | Troy | Research Engineer | Other Professional | DC Field User Technical Support |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Maier | Scott | Research Engineer | Other Professional | DC Field User Technical Support |
| Martin | Clyde | Scientific Research Specialist | Other Professional | DC Field User Technical Support |
| Nowell | Robert | Research Engineer | Other Professional | DC Field User Technical Support |
| Semenov | Dmitry | Research Engineer | Other Professional | DC Field User Technical Support |
| Hannahs | Scott | Research Faculty III | Senior Personnel | DC Field User Technical Support |
| Gwin | Emily | Research Assistant | Other Professional | Director's Office |
| Martin | Nancy | Consultant | Other Professional | Director's Office |
| Ochat | Colleen | Special Assistant to MagLab Director | Other Professional | Director's Office |
| Toth | Anke | Program Manager | Other Professional | Director's Office |
| Amm | Kathleen | Research Faculty III | Senior Personnel | Director's Office |
| Bird | Mark | Research Faculty III | Senior Personnel | Director's Office |
| Boebinger | Gregory | Professor | Senior Personnel | Director's Office |
| Migliori | Albert | Research Faculty III | Senior Personnel | Director's Office |
| Palm | Eric | Research Faculty III | Senior Personnel | Director's Office |
| Conklin | Justin | Front Desk Security | Support Staff - Secretarial/Clerical | Director's Office |
| Miller | Lauren | Receptionist | Support Staff - Secretarial/Clerical | Director's Office |
| Conklin | Christopher | Front Desk Security | Support Staff - Technical/Managerial | Director's Office |
| Tentnowski | Michael | Licensing Manager, FSU | Support Staff - Technical/Managerial | Director's Office |
| Wilbur | Elaine | Front Desk Security | Support Staff - Technical/Managerial | Director's Office |
| Lawrence | Yanique | Research Engineer | Other Professional | Electronics Shop |
| Powell | James | Research Engineer | Other Professional | Electronics Shop |
| Avellone | Thomas | Research Assistant | Support Staff - Technical/Managerial | Electronics Shop |
| Bisht | Shubham | Graduate Research Assistant | Graduate Student | EMR |
| Gakiya | Miguel | Graduate Research Assistant | Graduate Student | EMR |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Hanabe Subramanya | Manoj Vinayaka | Graduate Research Assistant | Graduate Student | EMR |
| Heburn | Nat | Research Assistant | Graduate Student | EMR |
| Kelly | Conor | Research Assistant | Graduate Student | EMR |
| Nguyen | Quang | Graduate Research Assistant | Graduate Student | EMR |
| Wang | Ronghe | Graduate Research Assistant | Graduate Student | EMR |
| Weaver | Sherwood | Research Assistant | Graduate Student | EMR |
| Yergeshbayeva | Sandugash | Graduate Research Assistant | Graduate Student | EMR |
| Adami | Francesca | Research Assistant | Other Professional | EMR |
| Cabigting | Jhersie | Research Assistant | Other Professional | EMR |
| Grimm | Brittany | Research Assistant | Other Professional | EMR |
| Trociewitz | Bianca | Research Engineer | Other Professional | EMR |
| Ara | Ferdous | Postdoctoral Associate | Postdoc | EMR |
| Atwood | Sabastian | Postdoctoral Associate | Postdoc | EMR |
| Hrubý | Jakub | Postdoctoral Associate | Postdoc | EMR |
| Kundu | Krishnendu | Postdoctoral Associate | Postdoc | EMR |
| Thangavel | Kavipriya | Postdoctoral Associate | Postdoc | EMR |
| Dalal | Naresh | Professor | Senior Personnel | EMR |
| Fajer | Piotr | Professor | Senior Personnel | EMR |
| Hill | Stephen | Professor | Senior Personnel | EMR |
| Krzystek | Jurek | Research Faculty III | Senior Personnel | EMR |
| Orlando | Tomas | Research Faculty I | Senior Personnel | EMR |
| Ozarowski | Andrzej | Research Faculty III | Senior Personnel | EMR |
| Stoian | Sebastian | Assistant Professor | Senior Personnel | EMR |
| van Tol | Johan | Research Faculty III | Senior Personnel | EMR |
| Ibbetson | Natalie | Research Assistant | Undergraduate Student | EMR |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Lagy | Annika | Research Assistant | Undergraduate Student | EMR |
| Powers | Kiera | Research Assistant | Undergraduate Student | EMR |
| Turner | Anne | Research Assistant | Undergraduate Student | EMR |
| Arline | Benjamin | Safety Research Engineer | Other Professional | Environmental, Health, Safety and Security |
| Barnes | Brooke | Chem Inventory Mgmt Officer | Other Professional | Environmental, Health, Safety and Security |
| Bolstridge | Ashleigh | Program Coordinator | Other Professional | Environmental, Health, Safety and Security |
| Brown | Alfie | NHMFL Safety Program Director | Other Professional | Environmental, Health, Safety and Security |
| Burch | Cody | Controls Tech | Other Professional | Environmental, Health, Safety and Security |
| Carnahan | Kelly | Chem Inventory Mgmt Officer | Other Professional | Environmental, Health, Safety and Security |
| Davis | Andrew | Laboratory Safety Officer | Other Professional | Environmental, Health, Safety and Security |
| Gray | Laymon | Associate Director Environmental Health & Safety | Other Professional | Environmental, Health, Safety and Security |
| Hill | William | Director of LAR | Other Professional | Environmental, Health, Safety and Security |
| Klawinski | Mark | Industrial Hygienist | Other Professional | Environmental, Health, Safety and Security |
| Le | Richard | Biological Safety Officer | Other Professional | Environmental, Health, Safety and Security |
| Marconnet | Jason | Industrial Hygienist | Other Professional | Environmental, Health, Safety and Security |
| Murray | Renee | Chemical Safety Officer | Other Professional | Environmental, Health, Safety and Security |
| Rodman | Christopher | Industrial Safety & Health Eng. | Other Professional | Environmental, Health, Safety and Security |
| Sevor | Sam | Fire Safety Coordinator | Other Professional | Environmental, Health, Safety and Security |
| Whetstone | Laurie | Building Manager | Other Professional | Environmental, Health, Safety and Security |
| White-James | Jaime | Assistant Director, Science & Research | Other Professional | Environmental, Health, Safety and Security |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Woods | Marvin | Associate Director Environmental Health & Safety | Other Professional | Environmental, Health, Safety and Security |
| Allen | Amy | Radiation Safety Officer (RSO) | Senior Personnel | Environmental, Health, Safety and Security |
| Bell | Marisha | Industrial Safety & Health Officer | Senior Personnel | Environmental, Health, Safety and Security |
| Creason | Mary | Fire Code Inspector | Senior Personnel | Environmental, Health, Safety and Security |
| Jacques | Jean | Assoc Biological Safety Officer | Senior Personnel | Environmental, Health, Safety and Security |
| Jessie | William | Fire Safety Technician | Senior Personnel | Environmental, Health, Safety and Security |
| Masterton | Alex | Business Off Clerical Etc | Senior Personnel | Environmental, Health, Safety and Security |
| Allen | Raymond | FSU Fire Tech | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Andresen | Carol | OPS Worker | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Brasher | Thomas | Industrial Safety & Health Officer | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Brimm | Rodney | Asst. Lab Animal Technician | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Brown | Crystal | Assistant Lab Animal Tech | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Centeno | Lisette | Asst. Lab Animal Technician | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Contreras | Vianca | Laboratory Animal Res Training | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Coshatt | Charles | Laboratory Animal Technician | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Dime | Darren | FSU Fire Tech | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Dodge | Bonnie | Laboratory Animal Technologist | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Dunlap | Lauren | Assistant Lab Animal Tech | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Dyal | Stephen | Controls Technician - Team Lead | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Feinberg | Jeffrey | IH & Indoor Air Qual Prgrm Mgr | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Furbee | Corey | Fire Safety Shop Manager | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Howell | Matt | Industrial Safety & Health Officer | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Mohammadi | Seyedehsahar | Industrial Health & Safety Officer | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Nipper | Jason | Lab Animal Technologist | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Nix | Chip | FSU Law Enforcement Officer | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Nobles | Aaron | Cage Wash & Anc Srvc Supervisor | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Parker | Johnathan | Senior Rotary Equipment Tech - Team Lead | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Perry | Forrest | Assistant Radiation Safety Officer | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Rogers | Curt | Industrial Safety & Health Officer | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Shillito | Chad | Assistant Lab Animal Tech | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Shuler | John | FSU Law Enforcement Officer | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Sinclair | Billy | Asst. Lab Animal Technician | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Smythe | Al | Building Code Official | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Wakefield | Emily | Chemical Safety Specialist | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Watford | Jason | Laboratory Safety Specialist | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Wilde | Rocky | Deputy Building Official | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Williams | Thomas | Controls Technician | Support Staff - Technical/Managerial | Environmental, Health, Safety and Security |
| Arenth | Dea | Preventative Maintenance Technician | Other Professional | Facilities |
| Brittingham | Toran | HVAC Technician 1 | Other Professional | Facilities |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Gamble | Kevin | Scientific Research Specialist | Other Professional | Facilities |
| Hunter | Tra | Research Engineer | Other Professional | Facilities |
| Robertson | Joshua | Preventative Maintenance Tech | Other Professional | Facilities |
| Ryon | Robert | Maintenance Technician | Other Professional | Facilities |
| Silvia | Nicholas | General Maint Tech 2 | Other Professional | Facilities |
| Wood | Marshall | Research Engineer | Other Professional | Facilities |
| Grant | Ben | Area Manager | Senior Personnel | Facilities |
| Kynoch | John | Assistant Director | Senior Personnel | Facilities |
| Anderson | Thomas | Sr. Electrician | Support Staff - Secretarial/Clerical | Facilities |
| Hermance | Scott | Campus Service Assistant | Support Staff - Secretarial/Clerical | Facilities |
| Baker | Mark | Utility Electrician | Support Staff - Technical/Managerial | Facilities |
| Barnes | David | Senior Electrician | Support Staff - Technical/Managerial | Facilities |
| Bergozza | Zale | Maintenance Supervisor - Trades | Support Staff - Technical/Managerial | Facilities |
| Braun | Jerel | Controls Technician | Support Staff - Technical/Managerial | Facilities |
| Braverman | Kenneth | Scientific Research Specialist | Support Staff - Technical/Managerial | Facilities |
| Buggs | Marques | General Maintenance Tech | Support Staff - Technical/Managerial | Facilities |
| Campbell | Rudy | Utility Electrician | Support Staff - Technical/Managerial | Facilities |
| Cannon | Melbin | Rotary Equipment Technician | Support Staff - Technical/Managerial | Facilities |
| Carrier | Tyler | Preventative Maintenance Technician | Support Staff - Technical/Managerial | Facilities |
| Casey | Christopher | Controls Technician | Support Staff - Technical/Managerial | Facilities |
| Castano | Marcela | Maintenance Engineer | Support Staff - Technical/Managerial | Facilities |
| Ceasor | Ricardo | Pipe Shop Tech | Support Staff - Technical/Managerial | Facilities |
| Clemons | Douglas | Senior Rotary Tech | Support Staff - Technical/Managerial | Facilities |
| Coleman | Johnny | Electrician- In House Construction | Support Staff - Technical/Managerial | Facilities |
| Colvin | Darrell | Mechanical Tech | Support Staff - Technical/Managerial | Facilities |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Cooper | Russ | Maintenance Shop Supervisor | Support Staff - Technical/Managerial | Facilities |
| Copeland | Rodney | Maintenance Supervisor | Support Staff - Technical/Managerial | Facilities |
| Cosenza | Joseph | Maintenance Mechanic | Support Staff - Technical/Managerial | Facilities |
| Cruz-Sahagun | Joseph | Maintenance Technician | Support Staff - Technical/Managerial | Facilities |
| Day | Kristoffer | Plumber | Support Staff - Technical/Managerial | Facilities |
| Dupree | Marcus | Senior Custodial Supervisor | Support Staff - Technical/Managerial | Facilities |
| Edwards | Jelisa | Custodial Worker 4 | Support Staff - Technical/Managerial | Facilities |
| English | Larry | Scientific Research Specialist | Support Staff - Technical/Managerial | Facilities |
| Fienemann | Brian | Plumber | Support Staff - Technical/Managerial | Facilities |
| Franklin | Delon | Facilities Tech | Support Staff - Technical/Managerial | Facilities |
| Furst | Christopher | Preventative Maintenance Tech | Support Staff - Technical/Managerial | Facilities |
| Garcia | Sarah | Facilities Tech | Support Staff - Technical/Managerial | Facilities |
| Geyer | Will | Controls Technician | Support Staff - Technical/Managerial | Facilities |
| Gibson | Kenny | Maintenance Technician | Support Staff - Technical/Managerial | Facilities |
| Greene | Clayton | Maintenance Supervisor | Support Staff - Technical/Managerial | Facilities |
| Hall | Steven | Maint Supervisor-Electric Shop | Support Staff - Technical/Managerial | Facilities |
| Helton | Marc | Fountain Maint Tech | Support Staff - Technical/Managerial | Facilities |
| Hines | Quentin | Electrician | Support Staff - Technical/Managerial | Facilities |
| Hosey | Jason | Utilities Project Manager | Support Staff - Technical/Managerial | Facilities |
| Hosey | Mark | Vertical Maintenance Specialist | Support Staff - Technical/Managerial | Facilities |
| Howell | Jonathon | Maintenance Systems Programmer | Support Staff - Technical/Managerial | Facilities |
| Ivester | Micheal | Plumber | Support Staff - Technical/Managerial | Facilities |
| Jackson | Christopher | Maintenance Tech. | Support Staff - Technical/Managerial | Facilities |
| Johnson | Steve | Maintenance Mechanic | Support Staff - Technical/Managerial | Facilities |
| Johnson | Sylvonta | Electrician | Support Staff - Technical/Managerial | Facilities |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Kalnin | James | Scientific Research Specialist | Support Staff - Technical/Managerial | Facilities |
| Kelly | John | Senior Electrician | Support Staff - Technical/Managerial | Facilities |
| Lesley | Danny | Plumber | Support Staff - Technical/Managerial | Facilities |
| Liko | Ermal | Scientific Research Specialist | Support Staff - Technical/Managerial | Facilities |
| McKenzie | Ronald | Scientific Research Specialist | Support Staff - Technical/Managerial | Facilities |
| Moore | Deion | Maintenance Technician | Support Staff - Technical/Managerial | Facilities |
| Morales | Jose | FSU Project Manager | Support Staff - Technical/Managerial | Facilities |
| Morgan | William | Maintenance Supervisor | Support Staff - Technical/Managerial | Facilities |
| Ochat | Michael | PM Supervisor | Support Staff - Technical/Managerial | Facilities |
| Odham | James | Plumber | Support Staff - Technical/Managerial | Facilities |
| Oxendine | Christopher | Scientific Research Specialist | Support Staff - Technical/Managerial | Facilities |
| Pagel | Don | Area Manager | Support Staff - Technical/Managerial | Facilities |
| Perkins | Eric | Controls Shop Supervisor | Support Staff - Technical/Managerial | Facilities |
| Perry | Tyrone | Electrician-- Team Lead | Support Staff - Technical/Managerial | Facilities |
| Porter | Ryan | Program Manager, Facility & Grounds | Support Staff - Technical/Managerial | Facilities |
| Preston | Daniel | Scientific Research Specialist | Support Staff - Technical/Managerial | Facilities |
| Price | Becky | Assistant Director, Technology Services | Support Staff - Technical/Managerial | Facilities |
| Proctor | Greg | Maintenance Supervisor | Support Staff - Technical/Managerial | Facilities |
| Rainey | Aaron | Recycling Supervisor | Support Staff - Technical/Managerial | Facilities |
| Richardson | Greg | Rotary Equipment Technician | Support Staff - Technical/Managerial | Facilities |
| Rollison | Andre | Senior Electrician | Support Staff - Technical/Managerial | Facilities |
| Scott | Verbon | Plumber | Support Staff - Technical/Managerial | Facilities |
| Shinn | James | Control Tech | Support Staff - Technical/Managerial | Facilities |
| Shreve | Rodney | Scientific Research Specialist | Support Staff - Technical/Managerial | Facilities |
| Smith | Ben | Controls Technician | Support Staff - Technical/Managerial | Facilities |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Steiner | Brian | Preventative Maintenance Tech | Support Staff - Technical/Managerial | Facilities |
| Stevens | Dustin | Scientific Research Specialist | Support Staff - Technical/Managerial | Facilities |
| Stone | Paul | Maintenance Supervisor | Support Staff - Technical/Managerial | Facilities |
| Sutton | Damian | Maintenance Technician | Support Staff - Technical/Managerial | Facilities |
| Sutton | Jeffery | Maintenance Technician | Support Staff - Technical/Managerial | Facilities |
| Thomas | Terrance | Facilities Tech | Support Staff - Technical/Managerial | Facilities |
| Tolver | Kathy | Building Grounds Assistant | Support Staff - Technical/Managerial | Facilities |
| Walker | Monroe | Network Specialist | Support Staff - Technical/Managerial | Facilities |
| Watford | Travis | Preventative Maintenance Assoc | Support Staff - Technical/Managerial | Facilities |
| Wilson | Melvin | General Trades Technician | Support Staff - Technical/Managerial | Facilities |
| Winkler | Cary | Controls Team Lead | Support Staff - Technical/Managerial | Facilities |
| Young | Aaron | Scientific Research Specialist | Support Staff - Technical/Managerial | Facilities |
| Allman | Lindsi | Graduate Research Assistant | Graduate Student | Geochemistry |
| Barnes | Gwen | Graduate Research Assistant | Graduate Student | Geochemistry |
| Brion | Elena | Graduate Research Assistant | Graduate Student | Geochemistry |
| Conklin | Taylor | Graduate Research Assistant | Graduate Student | Geochemistry |
| Evenson | Nathaniel | Graduate Research Assistant | Graduate Student | Geochemistry |
| Fowler | Gary | Graduate Research Assistant | Graduate Student | Geochemistry |
| Gfatter | Christian | Graduate Research Assistant | Graduate Student | Geochemistry |
| Goodin | John | Graduate Research Assistant | Graduate Student | Geochemistry |
| Greene | Jade | Graduate Research Assistant | Graduate Student | Geochemistry |
| Hannold | Chance | Research Assistant | Graduate Student | Geochemistry |
| Holt | Amy | Graduate Research Assistant | Graduate Student | Geochemistry |
| Kelsey | Mimi | Laboratory Assistant / Technician | Graduate Student | Geochemistry |
| Kurek | Martin | Graduate Research Assistant | Graduate Student | Geochemistry |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Maaleki moghadam | Mahdi | Graduate Research Assistant | Graduate Student | Geochemistry |
| Mobasher | Neda | Graduate Research Assistant | Graduate Student | Geochemistry |
| Rodriguez | Luis | Graduate Research Assistant | Graduate Student | Geochemistry |
| Roselli | Maya | Graduate Research Assistant | Graduate Student | Geochemistry |
| Saha | Sayantan | Graduate Research Assistant | Graduate Student | Geochemistry |
| Sengupta | Kanwa | Graduate Research Assistant | Graduate Student | Geochemistry |
| Thomason | Riley | Graduate Research Assistant | Graduate Student | Geochemistry |
| Yazdi | Parinaz | Graduate Research Assistant | Graduate Student | Geochemistry |
| Zhou | Anwen | Graduate Research Assistant | Graduate Student | Geochemistry |
| White | Gary | Scientific Research Specialist | Other Professional | Geochemistry |
| Adiatma | Yoseph | Postdoctoral Associate | Postdoc | Geochemistry |
| Hacisalihoglu | Gokhan | Professor | Postdoc | Geochemistry |
| Herbert | Lisa | Assistant Professor | Postdoc | Geochemistry |
| Kellerman | Anne | Postdoctoral Associate | Postdoc | Geochemistry |
| Samperiz Vizcaino | Ana | Postdoctoral Associate | Postdoc | Geochemistry |
| Zhou | Zhenhao | Postdoctoral Associate | Postdoc | Geochemistry |
| Atwood | Alyssa | Assistant Professor | Senior Personnel | Geochemistry |
| Chanton | Jeff | Professor | Senior Personnel | Geochemistry |
| Froelich | Philip | Research Faculty III | Senior Personnel | Geochemistry |
| Landing | William | Professor | Senior Personnel | Geochemistry |
| Odom | Leroy | Professor | Senior Personnel | Geochemistry |
| Owens | Jeremy | Assistant Professor | Senior Personnel | Geochemistry |
| Salters | Vincent | Professor | Senior Personnel | Geochemistry |
| Spencer | Robert | Assistant Professor | Senior Personnel | Geochemistry |
| Stewart | Emily | Assistant Professor | Senior Personnel | Geochemistry |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Stukel | Michael | Assistant Professor | Senior Personnel | Geochemistry |
| Wang | Yang | Professor | Senior Personnel | Geochemistry |
| Wolff | Burt | Assistant In Research | Senior Personnel | Geochemistry |
| Young | Seth | Associate Professor | Senior Personnel | Geochemistry |
| Zateslo | Theodore | Senior Engineer | Support Staff - Technical/Managerial | Geochemistry |
| Fravel | Mackenzie | Undergraduate Research Assistant | Undergraduate Student | Geochemistry |
| Haire | Alvin | Office Assistant | Undergraduate Student | Geochemistry |
| Harrison | Sydney | Undergraduate Research Assistant | Undergraduate Student | Geochemistry |
| Scott | Erin | Undergraduate Research Assistant | Undergraduate Student | Geochemistry |
| Sherman | Olivia | Undergraduate Research Assistant | Undergraduate Student | Geochemistry |
| Garba | Muhammad | Graduate Research Assistant | Graduate Student | Gypsum/Rare Earth |
| Lake | Bailey | Graduate Research Assistant | Graduate Student | Gypsum/Rare Earth |
| Lowery | Aidan | Graduate Research Assistant | Graduate Student | Gypsum/Rare Earth |
| Nwachukwu | Alwell | Graduate Research Assistant | Graduate Student | Gypsum/Rare Earth |
| Rogers | David | Graduate Research Assistant | Graduate Student | Gypsum/Rare Earth |
| Sharma | Srishti | Graduate Research Assistant | Graduate Student | Gypsum/Rare Earth |
| Sillitoe-Kukas | Steffanie | Graduate Research Assistant | Graduate Student | Gypsum/Rare Earth |
| Kornegay | Jacqueline | Program Manager | Other Professional | Gypsum/Rare Earth |
| Pugh | Frank | Program Director, Science and Research | Other Professional | Gypsum/Rare Earth |
| Richerson | Lezlee | Chief of Staff | Other Professional | Gypsum/Rare Earth |
| Hendrix | Donald | Postdoctoral Associate | Postdoc | Gypsum/Rare Earth |
| Hoare | Brendan | Postdoctoral Associate | Postdoc | Gypsum/Rare Earth |
| Khan | Mohd | Postdoctoral Associate | Postdoc | Gypsum/Rare Earth |
| Park | June Hee | Postdoctoral Associate | Postdoc | Gypsum/Rare Earth |
| Rassolov | Peter | Postdoctoral Associate | Postdoc | Gypsum/Rare Earth |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Sherif | Mahmoud | Postdoctoral Associate | Postdoc | Gypsum/Rare Earth |
| Szucs | Adrienn | Postdoctoral Associate | Postdoc | Gypsum/Rare Earth |
| Yang | Shuying | Postdoctoral Associate | Postdoc | Gypsum/Rare Earth |
| Humayun | Munir | Professor | Senior Personnel | Gypsum/Rare Earth |
| Lin | Ethan | Technical Writer | Support Staff - Secretarial/Clerical | Gypsum/Rare Earth |
| Collins | Raiona | Laboratory Assistant / Technician | Support Staff - Technical/Managerial | Gypsum/Rare Earth |
| Igboanugo | Anthony | Graduate Research Assistant | Support Staff - Technical/Managerial | Gypsum/Rare Earth |
| Kimball | Jonathan | Research Assistant | Support Staff - Technical/Managerial | Gypsum/Rare Earth |
| Wadhams | Jane | Scientific Research Specialist | Support Staff - Technical/Managerial | Gypsum/Rare Earth |
| Brungi | Pranathi | Research Assistant | Undergraduate Student | Gypsum/Rare Earth |
| Carlstedt | Nicholas | Research Assistant | Undergraduate Student | Gypsum/Rare Earth |
| Euridge | Miles | Research Assistant | Undergraduate Student | Gypsum/Rare Earth |
| Hilleary | Anna | Research Assistant | Undergraduate Student | Gypsum/Rare Earth |
| Patterson | Abigail | Research Assistant | Undergraduate Student | Gypsum/Rare Earth |
| Zhang | Phoebe | Research Assistant | Undergraduate Student | Gypsum/Rare Earth |
| Zimmerman | Zachary | Research Assistant | Undergraduate Student | Gypsum/Rare Earth |
| Roberts | Allyson | Sr Administrative Specialist | Other Professional | Human Resources |
| Stafford | Holly | Administrative Specialist | Other Professional | Human Resources |
| Waddell | Jennifer | Administrative Specialist | Other Professional | Human Resources |
| Billups | Nyah | Office Assistant | Undergraduate Student | Human Resources |
| Alharbi | Khaled | Graduate Research Assistant | Graduate Student | ICR |
| Amanze | Charles | Technician | Graduate Student | ICR |
| Andongma | Binda | Graduate Research Assistant | Graduate Student | ICR |
| Asefaw | Benhur | Graduate Research Assistant | Graduate Student | ICR |
| Bonilla | Julissa | Graduate Research Assistant | Graduate Student | ICR |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Fierros Romero | Grisel | Graduate Research Assistant | Graduate Student | ICR |
| Holder Montenegro | Christopher | Graduate Research Assistant | Graduate Student | ICR |
| Kamadana | Krishna Saketh | Graduate Research Assistant | Graduate Student | ICR |
| Lindsay | Brittany | Graduate Research Assistant | Graduate Student | ICR |
| Potu | Teja | Graduate Research Assistant | Graduate Student | ICR |
| Ssekimpi | Dennis | Graduate Research Assistant | Graduate Student | ICR |
| Tesfamariam | Ermias | Graduate Research Assistant | Graduate Student | ICR |
| Wu | Kuan-Lu | Graduate Research Assistant | Graduate Student | ICR |
| Lu | Jie | Research Assistant | Other Professional | ICR |
| Quinn | John | Research Engineer | Other Professional | ICR |
| Babcock-Adams | Lydia | Postdoctoral Associate | Postdoc | ICR |
| Glattke | Taylor | Postdoctoral Associate | Postdoc | ICR |
| Mikawy | Neven | Postdoctoral Research Associate | Postdoc | ICR |
| Polak | Marek | Postdoctoral Associate | Postdoc | ICR |
| Anderson | Lissa | Research Faculty II | Senior Personnel | ICR |
| Blakney | Gregory | Research Faculty II | Senior Personnel | ICR |
| Butcher | David | Visiting Research Faculty I | Senior Personnel | ICR |
| Chacon Patino | Martha | Research Faculty I | Senior Personnel | ICR |
| Chen | Huan | Research Faculty II | Senior Personnel | ICR |
| Duan | Zhenhai | Professor of Computer Science | Senior Personnel | ICR |
| Håkansson | Kristina | Professor | Senior Personnel | ICR |
| Hendrickson | Christopher | Research Faculty III | Senior Personnel | ICR |
| Kaiser | Nathan | Visiting Research Faculty III | Senior Personnel | ICR |
| Mallory | Xian | Assistant Professor of Computer Science | Senior Personnel | ICR |
| Marshall | Alan | Professor | Senior Personnel | ICR |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| McKenna | Amy | Research Faculty III | Senior Personnel | ICR |
| Rodgers | Ryan | Research Faculty III | Senior Personnel | ICR |
| Tyson | Gary | Harris Professor of Computer Science | Senior Personnel | ICR |
| Weisbrod | Chad | Research Faculty II | Senior Personnel | ICR |
| Jemmott | Krista | Program Coordinator | Support Staff - Secretarial/Clerical | ICR |
| Frye-Jones | Joseph | Technician | Support Staff - Technical/Managerial | ICR |
| Lowenstein | Daniel | Technician | Support Staff - Technical/Managerial | ICR |
| Rhodes | Vikram | Technician | Support Staff - Technical/Managerial | ICR |
| Albert | Grayson | Undergraduate Student | Undergraduate Student | ICR |
| Hughes | Emily | Undergraduate Research Student | Undergraduate Student | ICR |
| Long | Sylvia | Undergraduate Research Assistant | Undergraduate Student | ICR |
| Shung | Benjohn | Undergraduate Student | Undergraduate Student | ICR |
| Tello Rodriguez | Alvaro | Undergraduate Student | Undergraduate Student | ICR |
| Abbasi | Alireza | Research Assistant | Graduate Student | Magnet Science & Technology |
| Berry | Danyale | Graduate Research Assistant | Graduate Student | Magnet Science & Technology |
| Chen | Xingchi | Graduate Research Assistant | Graduate Student | Magnet Science & Technology |
| De Leon | Ana | Research Assistant | Graduate Student | Magnet Science & Technology |
| Evers | Cecil | Research Assistant | Graduate Student | Magnet Science & Technology |
| Fidd | Catherine | Graduate Research Assistant | Graduate Student | Magnet Science & Technology |
| Liu | He | Laboratory Assistant / Technician | Graduate Student | Magnet Science & Technology |
| Liu | Haoyang | Laboratory Assistant / Technician | Graduate Student | Magnet Science & Technology |
| Martin | Terrencia | Research Assistant | Graduate Student | Magnet Science & Technology |
| Reyes | Aspen | Graduate Research Assistant | Graduate Student | Magnet Science & Technology |
| Taleb | Omar | Microscopist | Graduate Student | Magnet Science & Technology |
| Wang | Peng | Laboratory Assistant / Technician | Graduate Student | Magnet Science & Technology |
| Adkins | Todd | Research Engineer | Other Professional | Magnet Science & Technology |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Arroyo | Erick | Scientific Research Specialist | Other Professional | Magnet Science & Technology |
| Belton | Matthew | Research Engineer | Other Professional | Magnet Science & Technology |
| Bonaventura | Nash | Research Engineer II | Other Professional | Magnet Science & Technology |
| Cantrell | Kurtis | Research Engineer | Other Professional | Magnet Science & Technology |
| Gibson | Murray | Professor | Other Professional | Magnet Science & Technology |
| Jarvis | Jeffrey | Scientific Research Specialist | Other Professional | Magnet Science & Technology |
| Marks | Emsley | Scientific Research Specialist | Other Professional | Magnet Science & Technology |
| O'Reilly | James | Scientific Research Specialist | Other Professional | Magnet Science & Technology |
| Ressler | Sara | Sr Administrative Specialist | Other Professional | Magnet Science & Technology |
| Stanton | Robert | Scientific Research Specialist | Other Professional | Magnet Science & Technology |
| Toplosky | Vince | Research Engineer | Other Professional | Magnet Science & Technology |
| White | James | Scientific Research Specialist | Other Professional | Magnet Science & Technology |
| Devendhar Singh | Sanjay Kumar | Laboratory Assistant / Technician | Postdoc | Magnet Science & Technology |
| Griffin | Shannon | Postdoctoral Associate | Postdoc | Magnet Science & Technology |
| Rogers | John | Postdoctoral Associate | Postdoc | Magnet Science & Technology |
| Arnett | Natalie | Associate Professor | Senior Personnel | Magnet Science & Technology |
| Bai | Hongyu | Research Faculty III | Senior Personnel | Magnet Science & Technology |
| Dixon | Iain | Research Faculty III | Senior Personnel | Magnet Science & Technology |
| Erickson | Greg | Visiting Scientist/Researcher | Senior Personnel | Magnet Science & Technology |
| Gavrilin | Andrey | Research Faculty III | Senior Personnel | Magnet Science & Technology |
| Han | Ke | Research Faculty III | Senior Personnel | Magnet Science & Technology |
| Ingrole | Aniket | Assistant In Research | Senior Personnel | Magnet Science & Technology |
| Kim | Kwangmin | Research Faculty II | Senior Personnel | Magnet Science & Technology |
| Lu | Jun | Research Faculty III | Senior Personnel | Magnet Science & Technology |
| Markiewicz | William | Research Assistant | Senior Personnel | Magnet Science & Technology |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Marshall | William | Sr. Research Associate | Senior Personnel | Magnet Science & Technology |
| Matos Pimentel | Hannah | Assistant In Research | Senior Personnel | Magnet Science & Technology |
| Niu | Rongmei | Associate In Research | Senior Personnel | Magnet Science & Technology |
| Painter | Thomas | Sr. Research Associate | Senior Personnel | Magnet Science & Technology |
| Shukla | Dharmendra Prasad | Assistant In Research | Senior Personnel | Magnet Science & Technology |
| Suetomi | Yu | Research Faculty I | Senior Personnel | Magnet Science & Technology |
| Sweat | Rebekah | Assistant Professor | Senior Personnel | Magnet Science & Technology |
| Toth | Jack | Research Faculty III | Senior Personnel | Magnet Science & Technology |
| Walsh | Robert | Sr. Research Associate | Senior Personnel | Magnet Science & Technology |
| Xin | Yan | Research Faculty III | Senior Personnel | Magnet Science & Technology |
| Zeller | Al | Visiting Scientist/Researcher | Senior Personnel | Magnet Science & Technology |
| Cone | Raymond | Scientific Research Specialist | Support Staff - Technical/Managerial | Magnet Science & Technology |
| Deterding | Justin | Scientific Research Specialist | Support Staff - Technical/Managerial | Magnet Science & Technology |
| Levitan | Jeremy | Research Engineer | Support Staff - Technical/Managerial | Magnet Science & Technology |
| Lucia | Joseph | Scientific Research Specialist | Support Staff - Technical/Managerial | Magnet Science & Technology |
| Nguyen | Joshua | Scientific Research Specialist | Support Staff - Technical/Managerial | Magnet Science & Technology |
| Ray | Christopher | Scientific Research Specialist | Support Staff - Technical/Managerial | Magnet Science & Technology |
| Chin | Ava | Engineer | Undergraduate Student | Magnet Science & Technology |
| Garrett | Amari | Research Assistant | Undergraduate Student | Magnet Science & Technology |
| Gavin | Noah | Undergraduate Research Assistant | Undergraduate Student | Magnet Science & Technology |
| Huszar | Anna | Research Assistant | Undergraduate Student | Magnet Science & Technology |
| Hutley | Aliya | Research Assistant | Undergraduate Student | Magnet Science & Technology |
| Jackson | Akeeme | Engineer | Undergraduate Student | Magnet Science & Technology |
| Mason | Samaiyah | Graduate Research Assistant | Undergraduate Student | Magnet Science & Technology |
| Polisetty | Pavan | Research Assistant | Undergraduate Student | Magnet Science & Technology |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Shonde | Tunde | Laboratory Assistant / Technician | Undergraduate Student | Magnet Science & Technology |
| Sorensen | John | Laboratory Assistant / Technician | Undergraduate Student | Magnet Science & Technology |
| Rowney | Alexander | Program Manager | Other Professional | Management and Administration |
| Sapronetti | Andrew | Administrative Specialist | Other Professional | Management and Administration |
| Booth | Debra | Business Systems Director | Senior Personnel | Management and Administration |
| Greene | Laura | Professor | Senior Personnel | Management and Administration |
| Lunger | David | Director, Project Management | Senior Personnel | Management and Administration |
| Sandy | Megan | Director, EH&S | Support Staff - Secretarial/Clerical | Management and Administration |
| Wackes | Christina | Office Assistant | Support Staff - Secretarial/Clerical | Management and Administration |
| Arroyo | Joseph | Maintenance Technician | Support Staff - Technical/Managerial | Management and Administration |
| Groves | Lee | Maintenance Supervisor | Support Staff - Technical/Managerial | Management and Administration |
| Murphy | Daniel | Coordinator, Administrative Services | Support Staff - Technical/Managerial | Management and Administration |
| Ahmad | Nazifa Tasnim | Graduate Research Assistant | Graduate Student | NMR |
| Arbabian | Arshia | Graduate Research Assistant | Graduate Student | NMR |
| Bhagu | Jamini | Graduate Research Assistant | Graduate Student | NMR |
| Bryant | Hannah | Graduate Research Assistant | Graduate Student | NMR |
| Chantra | Dominic | Graduate Research Assistant | Graduate Student | NMR |
| Dowdell | Zachary | Graduate Research Assistant | Graduate Student | NMR |
| Esmonde | Colin | Graduate Research Assistant | Graduate Student | NMR |
| Fan | Jiaxing | Graduate Research Assistant | Graduate Student | NMR |
| Fleischer III | Carl | Graduate Student | Graduate Student | NMR |
| Islam | Md Mahinur | Graduate Research Assistant | Graduate Student | NMR |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Jin | Yongkang | Graduate Research Assistant | Graduate Student | NMR |
| Kimball | James | Graduate Research Assistant | Graduate Student | NMR |
| Ojelade | Islamiyat | Graduate Research Assistant | Graduate Student | NMR |
| Ojha | Pawan | Graduate Research Assistant | Graduate Student | NMR |
| Osborn | Peyton | Graduate Research Assistant | Graduate Student | NMR |
| Peterson | Joseph | Graduate Research Assistant | Graduate Student | NMR |
| Radovich | Jenna | Graduate Research Assistant | Graduate Student | NMR |
| Richter | Dayna | Graduate Research Assistant | Graduate Student | NMR |
| Roy | Anamika | Graduate Research Assistant | Graduate Student | NMR |
| Sanchez | Jazmine | Graduate Research Assistant | Graduate Student | NMR |
| Scigliani | Alfredo | Graduate Research Assistant | Graduate Student | NMR |
| Smith | Robert | Graduate Student | Graduate Student | NMR |
| Termos | Sara | Graduate Research Assistant | Graduate Student | NMR |
| Toheed | Tehreem | Graduate Research Assistant | Graduate Student | NMR |
| Truong | Erica | Graduate Research Assistant | Graduate Student | NMR |
| Zehender | Dominik | Graduate Research Assistant | Graduate Student | NMR |
| Barnes | Heather | Program Coordinator | Other Professional | NMR |
| Kitchen | Jason | NMR Research Engineer | Other Professional | NMR |
| Ranner | Steven | Scientific Research Specialist | Other Professional | NMR |
| Chen | Yudan | Postdoctoral Associate | Postdoc | NMR |
| Dickwella Witanage | Malitha | Postdoctoral Associate | Postdoc | NMR |
| Gordon | Blaine | Postdoctoral Associate | Postdoc | NMR |
| Gunaga | Shubha | Postdoctoral Associate | Postdoc | NMR |
| Holmes | Sean | Postdoctoral Associate | Postdoc | NMR |
| Lumata | Jenica | Postdoctoral Associate | Postdoc | NMR |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| McCalpin | Samuel | Postdoctoral Associate | Postdoc | NMR |
| Ogbolu | Bright | Postdoctoral Associate | Postdoc | NMR |
| Oyekunle | Ifeoluwa | Postdoctoral Associate | Postdoc | NMR |
| Saha | Jhinuk | Postdoctoral Associate | Postdoc | NMR |
| Scott | Faith | Postdoctoral Associate | Postdoc | NMR |
| Sharma | Gaurav | Postdoctoral Associate | Postdoc | NMR |
| Brey | William | Research Faculty III | Senior Personnel | NMR |
| Cho | Shinho | Research Faculty I | Senior Personnel | NMR |
| Cross | Timothy | Researcher/Scientist | Senior Personnel | NMR |
| Dubroca | Thierry | Research Faculty I | Senior Personnel | NMR |
| Elumalai | Malathy | Associate In Research | Senior Personnel | NMR |
| Frydman | Lucio | Professor | Senior Personnel | NMR |
| Fu | Riqiang | Research Faculty III | Senior Personnel | NMR |
| Gan | Zhehong | Research Faculty III | Senior Personnel | NMR |
| Gor'kov | Peter | Sr. Research Associate | Senior Personnel | NMR |
| Grant | Samuel | Professor | Senior Personnel | NMR |
| Hallinan | Daniel | Associate Professor | Senior Personnel | NMR |
| Hu | Yan-Yan | Assistant Professor | Senior Personnel | NMR |
| Hung | Ivan | Sr. Research Associate | Senior Personnel | NMR |
| Litvak | Ilya | Sr. Research Associate | Senior Personnel | NMR |
| Maptue | Nesmine | Biological Scientist III (external NMR user) | Senior Personnel | NMR |
| Mentink-Vigier | Frederic | Research Faculty II | Senior Personnel | NMR |
| Mohammadigoushki | Hadi | Associate Professor | Senior Personnel | NMR |
| Ramamoorthy | Ayyalusamy | Professor | Senior Personnel | NMR |
| Schurko | Robert | Professor | Senior Personnel | NMR |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Silvers | Robert | Assistant Professor | Senior Personnel | NMR |
| Venkatesh | Amrit | Research Faculty I | Senior Personnel | NMR |
| Wi | Sungsool | Research Faculty II | Senior Personnel | NMR |
| Blue | Ashley | Scientific Research Specialist | Support Staff - Technical/Managerial | NMR |
| Collins | Joseph | Scientific Research Specialist | Support Staff - Technical/Managerial | NMR |
| Aguirre | Eva | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Amadi | Chiemeka | Intern | Undergraduate Student | NMR |
| Atuncar | Maria | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Blan | Connor | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Campbell | Alexander | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Campbell | Emma | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Canales | Izaac | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Cohan | James | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Da Vitoria Lobo | Thurston | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Dawad | Ali | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Dindinger | Joshua | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Ermakov-Spektor | David | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Frazier | Layla | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Gilmore | Madison | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Gonzalez Paz | Maria Carla | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Hernandez | Gabriel | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Kassinger | Kailey | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Kinsey | Taylor | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Lane-Lightfoot | Kara | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Martin | Julia | Undergrad Research Assistant | Undergraduate Student | NMR |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| McVay | Brianna | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Meenakshisundaram | Aparna | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Mota | Ahsly | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Oraedu | Kasiemobi | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Patel | Trisha | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Pereira | Tiffany | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Peterson | Christian | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Plowell | Renee | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Schlossnagle | Garrett | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Wasisco | Kylie | Undergrad Research Assistant | Undergraduate Student | NMR |
| Wolfe | Dana | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Wolszczak | Audrey | Undergraduate Research Assistant | Undergraduate Student | NMR |
| Bilenky | Stephen | Videographer | Other Professional | Public Affairs |
| McNiel | Caroline | Program Manager | Other Professional | Public Affairs |
| Schultz | Edan | Media Specialist | Other Professional | Public Affairs |
| Tabtimtong | Nilubon | Application Developer Designer | Other Professional | Public Affairs |
| Roberts | Kristin | Director, Strategic Initiatives | Senior Personnel | Public Affairs |
| Grooms | Lindsay | UBA Associate Director | Other Professional | UBA/Purchasing |
| Verma | Manjari | Travel Coordinator | Other Professional | UBA/Purchasing |
| Lee | Walter | Assistant Director, UBA Program | Senior Personnel | UBA/Purchasing |
| Barker | William | Campus Service Assistant | Support Staff - Secretarial/Clerical | UBA/Purchasing |
| Booth | Scott | Clerk | Support Staff - Secretarial/Clerical | UBA/Purchasing |
| Braman III | Robert Steven | Accounting Associate | Support Staff - Secretarial/Clerical | UBA/Purchasing |
| Fields | Sarah | Administrative Assistant | Support Staff - Secretarial/Clerical | UBA/Purchasing |
| Daugherty | John | Accounting Specialist | Support Staff - Technical/Managerial | UBA/Purchasing |
| White | Moses | Campus Services Specialist | Support Staff - Technical/Managerial | UBA/Purchasing |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Szelong | Dustin | Technology Specialist | Other Professional | WAG / Printing Services |
| Tabtimtong | Melisa | Application Developer | Other Professional | WAG / Printing Services |
| Clark | Eric | Assistant Director, Technology Services | Senior Personnel | WAG / Printing Services |
| Childs | John | Media Specialist (Graphic Artist) | Support Staff - Technical/Managerial | WAG / Printing Services |
| Finn | Sarita | Technology Specialist | Support Staff - Technical/Managerial | WAG / Printing Services |
| Hahn | David | Web Application Developer | Support Staff - Technical/Managerial | WAG / Printing Services |
| John | Kevin | Media Specialist (Graphic Artist) | Support Staff - Technical/Managerial | WAG / Printing Services |
| Ludlow | Richard | Media Specialist (Graphic Artist) | Support Staff - Technical/Managerial | WAG / Printing Services |

## MAGLAB AT LANL (37)

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Chavez | Melody | Administrative Assistant | Support Staff - Secretarial/Clerical | Administration |
| Velasquez | Sofia | Professional Staff Assistant | Support Staff - Secretarial/Clerical | Administration |
| Blawat | Joanna | Postdoctoral Researcher | Postdoc | Pulsed Field Facility |
| Kirstein | Johann | Postdoctoral Associate | Postdoc | Pulsed Field Facility |
| Mucchietto | Andrea | Postdoctoral Researcher | Postdoc | Pulsed Field Facility |
| Saini | Vikas | Postdoctoral Researcher | Postdoc | Pulsed Field Facility |
| Smith | Gregory | Postdoctoral Researcher | Postdoc | Pulsed Field Facility |
| Wang | Jingyuan | Postdoctoral Researcher | Postdoc | Pulsed Field Facility |
| Balakirev | Fedor | Research Faculty III | Senior Personnel | Pulsed Field Facility |
| Bhardwaj | Ashish | R+D Electrical Engineer | Senior Personnel | Pulsed Field Facility |
| Chan | Mun Keat | Research Faculty II | Senior Personnel | Pulsed Field Facility |
| Crooker | Scott | Research Faculty III | Senior Personnel | Pulsed Field Facility |
| Harrison | Neil | Research Faculty III | Senior Personnel | Pulsed Field Facility |
| Lee | Minseong | Research Faculty III | Senior Personnel | Pulsed Field Facility |
| Maiorov | Boris | Research Faculty III | Senior Personnel | Pulsed Field Facility |
| McDonald | Ross | Research Faculty III | Senior Personnel | Pulsed Field Facility |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Mizzi | Christopher | Research Faculty I | Senior Personnel | Pulsed Field Facility |
| Nguyen | Doan | Research Faculty III | Senior Personnel | Pulsed Field Facility |
| Palmstrom | Johanna | Research Faculty I | Senior Personnel | Pulsed Field Facility |
| Rubi | Km | Research Faculty I | Senior Personnel | Pulsed Field Facility |
| Shehter | Arkady | Research Faculty II | Senior Personnel | Pulsed Field Facility |
| Singleton | John | Research Faculty III | Senior Personnel | Pulsed Field Facility |
| Winter | Laurel | Research Faculty III | Senior Personnel | Pulsed Field Facility |
| Zapf | Vivien | Research Faculty III | Senior Personnel | Pulsed Field Facility |
| Zhang | Shengzhi | Research Faculty I | Senior Personnel | Pulsed Field Facility |
| Ayala Valenzuela | Oscar | Research Technologist | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Betts | Scott | Research Technologist | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Gonzales | Leonard | Research Technologist | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Lucero | Jason | Research Technologist | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Michel | James | Research Technologist | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Noe | Gary | Research Technologist | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Noerper | Jonathan | Research Technologist | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Srock | Josiah | R+D Mechnical Engineer | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Teshima | Hazuki | Research Technologist | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Valdez | Abran | Research Technician | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Wirth | Daniel | Research Technician | Support Staff - Technical/Managerial | Pulsed Field Facility |
| Yoakam | Roxanne | Research Technician | Support Staff - Technical/Managerial | Pulsed Field Facility |

## MAGLAB AT UF (52)

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Dowling | Gregory | Engineer | Other Professional | AMRIS Affiliated Faculty & Staff |
| Jenkins | Kelly | RF Coil Engineer | Other Professional | AMRIS Affiliated Faculty & Staff |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Nicholson | Tammy | Certified Radiology Technology Mgr. (3T Imaging Applications) | Other Professional | AMRIS Affiliated Faculty & Staff |
| Rosenberg | Jens | Core Research Facility Manager / AMRIS facilities manager of Clinical MRI instrumentation | Other Professional | AMRIS Affiliated Faculty & Staff |
| Febo | Marcelo | Associate Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Forbes | Sean | Associate Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Khemtong | Chalermchai | Associate Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Long | Joanna | Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Luesch | Hendrik | Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Mareci | Thomas | Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Merritt | Matthew | Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Vaillancourt | David | Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Vandenborne | Krista | Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Vasenkov | Sergey | Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Walter | Glenn | Professor | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Zeng | Huadong | Core Research Facility Manager | Senior Personnel | AMRIS Affiliated Faculty & Staff |
| Ali | Kaley | Office Manager, Administrative Support AST II | Support Staff - Secretarial/Clerical | AMRIS Affiliated Faculty & Staff |
| Caldas Nogueira | Maria Luiza | Core Research Facility Manager | Support Staff - Technical/Managerial | AMRIS Affiliated Faculty & Staff |
| Chatfield | Shane | 3 T MRI Technologist | Support Staff - Technical/Managerial | AMRIS Affiliated Faculty & Staff |
| Collins | James | Core Research Facility Manager | Support Staff - Technical/Managerial | AMRIS Affiliated Faculty & Staff |
| Slade | Joshua | Engineering Technician | Support Staff - Technical/Managerial | AMRIS Affiliated Faculty & Staff |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Steadman | Judith | MRI Technologist | Support Staff - Technical/Managerial | AMRIS Affiliated Faculty & Staff |
| Wolf | Eli | Research Coordinator | Support Staff - Technical/Managerial | AMRIS Affiliated Faculty & Staff |
| Chang | Mario | Graduate Research Assistant | Graduate Student | Chemistry Affiliated Faculty & Staff |
| Angerhofer | Alexander | Professor | Senior Personnel | Chemistry Affiliated Faculty & Staff |
| Bowers | Clifford | Professor | Senior Personnel | Chemistry Affiliated Faculty & Staff |
| Butcher | Rebecca | Associate Professor | Senior Personnel | Chemistry Affiliated Faculty & Staff |
| Eddy | Matthew | Assistant Professor | Senior Personnel | Chemistry Affiliated Faculty & Staff |
| Evans | Austin | Assistant Professor | Senior Personnel | Chemistry Affiliated Faculty & Staff |
| Fanucci | Gail | Professor | Senior Personnel | Chemistry Affiliated Faculty & Staff |
| Talham | Daniel | Professor | Senior Personnel | Chemistry Affiliated Faculty & Staff |
| Silva | Nicolas | Postdoctoral Associate | Postdoc | High B/T Affiliated Faculty & Staff |
| Gazizulin | Rasul | Assistant In Research | Senior Personnel | High B/T Affiliated Faculty & Staff |
| Huan | Chao | Research Faculty I | Senior Personnel | High B/T Affiliated Faculty & Staff |
| Laroche | Dominique | Assistant Professor | Senior Personnel | High B/T Affiliated Faculty & Staff |
| Lee | Sangyun | Research Faculty I | Senior Personnel | High B/T Affiliated Faculty & Staff |
| Lee | Yoonseok | Professor | Senior Personnel | High B/T Affiliated Faculty & Staff |
| Meisel | Mark | Professor | Senior Personnel | High B/T Affiliated Faculty & Staff |
| Sullivan | Neil | Professor | Senior Personnel | High B/T Affiliated Faculty & Staff |
| Takano | Yasumasa | Professor | Senior Personnel | High B/T Affiliated Faculty & Staff |

| Last Name | First Name | Title | Position Category | Division |
|---|---|---|---|---|
| Ollmann | Chris | Engineer II | Support Staff - Technical/Managerial | High B/T Affiliated Faculty & Staff |
| Donald | Alexander | Graduate Research Assistant | Graduate Student | Physics Affiliated Faculty & Staff |
| Hamlin | James | Associate Professor | Senior Personnel | Physics Affiliated Faculty & Staff |
| Hebard | Arthur | Professor | Senior Personnel | Physics Affiliated Faculty & Staff |
| Hershfield | Selman | Professor | Senior Personnel | Physics Affiliated Faculty & Staff |
| Hirschfeld | Peter | Professor | Senior Personnel | Physics Affiliated Faculty & Staff |
| Ingersent | Kevin | Professor | Senior Personnel | Physics Affiliated Faculty & Staff |
| Maslov | Dmitrii | Professor | Senior Personnel | Physics Affiliated Faculty & Staff |
| Stanton | Christopher | Professor | Senior Personnel | Physics Affiliated Faculty & Staff |
| Stewart | Gregory | Professor | Senior Personnel | Physics Affiliated Faculty & Staff |
| Tanner | David | Professor | Senior Personnel | Physics Affiliated Faculty & Staff |
| Zhang | Xiao-Xiao | Assistant Professor | Senior Personnel | Physics Affiliated Faculty & Staff |

# APPENDIX 2 – USER FACILITY STATISTICS

## OVERVIEW

Seven user facilities — AMRIS (NMR-MRI@UF), DC Field, EMR, High B/T, ICR, NMR-MRI @FSU, and Pulsed Field — each with exceptional instrumentation and highly qualified staff scientists and staff, comprise the magnet lab's user program. In this appendix, each facility presents detailed information about its user demographics, operations statistics and requests for magnet time. A user is an individual or a member of a research group that is allocated magnet time. The user does not have to be "on site" for the experiment. A researcher who sends samples for analysis; a scientist who uses new lab technologies to conduct experiments remotely; or a PI who sends students to the magnet lab, are all considered users. All user numbers reflect distinct individuals, i.e., if a user has multiple proposals (different scientific thrusts) or is allocated magnet time more than once during the year, he/she is counted only once.

## AMRIS FACILITY

***Table 1a.*** *Users by Participation – NSF-Funded*

| | Users | Users Present | User Present Virtually | Users Operating Remotely | Users Sending Sample | Off-Site Users |
|---|---|---|---|---|---|---|
| Senior Personnel, U.S. | **45** | 39 | 0 | 0 | 0 | 6 |
| Senior Personnel, non-U.S. | **4** | 3 | 0 | 0 | 0 | 1 |
| Postdocs, U.S. | **13** | 12 | 0 | 0 | 0 | 1 |
| Postdocs, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 |
| Students, U.S. | **40** | 29 | 0 | 0 | 0 | 11 |
| Students, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 |
| Technician, U.S. | **5** | 4 | 0 | 0 | 0 | 1 |
| Technician, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 |
| **Total** | **107** | **87** | **0** | **0** | **0** | **20** |

[1] Users using multiple facilities are counted in each facility listed.
[2] "Users Operating Remotely" refers to users who operate the magnet system from a remote location. Remote operations are not currently available in all facilities.
[3] "Users Sending Sample" refers to users who send the sample to the facility and/or research group and the experiment is conducted by other collaborators on the experiment. Users at UF, FSU, and LANL cannot be "sample senders" for facilities located on their campuses.
[4] "Off-Site Users" are scientific or technical participants on the experiment; who will not be present, sending sample, or operating the magnet system remotely; and who are not located on the campus of that facility (i.e., they are off-site).

***Table 1b.*** *Users by Participation – Non-NHMFL Funded*

| | Users | Users Present | User Present Virtually | Users Operating Remotely | Users Sending Sample | Off-Site Users |
|---|---|---|---|---|---|---|
| Senior Personnel, U.S. | **61** | 52 | 0 | 0 | 1 | 8 |
| Senior Personnel, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 |
| Postdocs, U.S. | **14** | 14 | 0 | 0 | 0 | 0 |
| Postdocs, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 |
| Students, U.S. | **83** | 68 | 0 | 0 | 0 | 15 |
| Students, non-U.S. | **1** | 1 | 0 | 0 | 0 | 0 |
| Technician, U.S. | **13** | 12 | 0 | 0 | 0 | 1 |
| Technician, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 |
| **Total** | **172** | **147** | **0** | **0** | **1** | **24** |

***Table 1c.*** *Users by Participation – Summary*

| | Users | Users Present | User Present Virtually | Users Operating Remotely | Users Sending Sample | Off-Site Users |
|---|---|---|---|---|---|---|
| NSF Funded | **107** | **87** | **0** | **0** | **0** | **20** |
| Non-NHMFL Funded | **172** | **147** | **0** | **0** | **1** | **24** |
| TOTAL | **279** | **234** | **0** | **0** | **1** | **44** |

***Table 2a.*** *Users by Organization – NSF-Funded*

| | Users[1] | External Users | Local Users[2] | NHMFL-Affiliated Users[2,3,4] | Laboratory[3,5] | University[4,5] | Industry[5] |
|---|---|---|---|---|---|---|---|
| Senior Personnel, U.S. | **45** | 21 | 13 | 11 | 0 | 45 | 0 |
| Senior Personnel, non-U.S. | **4** | 4 | 0 | 0 | 1 | 3 | 0 |
| Postdocs, U.S. | **13** | 8 | 5 | 0 | 0 | 13 | 0 |
| Postdocs, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Students, U.S. | **40** | 23 | 17 | 0 | 1 | 39 | 0 |
| Students, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Technician, U.S. | **5** | 2 | 1 | 2 | 0 | 5 | 0 |
| Technician, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **107** | **58** | **36** | **13** | **2** | **105** | **0** |

[1] Users using multiple facilities are counted in each facility listed.
[2] NHMFL-Affiliated users are defined as anyone in the lab's personnel system (i.e., on our website/directory), even if they travel to another site. Local users are defined as any non-NHMFL-Affiliated researchers originating at any of the institutions in proximity to the MagLab sites (i.e., researchers at FSU, UF, FAMU, or LANL), even if they travel to another site.

[3] Users with primary affiliations at NHMFL/LANL are reported in NHMFL-Affiliated Users and National Laboratory.
[4] Users with primary affiliations at FSU, UF, or FAMU are reported in NHMFL-Affiliated Users and National University.
[5] The TOTAL of university, industry, and national lab users will equal the TOTAL number of users.

***Table 2b.*** *Users by Organization – Non-NHMFL Funded*

| | Users[1] | External Users | Local Users[2] | NHMFL-Affiliated Users[2,3,4] | Laboratory[3,5] | University[4,5] | Industry[5] |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **61** | 8 | 43 | 10 | 0 | 59 | 2 |
| **Senior Personnel, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Postdocs, U.S.** | **14** | 2 | 11 | 1 | 0 | 13 | 1 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Students, U.S.** | **83** | 2 | 80 | 1 | 0 | 83 | 0 |
| **Students, non-U.S.** | **1** | 1 | 0 | 0 | 0 | 1 | 0 |
| **Technician, U.S.** | **13** | 1 | 11 | 1 | 0 | 13 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **172** | **14** | **145** | **13** | **0** | **169** | **3** |

***Table 2c.*** *Users by Organization – Summary*

| | Users[1] | External Users | Local Users[2] | NHMFL-Affiliated Users[2,3,4] | Laboratory[3,5] | University[4,5] | Industry[5] |
|---|---|---|---|---|---|---|---|
| **NSF Funded** | **107** | **58** | **36** | **13** | **2** | **105** | **0** |
| **Non-NHMFL Funded** | **172** | **14** | **145** | **13** | **0** | **169** | **3** |
| **TOTAL** | **279** | **72** | **181** | **26** | **2** | **274** | **3** |

***Table 3a.*** *Users by Discipline – NSF-Funded*

| | Users[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Bio-chemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **45** | 0 | 13 | 10 | 0 | 22 | 0 |
| **Senior Personnel, non-U.S.** | **4** | 1 | 0 | 1 | 0 | 2 | 0 |
| **Postdocs, U.S.** | **13** | 0 | 4 | 4 | 1 | 4 | 0 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Students, U.S.** | **40** | 0 | 10 | 9 | 1 | 20 | 0 |
| **Students, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Technician, U.S.** | **5** | 0 | 0 | 2 | 0 | 3 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **107** | **1** | **27** | **26** | **2** | **51** | **0** |

[1] Users using multiple facilities are counted in each facility listed.

***Table 3b.*** *Users by Discipline – Non-NHMFL Funded*

| | Users[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Bio-chemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **61** | 0 | 7 | 8 | 0 | 46 | 0 |
| **Senior Personnel, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Postdocs, U.S.** | **14** | 0 | 1 | 0 | 0 | 13 | 0 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Students, U.S.** | **83** | 0 | 7 | 13 | 3 | 60 | 0 |
| **Students, non-U.S.** | **1** | 0 | 1 | 0 | 0 | 0 | 0 |
| **Technician, U.S.** | **13** | 0 | 1 | 1 | 0 | 11 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **172** | **0** | **17** | **22** | **3** | **130** | **0** |

***Table 3c.*** *Users by Discipline – Summary*

| | Users[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Bio-chemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **NSF Funded** | **107** | **1** | **27** | **26** | **2** | **51** | **0** |
| **Non-NHMFL Funded** | **172** | **0** | **17** | **22** | **3** | **130** | **0** |
| **TOTAL** | **279** | **1** | **44** | **48** | **5** | **181** | **0** |

***Table 4.*** *Subscription Rate - Summary*

| | Experiments Submitted (Current Year) | Experiments Submitted (Deferred from prev. year) | Experi-ments w/ Usage | Experiments w/ Usage Percentage | Experi-ments Declined | Experiments Declined Percentage | Experi-ments Reviewed | Experiment Subscription Rate | Experiments Subscription Percentage |
|---|---|---|---|---|---|---|---|---|---|
| **NSF Funded** | **20** | 7 | 27 | 100 % | 0 | 0 % | 27 | 1 | 100 % |
| **Non-NHMFL Funded** | **21** | 6 | 27 | 100 % | 0 | 0 % | 27 | 1 | 100 % |
| **TOTAL** | **41** | **13** | **54** | | **0** | | **54** | | |

***Table 5.*** *Research Proposals Profile (Discipline) with Magnet Time*

| | TOTAL Proposals | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|---|
| NSF Funded | 27 | 0 | 4 | 4 | 5 | 14 | 0 |
| Non-NHMFL Funded | 24 | 0 | 0 | 0 | 0 | 24 | 0 |
| TOTAL | 51 | 0 | 4 | 4 | 5 | 38 | 0 |

Find the list of user proposals in **Appendix 5** and on our **website**

***Table 6a.*** *Operations by Magnet System Group – NSF-Funded*

| | Total Days Used | Percentage of Total Days Used | 600MHz NMR Spectro-meter with Cryoprobe | 600MHz NMR Spectro-meter Hyper-sense | 600MHz Wide Bore Spectro-meter | 750MHz Wide Bore Spectro-meter | 800MHz, 63mm bore NMR Spectro-meter | 800MHz NMR Spectro-meter with Cryoprobe | 11T/40 MRI System |
|---|---|---|---|---|---|---|---|---|---|
| NHMFL-Affiliated | 15 | 1.5 % | 0 | 4 | 6 | 0 | 0 | 0 | 5 |
| Local | 156.2 | 15.9 % | 19.5 | 0 | 8.5 | 55.5 | 0 | 72.7 | 0 |
| University, U.S. | 188.8 | 19.2 % | 8.5 | 115.5 | 6 | 18.7 | 11.8 | 28.3 | 0 |
| University, non-U.S. | 6.5 | 0.7 % | 0 | 0 | 0 | 0 | 0 | 6.5 | 0 |
| Government Lab, U.S. | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Government Lab, non-U.S. | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Industry, U.S. | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Industry, non-U.S. | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Test/Calibration/Maintenance | 377 | 38.4 % | 76.3 | 48 | 41 | 45.5 | 42.5 | 39.5 | 84.2 |
| Method Development | 56.2 | 5.7 % | 27.7 | 0 | 0 | 19.5 | 3.3 | 5.7 | 0 |
| Analytical Chemistry | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Upgrade Cell Design/Hardware | 95.5 | 9.7 % | 3 | 13 | 19 | 29.5 | 28 | 1.5 | 1.5 |
| Setup | 87.8 | 8.9 % | 11 | 8.5 | 19.5 | 12.3 | 15.3 | 7.8 | 13.3 |
| Repair | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 983 | | 146 | 189 | 100 | 181 | 101 | 162 | 104 |

***Table 6b.*** *Operations by Magnet System Group – Non-NHMFL Funded*

| | Total Days Used | Percentage of Total Days Used | 600MHz NMR Spectro-meter with Cryoprobe | 600MHz NMR Spectro-meter – Hyper-sense | 600MHz Wide Bore Spectro-meter | 750MHz Wide Bore Spectro-meter | 800MHz, 63mm bore NMR Spectro-meter | 800MHz NMR Spectro-meter with Cryoprobe | 11T/40 MRI System |
|---|---|---|---|---|---|---|---|---|---|
| NHMFL-Affiliated | 483.3 | 74.5 % | 52 | 78 | 96 | 49.5 | 29 | 72.3 | 106.5 |
| Local | 85.3 | 13.1 % | 2 | 0 | 0 | 14.5 | 0 | 18.3 | 50.5 |
| University, U.S. | 2.5 | 0.4 % | 0 | 0 | 0 | 2.5 | 0 | 0 | 0 |
| University, non-U.S. | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Government Lab, U.S. | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Government Lab, non-U.S. | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Industry, U.S. | 77.8 | 12 % | 2 | 9 | 0 | 7.5 | 0 | 59.3 | 0 |
| Industry, non-U.S. | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Test/Calibration/Maintenance | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Method Development | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Analytical Chemistry | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Upgrade Cell Design/Hardware | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Setup | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Repair | 0 | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 649 | | 56 | 87 | 96 | 74 | 29 | 150 | 157 |

***Table 6c.*** *Operations by Magnet System Group –Summary*

| | Total Days Used | 600MHz NMR Spectrometer with Cryoprobe | 600MHz NMR Spectrometer Hypersense | 600MHz Wide Bore Spectrometer | 750MHz Wide Bore Spectrometer | 800MHz, 63mm bore NMR Spectrometer | 800MHz NMR Spectrometer with Cryoprobe | 11T/40 MRI System |
|---|---|---|---|---|---|---|---|---|
| NSF Funded | 983 | 146 | 189 | 100 | 181 | 101 | 162 | 104 |
| Non-NHMFL Funded | 649 | 56 | 87 | 96 | 74 | 29 | 150 | 157 |
| TOTAL | 1,632 | 202 | 276 | 196 | 255 | 130 | 312 | 261 |

***Table 7a.*** *Operations by Discipline – NSF-Funded*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|---|
| NHMFL-Affiliated | **15** | 0 | 10 | 0 | 0 | 5 | 0 |
| Local | **156.2** | 0 | 4 | 0 | 1.5 | 150.7 | 0 |
| University, U.S. | **188.8** | 0 | 5.5 | 115.5 | 0 | 67.8 | 0 |
| University, non-U.S. | **6.5** | 0 | 0 | 0 | 0 | 6.5 | 0 |
| Government Lab, U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Government Lab, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Industry, U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Industry, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Test/Calibration/Maintenance | **377** | 0 | 0 | 0 | 377 | 0 | 0 |
| Method Development | **56.2** | 0 | 0 | 0 | 56.2 | 0 | 0 |
| Analytical Chemistry | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Upgrade Cell Design/Hardware | **95.5** | 0 | 0 | 0 | 95.5 | 0 | 0 |
| Setup | **87.8** | 0 | 0 | 0 | 87.8 | 0 | 0 |
| Repair | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **983** | **0** | **19.5** | **115.5** | **618** | **230** | **0** |

***Table 7b.*** *Operations by Discipline – Non-NHMFL Funded*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|---|
| NHMFL-Affiliated | **483.3** | 0 | 0 | 0 | 6 | 477.3 | 0 |
| Local | **85.3** | 0 | 0 | 0 | 0 | 85.3 | 0 |
| University, U.S. | **2.5** | 0 | 0 | 0 | 0 | 2.5 | 0 |
| University, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Government Lab, U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Government Lab, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Industry, U.S. | **77.8** | 0 | 77.8 | 0 | 0 | 0 | 0 |
| Industry, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Test/Calibration/Maintenance | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Method Development | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Analytical Chemistry | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Upgrade Cell Design/Hardware | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Setup | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| Repair | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **649** | **0** | **77.8** | **0** | **6** | **565.2** | **0** |

***Table 7c.*** *Operations by Discipline – Summary*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|---|
| **NSF Funded** | **983** | **0** | **19.5** | **115.5** | **618** | **230** | **0** |
| **Non-NHMFL Funded** | **649** | **0** | **77.8** | **0** | **6** | **565.2** | **0** |
| **TOTAL** | **1,632** | **0** | **97.3** | **115.5** | **624** | **795.2** | **0** |

***Table 8a.*** *New PIs[1] and New Users – NSF-Funded*

| | All PIs | New PIs at the MagLab | New PIs at Facility | Returning PIs at Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | 25 | 2 | 2 | 23 | 45 | 4 | 4 | 41 |
| **Senior Personnel, non-U.S.** | 1 | 0 | 0 | 1 | 4 | 3 | 3 | 1 |
| **Postdocs, U.S.** | 0 | 0 | 0 | 0 | 13 | 3 | 3 | 10 |
| **Postdocs, non-U.S.** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Students, U.S.** | 0 | 0 | 0 | 0 | 40 | 15 | 15 | 25 |
| **Students, non-U.S.** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Technician, U.S.** | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 |
| **Technician, non-U.S.** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **26** | **2** | **2** | **24** | **107** | **25** | **25** | **82** |

[1] PIs who received magnet time for the first time.

***Table 8b.*** *New PIs[1] and New Users – Non-NHMFL Funded*

| | All PIs | New PIs at the MagLab | New PIs at Facility | Returning PIs at Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **23** | 2 | 3 | 20 | 61 | 7 | 10 | 51 |
| **Senior Personnel, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Postdocs, U.S.** | **1** | 0 | 0 | 1 | 14 | 2 | 5 | 9 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | All PIs | New PIs at the MagLab | New PIs at Facility | Returning PIs at Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| Students, U.S. | **0** | 0 | 0 | 0 | 83 | 25 | 33 | 50 |
| Students, non-U.S. | **0** | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Technician, U.S. | **0** | 0 | 0 | 0 | 13 | 4 | 6 | 7 |
| Technician, non-U.S. | **0** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **24** | **2** | **3** | **21** | **172** | **38** | **55** | **117** |

***Table 8c.*** *New PIs[1] and New Users – Summary*

| | All PIs | New PIs at the MagLab | New PIs at Facility | Returning PIs at Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **NSF Funded** | **26** | **2** | **2** | **24** | **107** | **25** | **25** | **82** |
| **Non-NHMFL Funded** | **24** | **2** | **3** | **21** | **172** | **38** | **55** | **117** |
| **TOTAL** | **50** | **4** | **5** | **45** | **279** | **63** | **80** | **199** |

***Table 9.*** *New[1] User PIs – NSF-Funded*

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Jason Bara | University of Alabama, Tuscaloosa | P20361 | Received 2024 | Yes |
| Tracy Centanni | University of Florida | P20450 | Received 2024 | No |
| Carson Ingo | Northwestern University | P20436 | Received 2024 | Yes |
| May Khanna | University of Florida | P20821 | Received 2024 | Yes |
| Orlando Laitano | University of Florida | P20822 | Received 2024 | Yes |

# DC FIELD FACILITY

***Table 1.*** *Users by Participation*

| | Users[1] | Users Present | User Present Virtually | Users Operating Remotely[2] | Users Sending Sample[3] | Off-Site User[4] |
|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **182** | 87 | 7 | 0 | 18 | 70 |
| **Senior Personnel, non-U.S.** | **52** | 11 | 5 | 0 | 9 | 27 |
| **Postdocs, U.S.** | **62** | 38 | 2 | 0 | 3 | 19 |
| **Postdocs, non-U.S.** | **7** | 1 | 0 | 0 | 1 | 5 |
| **Students, U.S.** | **177** | 137 | 2 | 0 | 5 | 33 |
| **Students, non-U.S.** | **43** | 31 | 0 | 0 | 5 | 7 |
| **Technician, U.S.** | **15** | 6 | 0 | 0 | 0 | 9 |
| **Technician, non-U.S.** | **1** | 1 | 0 | 0 | 0 | 0 |
| **TOTAL** | **539** | **312** | **16** | **0** | **41** | **170** |

[1] Users using multiple facilities are counted in each facility listed.
[2] "Users Operating Remotely" refers to users who operate the magnet system from a remote location. Remote operations are not currently available in all facilities.
[3] "Users Sending Sample" refers to users who send the sample to the facility and/or research group and the experiment is conducted by other collaborators on the experiment. Users at UF, FSU, and LANL cannot be "sample senders" for facilities located on their campuses.
[4] "Off-Site Users" are scientific or technical participants on the experiment; who will not be present, sending sample, or operating the magnet system remotely; and who are not located on the campus of that facility (i.e., they are off-site).

***Table 2.*** *Users by Organization*

| | Users[1] | External Users | Local Users[2] | NHMFL-Affiliated Users[2,3,4] | Laboratory[3,5] | University[4,5] | Industry[5] |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **182** | 125 | 5 | 52 | 26 | 140 | 16 |
| **Senior Personnel, non-U.S.** | **52** | 52 | 0 | 0 | 9 | 43 | 0 |
| **Postdocs, U.S.** | **62** | 47 | 8 | 7 | 12 | 50 | 0 |
| **Postdocs, non-U.S.** | **7** | 7 | 0 | 0 | 0 | 7 | 0 |
| **Students, U.S.** | **177** | 148 | 15 | 14 | 2 | 174 | 1 |
| **Students, non-U.S.** | **43** | 42 | 0 | 1 | 0 | 43 | 0 |
| **Technician, U.S.** | **15** | 8 | 1 | 6 | 0 | 11 | 4 |
| **Technician, non-U.S.** | **1** | 1 | 0 | 0 | 0 | 1 | 0 |
| **TOTAL** | **539** | **430** | **29** | **80** | **49** | **469** | **21** |

[1] Users using multiple facilities are counted in each facility listed.
[2] NHMFL-Affiliated users are defined as anyone in the lab's personnel system (i.e., on our web site/directory), even if they travel to another site. Local users are defined as any non-NHMFL-Affiliated researchers originating at any of the institutions in proximity to the MagLab sites (i.e., researchers at FSU, UF, FAMU, or LANL), even if they travel to another site.
[3] Users with primary affiliations at NHMFL/LANL are reported in NHMFL-Affiliated Users and National Laboratory.
[4] Users with primary affiliations at FSU, UF, or FAMU are reported in NHMFL-Affiliated Users and National University.
[5] The TOTAL of university, industry, and national lab users will equal the TOTAL number of users.

***Table 3.*** *Users by Discipline*

| | Users[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Bio-chemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **182** | 126 | 15 | 10 | 19 | 1 | 11 |
| **Senior Personnel, non-U.S.** | **52** | 42 | 7 | 2 | 0 | 0 | 1 |
| **Postdocs, U.S.** | **62** | 50 | 5 | 2 | 1 | 1 | 3 |
| **Postdocs, non-U.S.** | **7** | 5 | 2 | 0 | 0 | 0 | 0 |
| **Students, U.S.** | **177** | 131 | 28 | 7 | 3 | 0 | 8 |
| **Students, non-U.S.** | **43** | 39 | 3 | 0 | 0 | 0 | 1 |
| **Technician, U.S.** | **15** | 0 | 0 | 9 | 5 | 0 | 1 |
| **Technician, non-U.S.** | **1** | 1 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **539** | **394** | **60** | **30** | **28** | **2** | **25** |

[1] Users using multiple facilities are counted in each facility listed.

***Table 4a.*** *Subscription Rate (Experiments)*

| Experiments Submitted (Current Year) | Experiments Submitted (Deferred from prev. year) | Experi-ments w/ Usage | Experiments w/ Usage Percentage | Experi-ments Declined | Experiments Declined Percentage | Experi-ments Reviewed | Experiment Subscription Rate | Experiments Subscription Percentage |
|---|---|---|---|---|---|---|---|---|
| **371** | 29 | 273 | 68.3 % | 127 | 31.8 % | 400 | 1.5 | 146.5 % |

***Table 4b.*** *Subscription Rate (Magnet Days)*

| Days Submitted | Days Used by External User | Days Used by Local User | Days Used by NHMFL-Affiliated User | Days Used for Inst., Dev., Test and Maintenance[1] | Total Days Used | Days Subscription Rate | Days Subscription Percentage |
|---|---|---|---|---|---|---|---|
| **2,972** | 1,396.1 | 43.1 | 501.2 | 71.5 | 2,011.8 | 1.5 | 147.7 % |

[1] Test/Calibration/ Maintenance, Method Development, Analytical Chemistry, Upgrade Cell Design/Hardware Setup, Repair

***Table 5*** *Research Proposals Profile (Discipline) with Magnet Time*

| TOTAL Proposals | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|
| **146** | 112 | 15 | 1 | 11 | 1 | 6 |

Find the list of user proposals in **Appendix 5** and on our **website**

***Table 6.*** *Operations by Magnet System Group*

| | Total Days Used[1] | % of Total Days Used | 45T | Resistive | SCH | Super-conducting |
|---|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **501.2** | 24.9 % | 1 | 100.2 | 3 | 397 |
| **Local** | **43.1** | 2.1 % | 0 | 3.1 | 0 | 40 |
| **University, U.S.** | **939.3** | 46.7 % | 15 | 257.3 | 0 | 667 |
| **University, non-U.S.** | **293.5** | 14.6 % | 15 | 63.5 | 0 | 215 |
| **Government Lab, U.S.** | **97.3** | 4.8 % | 0 | 13.3 | 0 | 84 |
| **Government Lab, non-U.S.** | **27.3** | 1.4 % | 0 | 5.3 | 0 | 22 |
| **Industry, U.S.** | **38.8** | 1.9 % | 0 | 17.8 | 0 | 21 |
| **Industry, non-U.S.** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **Test/Calibration/Maintenance** | **1.5** | 0.1 % | 0 | 1.5 | 0 | 0 |
| **Method Development** | **70** | 3.5 % | 0 | 0 | 0 | 70 |
| **Analytical Chemistry** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **Setup** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **Repair** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **TOTAL** | **2,011.8** | | **31** | **461.8** | **3** | **1,516** |

[1] Each 20MW resistive magnet requires two power supplies to run, the 45T hybrid magnet requires three power supplies, and the 36T Series Connected Hybrid requires one power supply. Thus, there can be four resistive magnets + three superconducting magnets operating or the 45T hybrid, series connected hybrid, two resistive magnets and three superconducting magnets. User Units are defined as magnet days. Users of water-cooled resistive or hybrid magnets can typically expect to receive enough energy for 7 hours a day of magnet usage, so a magnet day is defined as 7 hours. Superconducting magnets are scheduled typically 24 hours a day.

***Table 7.*** *Operations by Discipline*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **501.2** | 372.9 | 8 | 0 | 99.7 | 0 | 20.7 |
| **Local** | **43.1** | 33 | 3.1 | 7 | 0 | 0 | 0 |
| **University, U.S.** | **939.3** | 771.8 | 124.3 | 0 | 11.8 | 0 | 31.4 |
| **University, non-U.S.** | **293.5** | 252.5 | 41 | 0 | 0 | 0 | 0 |
| **Government Lab, U.S.** | **97.3** | 90.3 | 0 | 0 | 0 | 0 | 7 |
| **Government Lab, non-U.S.** | **27.3** | 27.3 | 0 | 0 | 0 | 0 | 0 |
| **Industry, U.S.** | **38.8** | 0 | 0 | 0 | 11.6 | 0 | 27.2 |
| **Industry, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Test/ Calibration/ Maintenance** | **1.5** | 1.5 | 0 | 0 | 0 | 0 | 0 |
| **Method Development** | **70** | 70 | 0 | 0 | 0 | 0 | 0 |
| **Analytical Chemistry** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Setup** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Repair** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **2,011.8** | **1,619.1** | **176.4** | **7** | **123.1** | **0** | **86.2** |

***Table 8.*** *New PIs[1] and New Users*

| | All PIs | New PIs at the MagLab | New PIs at Facility | Returning PIs at Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **101** | 14 | 19 | 82 | **182** | 17 | 21 | 161 |
| **Senior Personnel, non-U.S.** | **27** | 7 | 8 | 19 | **52** | 10 | 11 | 41 |
| **Postdocs, U.S.** | **1** | 0 | 0 | 1 | **62** | 15 | 16 | 46 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | **7** | 0 | 2 | 5 |
| **Students, U.S.** | **0** | 0 | 0 | 0 | **177** | 55 | 58 | 119 |
| **Students, non-U.S.** | **0** | 0 | 0 | 0 | **43** | 17 | 18 | 25 |
| **Technician, U.S.** | **0** | 0 | 0 | 0 | **15** | 3 | 3 | 12 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | **1** | 0 | 0 | 1 |
| **TOTAL** | **129** | **21** | **27** | **102** | **539** | **117** | **129** | **410** |

[1] PIs who received magnet time for the first time.

***Table 9*** *New PIs[1]*

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Kirstin Alberi | National Renewable Energy Laboratory | P20510 | Received 2024 | No |

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Arnab Banerjee | Purdue University | P20720 | Received 2024 | Yes |
| Konstantin Bukhryakov | Florida International University | P20604 | Received 2024 | Yes |
| Radu Coldea | University of Oxford | P20523 | Received 2024 | Yes |
| Daniel Davis | National High Magnetic Field Laboratory | P20663 | Received 2024 | Yes |
| Gael Grissonnanche | Institute Polytechnic De Paris | P20527 | Received 2024 | Yes |
| David Herbert | University of Manitoba | P19661 | Received 2024 | No |
| Stephen Holmes | University of Missouri, St Louis | P20632 | Received 2024 | No |
| Zahir Islam | Argonne National Laboratory | P20446 | Received 2024 | Yes |
| Myung-Hwa Jung | Sogang University | P20520 | Received 2024 | Yes |
| Hemamala Karunadasa | Stanford University | P20617 | Received 2024 | Yes |
| Bumjoon Kim | Pohang University of Science and Technology | P20613 | Received 2024 | Yes |
| Bryan Kudisch | Florida State University | P20514 | Received 2024 | Yes |
| Sangyun Lee | National High Magnetic Field Laboratory | P20151 | Received 2024 | No |
| Duminda Liurukara | Oak Ridge National Laboratory | P20627 | Received 2024 | Yes |
| Gennady Logvenov | Max Planck Institute for Solid State Research, Stuttgart | P20378 | Received 2024 | Yes |
| Hongcheng Lu | Huazhong University of Science and Technology | P20228 | Received 2024 | Yes |
| Madalynn Marshall | Kennesaw State University | P20676 | Received 2024 | Yes |
| Hadi Mohammadigoushki | Florida State University | P20674 | Received 2024 | No |
| Shin-ichi Ohkoshi | University of Tokyo | P20624 | Received 2024 | Yes |
| Allen Scheie | Los Alamos National Laboratory | P20517 | Received 2024 | Yes |
| Jian Shi | Rensselaer Polytechnic Institute | P20630 | Received 2024 | Yes |
| Lucia Steinke | Maybell Quantum Industries | P20680 | Received 2024 | No |
| Thao Tran | Clemson University | P20648 | Received 2024 | Yes |
| Ines Wyrsta | High Temperature Superconductors Inc. | P20722 | Received 2024 | Yes |
| Peng Xiong | Florida State University | P20660 | Received 2024 | Yes |
| Linda Ye | California Institute of Technology | P20405 | Received 2024 | Yes |

[1] PIs who received magnet time for the first time.

# EMR FACILITY

***Table 1.*** *Users by Participation*

| | Users[1] | Users Present | User Present Virtually | Users Operating Remotely[2] | Users Sending Sample[3] | Off-Site User[4] |
|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **62** | 15 | 0 | 0 | 18 | 29 |
| **Senior Personnel, non-U.S.** | **19** | 2 | 0 | 0 | 5 | 12 |
| **Postdocs, U.S.** | **19** | 7 | 0 | 0 | 5 | 7 |
| **Postdocs, non-U.S.** | **6** | 1 | 0 | 0 | 1 | 4 |
| **Students, U.S.** | **61** | 19 | 0 | 0 | 23 | 19 |
| **Students, non-U.S.** | **7** | 0 | 0 | 0 | 4 | 3 |
| **Technician, U.S.** | **1** | 0 | 0 | 0 | 0 | 1 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **175** | **44** | **0** | **0** | **56** | **75** |

[1] Users using multiple facilities are counted in each facility listed.
[2] "Users Operating Remotely" refers to users who operate the magnet system from a remote location. Remote operations are not currently available in all facilities.
[3] "Users Sending Sample" refers to users who send the sample to the facility and/or research group and the experiment is conducted by other collaborators on the experiment. Users at UF, FSU, and LANL cannot be "sample senders" for facilities located on their campuses.
[4] "Off-Site Users" are scientific or technical participants on the experiment; who will not be present, sending sample, or operating the magnet system remotely; and who are not located on the campus of that facility (i.e., they are off-site).

***Table 2.*** *Users by Organization*

| | Users[1] | External Users | Local Users[2] | NHMFL-Affiliated Users[2,3,4] | Laboratory[3,5] | University[4,5] | Industry[5] |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **62** | 37 | 4 | 21 | 3 | 59 | 0 |
| **Senior Personnel, non-U.S.** | **19** | 19 | 0 | 0 | 2 | 17 | 0 |
| **Postdocs, U.S.** | **19** | 10 | 3 | 6 | 0 | 19 | 0 |
| **Postdocs, non-U.S.** | **6** | 6 | 0 | 0 | 1 | 5 | 0 |
| **Students, U.S.** | **61** | 36 | 16 | 9 | 0 | 61 | 0 |
| **Students, non-U.S.** | **7** | 7 | 0 | 0 | 1 | 6 | 0 |
| **Technician, U.S.** | **1** | 0 | 0 | 1 | 0 | 1 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **175** | **115** | **23** | **37** | **7** | **168** | **0** |

[1] Users using multiple facilities are counted in each facility listed.
[2] NHMFL-Affiliated users are defined as anyone in the lab's personnel system (i.e., on our web site/directory), even if they travel to another site. Local users are defined as any non-NHMFL-Affiliated researchers originating at any of the institutions in proximity to the MagLab sites (i.e., researchers at FSU, UF, FAMU, or LANL), even if they travel to another site.
[3] Users with primary affiliations at NHMFL/LANL are reported in NHMFL-Affiliated Users and National Laboratory.
[4] Users with primary affiliations at FSU, UF, or FAMU are reported in NHMFL-Affiliated Users and National University.
[5] The TOTAL of university, industry, and national lab users will equal the TOTAL number of users.

***Table 3.*** *Users by Discipline*

| | Users[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **62** | 16 | 32 | 3 | 1 | 6 | 4 |
| **Senior Personnel, non-U.S.** | **19** | 5 | 12 | 0 | 0 | 2 | 0 |
| **Postdocs, U.S.** | **19** | 5 | 12 | 0 | 0 | 0 | 2 |
| **Postdocs, non-U.S.** | **6** | 2 | 4 | 0 | 0 | 0 | 0 |
| **Students, U.S.** | **61** | 7 | 48 | 1 | 0 | 3 | 2 |
| **Students, non-U.S.** | **7** | 1 | 6 | 0 | 0 | 0 | 0 |
| **Technician, U.S.** | **1** | 0 | 0 | 0 | 1 | 0 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **175** | **36** | **114** | **4** | **2** | **11** | **8** |

[1] Users using multiple facilities are counted in each facility listed.

***Table 4a.*** *Subscription Rate (Experiments)*

| Experiments Submitted (Current Year) | Experiments Submitted (Deferred from prev. year) | Experi-ments w/ Usage | Experiments w/ Usage Percentage | Experi-ments Declined | Experiments Declined Percentage | Experi-ments Reviewed | Experiment Subscription Rate | Experiments Subscription Percentage |
|---|---|---|---|---|---|---|---|---|
| **134** | 8 | 124 | 87.3 % | 18 | 12.7 % | 142 | 1.1 | 114.5 % |

***Table 4b.*** *Subscription Rate (Magnet Days)*

| Days Submitted | Days Used by External User | Days Used by Local User | Days Used by NHMFL-Affiliated User | Days Used for Inst., Dev., Test and Maintenance[1] | Total Days Used | Days Subscription Rate | Days Subscription Percentage |
|---|---|---|---|---|---|---|---|
| **1,489** | 356.5 | 44.0 | 255.5 | 95.0 | 751 | 2 | 198.3 % |

[1] Test/Calibration/ Maintenance, Method Development, Analytical Chemistry, Upgrade Cell Design/Hardware Setup, Repair

***Table 5.*** *Research Proposals Profile (Discipline) with Magnet Time*

| TOTAL Proposals | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|
| **57** | 8 | 32 | 2 | 4 | 7 | 4 |

Find the list of user proposals in **Appendix 5** and on our [website]

***Table 6.*** *Operations by Magnet System Group*

| | Total Days Used[1] | % of Total Days Used | 12.5T SC, Pulsed EPR | 17T SCM | Bruker[2] | HiPER |
|---|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **255.5** | 0 | 24 | 78 | 20 | 133.5 |
| **Local** | **44** | 5.9 % | 0 | 14 | 30 | 0 |
| **University, U.S.** | **272** | 36.2 % | 119 | 97 | 14 | 42 |
| **University, non-U.S.** | **79.5** | 10.6 % | 19 | 34 | 19 | 7.5 |
| **Government Lab, U.S.** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **Government Lab, non-U.S.** | **5** | 0.7 % | 0 | 5 | 0 | 0 |
| **Industry, U.S.** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **Industry, non-U.S.** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **Test/Calibration/Maintenance** | **62** | 8.3 % | 0 | 34 | 0 | 28 |
| **Method Development** | **33** | 4.4 % | 3 | 3 | 15 | 12 |
| **Analytical Chemistry** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **Setup** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **Repair** | **0** | 0 % | 0 | 0 | 0 | 0 |
| **TOTAL** | **751** | | **165** | **265** | **98** | **223** |

[1] User Units are defined as magnet days. One magnet day is defined as 24 hours in superconducting magnets.

***Table 7.*** *Operations by Discipline*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **255.5** | 9 | 60 | 177 | 2.5 | 0 | 7 |
| **Local** | **44** | 0 | 36 | 1 | 0 | 7 | 0 |
| **University, U.S.** | **272** | 63.5 | 175 | 0 | 0 | 1.5 | 32 |
| **University, non-U.S.** | **79.5** | 24 | 31.5 | 0 | 0 | 0 | 24 |
| **Government Lab, U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Government Lab, non-U.S.** | **5** | 5 | 0 | 0 | 0 | 0 | 0 |
| **Industry, U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Industry, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Test/ Calibration/ Maintenance** | **62** | 0 | 1 | 61 | 0 | 0 | 0 |
| **Method Development** | **33** | 0 | 20 | 12 | 1 | 0 | 0 |
| **Analytical Chemistry** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Setup** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Repair** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **751** | **101.5** | **323.5** | **251** | **3.5** | **8.5** | **63** |

***Table 8.*** *New PIs[1] and New Users*

| | All PIs | New PIs at the MagLab | New PIs at Facility | Returning PIs at Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **41** | 5 | 8 | 33 | **62** | 1 | 6 | 56 |
| **Senior Personnel, non-U.S.** | **11** | 1 | 3 | 8 | **19** | 1 | 2 | 17 |
| **Postdocs, U.S.** | **0** | 0 | 0 | 0 | **19** | 2 | 3 | 16 |
| **Postdocs, non-U.S.** | **1** | 0 | 0 | 1 | **6** | 1 | 1 | 5 |
| **Students, U.S.** | **0** | 0 | 0 | 0 | **61** | 16 | 22 | 39 |
| **Students, non-U.S.** | **0** | 0 | 0 | 0 | **7** | 2 | 4 | 3 |
| **Technician, U.S.** | **0** | 0 | 0 | 0 | **1** | 0 | 1 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 |
| **TOTAL** | **53** | **6** | **11** | **42** | **175** | **23** | **39** | **136** |

[1] PIs who received magnet time for the first time.

***Table 9.*** *New PIs[1]*

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Igor Alabugin | Florida State University | P20726 | Received 2024 | No |
| Abhijit Biswas | Rice University | P20662 | Received 2024 | Yes |
| Konstantin Bukhryakov | Florida International University | P20604 | Received 2024 | Yes |

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Juraj Cernak | Safarik University | P20220 | Received 2024 | No |
| Thomas Gunnoe | University of Virginia | P20734 | Received 2024 | Yes |
| Martin Kirk | University of New Mexico | P19926 | Received 2024 | No |
| Hadi Mohammadigoushki | Florida State University | P20600 | Received 2024 | No |
| Kasper Pedersen | Technical University of Denmark | P20666 | Received 2024 | Yes |
| Snorri Sigurdsson | University of Iceland | P20530 | Received 2024 | No |
| Thao Tran | Clemson University | P20648 | Received 2024 | Yes |
| Wen Zhu | Florida State University | P20508 | Received 2024 | Yes |

[1] PIs who received magnet time for the first time.

# HIGH B/T FACILITY

***Table 1.*** *Users by Participation*

| | Users[1] | Users Present | User Present Virtually | Users Operating Remotely[2] | Users Sending Sample[3] | Off-Site User[4] |
|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **12** | 5 | 0 | 0 | 0 | 7 |
| **Senior Personnel, non-U.S.** | **1** | 0 | 0 | 0 | 0 | 1 |
| **Postdocs, U.S.** | **5** | 5 | 0 | 0 | 0 | 0 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 |
| **Students, U.S.** | **5** | 5 | 0 | 0 | 0 | 0 |
| **Students, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 |
| **Technician, U.S.** | **1** | 1 | 0 | 0 | 0 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **24** | **16** | **0** | **0** | **0** | **8** |

[1] Users using multiple facilities are counted in each facility listed.
[2] "Users Operating Remotely" refers to users who operate the magnet system from a remote location. Remote operations are not currently available in all facilities.
[3] "Users Sending Sample" refers to users who send the sample to the facility and/or research group and the experiment is conducted by other collaborators on the experiment. Users at UF, FSU, and LANL cannot be "sample senders" for facilities located on their campuses.
[4] "Off-Site Users" are scientific or technical participants on the experiment; who will not be present, sending sample, or operating the magnet system remotely; and who are not located on the campus of that facility (i.e., they are off-site).

***Table 2.*** *Users by Organization*

| | Users[1] | External Users | Local Users[2] | NHMFL-Affiliated Users[2,3,4] | Laboratory[3,5] | University[4,5] | Industry[5] |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **12** | 5 | 0 | 7 | 4 | 8 | 0 |
| **Senior Personnel, non-U.S.** | **1** | 1 | 0 | 0 | 0 | 1 | 0 |
| **Postdocs, U.S.** | **5** | 3 | 2 | 0 | 0 | 5 | 0 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Students, U.S.** | **5** | 3 | 1 | 1 | 0 | 5 | 0 |
| **Students, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Technician, U.S.** | **1** | 0 | 0 | 1 | 0 | 1 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **24** | **12** | **3** | **9** | **4** | **20** | **0** |

[1] Users using multiple facilities are counted in each facility listed.
[2] NHMFL-Affiliated users are defined as anyone in the lab's personnel system (i.e., on our web site/directory), even if they travel to another site. Local users are defined as any non-NHMFL-Affiliated researchers originating at any of the institutions in proximity to the MagLab sites (i.e., researchers at FSU, UF, FAMU, or LANL), even if they travel to another site.
[3] Users with primary affiliations at NHMFL/LANL are reported in NHMFL-Affiliated Users and National Laboratory.
[4] Users with primary affiliations at FSU, UF, or FAMU are reported in NHMFL-Affiliated Users and National University.
[5] The TOTAL of university, industry, and national lab users will equal the TOTAL number of users.

***Table 3.*** *Users by Discipline*

| | Users[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Bio-chemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **12** | 12 | 0 | 0 | 0 | 0 | 0 |
| **Senior Personnel, non-U.S.** | **1** | 1 | 0 | 0 | 0 | 0 | 0 |
| **Postdocs, U.S.** | **5** | 5 | 0 | 0 | 0 | 0 | 0 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Students, U.S.** | **5** | 5 | 0 | 0 | 0 | 0 | 0 |
| **Students, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Technician, U.S.** | **1** | 0 | 0 | 1 | 0 | 0 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **24** | **23** | **0** | **1** | **0** | **0** | **0** |

[1] Users using multiple facilities are counted in each facility listed.

***Table 4a.*** *Subscription Rate (Experiments)*

| Experiments Submitted (Current Year) | Experiments Submitted (Deferred from prev. year) | Experime nts w/ Usage | Experiments w/ Usage Percentage | Experi-ments Declined | Experiments Declined Percentage | Experi-ments Reviewed | Experiment Subscription Rate | Experiments Subscription Percentage |
|---|---|---|---|---|---|---|---|---|
| **11** | 1 | 8 | 66.7 % | 4 | 33.3 % | 12 | 1.5 | 150% |

***Table 4b.*** *Subscription Rate (Magnet Days)*

| Days Submitted | Days Used by External User | Days Used by Local User | Days Used by NHMFL-Affiliated User | Days Used for Inst., Dev., Test and Maintenance[1] | Total Days Used | Days Subscription Rate | Days Subscription Percentage |
|---|---|---|---|---|---|---|---|
| **638** | 212.5 | 105 | 169 | 151.5 | 638 | 1.0 | 100 % |

[1] Test/Calibration/ Maintenance, Method Development, Analytical Chemistry, Upgrade Cell Design/Hardware Setup, Repair

***Table 5.*** *Research Proposals Profile (Discipline) with Magnet Time*

| TOTAL Proposals | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|
| **6** | 5 | 0 | 0 | 0 | 1 | 0 |

Find the list of user proposals in **Appendix 5** and on our **website**

***Table 6.*** *Operations by Magnet System Group*

| | Total Days Used[1] | % of Total Days Used | Bay 1 (UF Microkelvin Lab) | Bay 2 (UF Microkelvin Lab.): 0.02mK, 8T |
|---|---|---|---|---|
| **NHMFL-Affiliated** | **169** | 26.5 % | 169 | 0 |
| **Local** | **105** | 16.5 % | 0 | 105 |
| **University, U.S.** | **212.5** | 33.3 % | 126 | 86.5 |
| **University, non-U.S.** | **0** | 0 % | 0 | 0 |
| **Government Lab, U.S.** | **0** | 0 % | 0 | 0 |
| **Government Lab, non-U.S.** | **0** | 0 % | 0 | 0 |
| **Industry, U.S.** | **0** | 0 % | 0 | 0 |
| **Industry, non-U.S.** | **0** | 0 % | 0 | 0 |
| **Test/Calibration/Maintenance** | **57.5** | 0 | 0 | 57.5 |
| **Method Development** | **0** | 0 % | 0 | 0 |
| **Analytical Chemistry** | **0** | 0 % | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **77** | 12.1 % | 0 | 77 |
| **Setup** | **17** | 2.7 % | 12 | 5 |
| **Repair** | **0** | 0 % | 0 | 0 |
| **TOTAL** | **638** | | **307** | **331** |

[1] User Units are defined as magnet days. One magnet day is defined as 24 hours in superconducting magnets.

***Table 7.*** *Operations by Discipline*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **169** | 169 | 0 | 0 | 0 | 0 | 0 |
| **Local** | **105** | 105 | 0 | 0 | 0 | 0 | 0 |
| **University, U.S.** | **212.5** | 212.5 | 0 | 0 | 0 | 0 | 0 |
| **University, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Government Lab, U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Government Lab, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Industry, U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Industry, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Test/ Calibration/ Maintenance** | **57.5** | 57.5 | 0 | 0 | 0 | 0 | 0 |
| **Method Development** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Analytical Chemistry** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **77** | 77 | 0 | 0 | 0 | 0 | 0 |
| **Setup** | **17** | 17 | 0 | 0 | 0 | 0 | 0 |
| **Repair** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **638** | **638** | **0** | **0** | **0** | **0** | **0** |

***Table 8.*** *New PIs[1] and New Users*

| | All PIs | New PIs at the MagLab | New PIs at Facility | Returning PIs at Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **6** | 2 | 4 | 2 | **12** | 1 | 3 | 9 |
| **Senior Personnel, non-U.S.** | **0** | 0 | 0 | 0 | **1** | 0 | 0 | 1 |
| **Postdocs, U.S.** | **0** | 0 | 0 | 0 | **5** | 0 | 1 | 4 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 |
| **Students, U.S.** | **0** | 0 | 0 | 0 | **5** | 0 | 2 | 3 |
| **Students, non-U.S.** | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 |
| **Technician, U.S.** | **0** | 0 | 0 | 0 | **1** | 0 | 0 | 1 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 |
| **TOTAL** | **6** | **2** | **4** | **2** | **24** | **1** | **6** | **18** |

[1] PIs who received magnet time for the first time.

***Table 9.*** *New PIs*

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Rasul Gazizulin | University of Florida | P20605 | Received 2024 | Yes |
| Zahid Hasan | Princeton University | P20560 | Received 2024 | No |

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Allen Scheie | Los Alamos National Laboratory | P20517 | Received 2024 | Yes |
| Jun Zhu | Pennsylvania State University | P20654 | Received 2024 | No |

[1] PIs who received magnet time for the first time.

# ICR FACILITY

***Table 1.*** *Users by Participation*

| | Users[1] | Users Present | User Present Virtually | Users Operating Remotely[2] | Users Sending Sample[3] | Off-Site User[4] |
|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **38** | 11 | 0 | 0 | 1 | 26 |
| **Senior Personnel, non-U.S.** | **16** | 3 | 0 | 0 | 0 | 13 |
| **Postdocs, U.S.** | **11** | 6 | 0 | 0 | 1 | 4 |
| **Postdocs, non-U.S.** | **2** | 0 | 0 | 0 | 0 | 2 |
| **Students, U.S.** | **22** | 10 | 0 | 0 | 1 | 11 |
| **Students, non-U.S.** | **7** | 2 | 0 | 0 | 0 | 5 |
| **Technician, U.S.** | **4** | 1 | 0 | 0 | 0 | 3 |
| **Technician, non-U.S.** | **1** | 0 | 0 | 0 | 0 | 1 |
| **TOTAL** | **101** | **33** | **0** | **0** | **3** | **65** |

[1] Users using multiple facilities are counted in each facility listed.
[2] "Users Operating Remotely" refers to users who operate the magnet system from a remote location. Remote operations are not currently available in all facilities.
[3] "Users Sending Sample" refers to users who send the sample to the facility and/or research group and the experiment is conducted by other collaborators on the experiment. Users at UF, FSU, and LANL cannot be "sample senders" for facilities located on their campuses.
[4] "Off-Site Users" are scientific or technical participants on the experiment; who will not be present, sending sample, or operating the magnet system remotely; and who are not located on the campus of that facility (i.e., they are off-site).

***Table 2.*** *Users by Organization*

| | Users[1] | External Users | Local Users[2] | NHMFL-Affiliated Users[2,3,4] | Laboratory[3,5] | University[4,5] | Industry[5] |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **38** | 24 | 3 | 11 | 3 | 32 | 3 |
| **Senior Personnel, non-U.S.** | **16** | 16 | 0 | 0 | 5 | 9 | 2 |
| **Postdocs, U.S.** | **11** | 7 | 0 | 4 | 1 | 10 | 0 |
| **Postdocs, non-U.S.** | **2** | 2 | 0 | 0 | 0 | 2 | 0 |
| **Students, U.S.** | **22** | 11 | 8 | 3 | 0 | 22 | 0 |
| **Students, non-U.S.** | **7** | 7 | 0 | 0 | 0 | 7 | 0 |
| **Technician, U.S.** | **4** | 3 | 0 | 1 | 0 | 2 | 2 |
| **Technician, non-U.S.** | **1** | 1 | 0 | 0 | 0 | 1 | 0 |
| **TOTAL** | **101** | **71** | **11** | **19** | **9** | **85** | **7** |

[1] Users using multiple facilities are counted in each facility listed.
[2] NHMFL-Affiliated users are defined as anyone in the lab's personnel system (i.e., on our website/directory), even if they travel to another site. Local users are defined as any non-NHMFL-Affiliated researchers originating at any of the institutions in proximity to the MagLab sites (i.e., researchers at FSU, UF, FAMU, or LANL), even if they travel to another site.
[3] Users with primary affiliations at NHMFL/LANL are reported in NHMFL-Affiliated Users and National Laboratory.
[4] Users with primary affiliations at FSU, UF, or FAMU are reported in NHMFL-Affiliated Users and National University.
[5] The TOTAL of university, industry, and national lab users will equal the TOTAL number of users.

***Table 3.*** *Users by Discipline*

| | Users[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Bio-chemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **38** | 0 | 27 | 2 | 1 | 8 | 0 |
| **Senior Personnel, non-U.S.** | **16** | 0 | 13 | 1 | 0 | 2 | 0 |
| **Postdocs, U.S.** | **11** | 0 | 7 | 3 | 1 | 0 | 0 |
| **Postdocs, non-U.S.** | **2** | 0 | 1 | 0 | 0 | 1 | 0 |
| **Students, U.S.** | **22** | 0 | 18 | 0 | 0 | 3 | 1 |
| **Students, non-U.S.** | **7** | 0 | 7 | 0 | 0 | 0 | 0 |
| **Technician, U.S.** | **4** | 0 | 0 | 2 | 1 | 1 | 0 |
| **Technician, non-U.S.** | **1** | 0 | 1 | 0 | 0 | 0 | 0 |
| **TOTAL** | **101** | **0** | **74** | **8** | **3** | **15** | **1** |

[1] Users using multiple facilities are counted in each facility listed.

***Table 4a.*** *Subscription Rate (Experiments)*

| Experiments Submitted (Current Year) | Experiments Submitted (Deferred from prev. year) | Experi-ments w/ Usage | Experiments w/ Usage Percentage | Experi-ments Declined | Experiments Declined Percentage | Experi-ments Reviewed | Experiment Subscription Rate | Experiments Subscription Percentage |
|---|---|---|---|---|---|---|---|---|
| **70** | 5 | 41 | 54.7 % | 34 | 45.3 % | 75 | 1.8 | 182.9 % |

***Table 4b.*** *Subscription Rate (Magnet Days)*

| Days Submitted | Days Used by External User | Days Used by Local User | Days Used by NHMFL-Affiliated User | Days Used for Inst., Dev., Test and Maintenance[1] | Total Days Used | Days Subscription Rate | Days Subscription Percentage |
|---|---|---|---|---|---|---|---|
| **956** | 125 | 26.5 | 19.8 | 323.7 | 495 | 1.9 | 193.1 % |

[1] Test/Calibration/ Maintenance, Method Development, Analytical Chemistry, Upgrade Cell Design/Hardware Setup, Repair

***Table 5.*** *Research Proposals Profile (Discipline) with Magnet Time*

| TOTAL Proposals | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|
| **28** | 0 | 23 | 1 | 0 | 4 | 0 |

Find the list of user proposals in **Appendix 5** and on our **website**

***Table 6.*** *Operations by Magnet System Group*

| | Total Days Used[1] | % of Total Days Used | 9.4T, 220mm bore FT-ICR MS | 14.5T Hybrid LTQ/FT-ICR MS | 21T Hybrid LTQ/FT-ICR MS |
|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **19.8** | 0 | 0 | 0 | 19.8 |
| **Local** | **26.5** | 5.4 % | 0 | 20.5 | 6 |
| **University, U.S.** | **18.7** | 3.8 % | 0.5 | 6 | 12.2 |
| **University, non-U.S.** | **19.3** | 3.9 % | 0 | 0 | 19.3 |
| **Government Lab, U.S.** | **0** | 0 % | 0 | 0 | 0 |
| **Government Lab, non-U.S.** | **32.7** | 6.6 % | 0 | 14.5 | 18.2 |
| **Industry, U.S.** | **41.3** | 8.4 % | 0 | 6 | 35.3 |
| **Industry, non-U.S.** | **13** | 2.6 % | 13 | 0 | 0 |
| **Test/Calibration/Maintenance** | **195** | 39.4 % | 186.5 | 8 | 0.5 |
| **Method Development** | **0** | 0 % | 0 | 0 | 0 |
| **Analytical Chemistry** | **128.7** | 0 | 0 | 0 | 128.7 |
| **Upgrade Cell Design/Hardware** | **0** | 0 % | 0 | 0 | 0 |
| **Setup** | **0** | 0 % | 0 | 0 | 0 |
| **Repair** | **0** | 0 % | 0 | 0 | 0 |
| **TOTAL** | **495** | | **200** | **55** | **240** |

[1] User Units are defined as magnet days. One magnet day is defined as 24 hours in superconducting magnets.
[2] The 9.4T active system was retired, and the 9.4T passive suffered a costly turbo pump failure that limited instrument usage.

***Table 7.*** *Operations by Discipline*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **19.8** | 0 | 19.8 | 0 | 0 | 0 | 0 |
| **Local** | **26.5** | 0 | 26.5 | 0 | 0 | 0 | 0 |
| **University, U.S.** | **18.7** | 0 | 14.7 | 0 | 0 | 4 | 0 |
| **University, non-U.S.** | **19.3** | 0 | 19.3 | 0 | 0 | 0 | 0 |
| **Government Lab, U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Government Lab, non-U.S.** | **32.7** | 0 | 10.7 | 22 | 0 | 0 | 0 |
| **Industry, U.S.** | **41.3** | 0 | 27.8 | 0 | 0 | 13.5 | 0 |
| **Industry, non-U.S.** | **13** | 0 | 13 | 0 | 0 | 0 | 0 |
| **Test/ Calibration/ Maintenance** | **195** | 0 | 195 | 0 | 0 | 0 | 0 |
| **Method Development** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Analytical Chemistry** | **128.7** | 0 | 128.7 | 0 | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Setup** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Repair** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **495** | **0** | **455.5** | **22** | **0** | **17.5** | **0** |

[1] User Units are defined as magnet days. One magnet day is defined as 24 hours in superconducting magnets.

***Table 8.*** *New PIs[1] and New Users*

| | All PIs | New PIs at the MagLab | New PIs at Facility | Returning PIs at Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **19** | 3 | 3 | 16 | **38** | 3 | 3 | 35 |
| **Senior Personnel, non-U.S.** | **5** | 2 | 2 | 3 | **16** | 6 | 6 | 10 |
| **Postdocs, U.S.** | **0** | 0 | 0 | 0 | **11** | 4 | 4 | 7 |
| **Postdocs, non-U.S.** | **1** | 1 | 1 | 0 | **2** | 0 | 0 | 2 |
| **Students, U.S.** | **0** | 0 | 0 | 0 | **22** | 9 | 9 | 13 |
| **Students, non-U.S.** | **0** | 0 | 0 | 0 | **7** | 4 | 4 | 3 |
| **Technician, U.S.** | **0** | 0 | 0 | 0 | **4** | 1 | 1 | 3 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | **1** | 1 | 1 | 0 |
| **TOTAL** | **25** | **6** | **6** | **19** | **101** | **28** | **28** | **73** |

[1] PIs who received magnet time for the first time.

***Table 9.*** *New [1] User Pis*

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Maxime Bridoux | French Alternative Energies and Atomic Energy Commission | P20675 | Received 2024 | Yes |

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| María Diéguez | National University of Comahue | P20585 | Received 2024 | Yes |
| Jared Kafader | Northwestern University | P20594 | Received 2024 | Yes |
| Sung Kim | Howard University | P19670 | Received 2024 | Yes |
| Alexandre Shvartsburg | Wichita State University | P20589 | Received 2024 | Yes |
| Alexander Zherebker | University of Cambridge | P20511 | Received 2024 | Yes |

[1] PIs who received magnet time for the first time.

# NMR FACILITY

***Table 1.*** *Users by Participation*

| | Users[1] | Users Present | User Present Virtually | Users Operating Remotely[2] | Users Sending Sample[3] | Off-Site User[4] |
|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **95** | 30 | 0 | 15 | 13 | 37 |
| **Senior Personnel, non-U.S.** | **32** | 2 | 0 | 0 | 13 | 17 |
| **Postdocs, U.S.** | **22** | 11 | 0 | 5 | 4 | 2 |
| **Postdocs, non-U.S.** | **6** | 0 | 0 | 1 | 3 | 2 |
| **Students, U.S.** | **81** | 38 | 0 | 12 | 15 | 16 |
| **Students, non-U.S.** | **28** | 4 | 0 | 1 | 18 | 5 |
| **Technician, U.S.** | **3** | 1 | 0 | 0 | 1 | 1 |
| **Technician, non-U.S.** | **3** | 0 | 0 | 0 | 1 | 2 |
| **TOTAL** | **270** | **86** | **0** | **34** | **68** | **82** |

[1] Users using multiple facilities are counted in each facility listed.
[2] "Users Operating Remotely" refers to users who operate the magnet system from a remote location. Remote operations are not currently available in all facilities.
[3] "Users Sending Sample" refers to users who send the sample to the facility and/or research group and the experiment is conducted by other collaborators on the experiment. Users at UF, FSU, and LANL cannot be "sample senders" for facilities located on their campuses.
[4] "Off-Site Users" are scientific or technical participants on the experiment; who will not be present, sending sample, or operating the magnet system remotely; and who are not located on the campus of that facility (i.e., they are off-site).

***Table 2.*** *Users by Organization*

| | Users[1] | External Users | Local Users[2] | NHMFL-Affiliated Users[2,3,4] | Laboratory[3,5] | University[4,5] | Industry[5] |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **95** | 59 | 10 | 26 | 5 | 90 | 0 |
| **Senior Personnel, non-U.S.** | **32** | 32 | 0 | 0 | 5 | 24 | 3 |
| **Postdocs, U.S.** | **22** | 11 | 7 | 4 | 1 | 21 | 0 |
| **Postdocs, non-U.S.** | **6** | 6 | 0 | 0 | 3 | 3 | 0 |
| **Students, U.S.** | **81** | 41 | 22 | 18 | 0 | 81 | 0 |
| **Students, non-U.S.** | **28** | 27 | 0 | 1 | 0 | 28 | 0 |
| **Technician, U.S.** | **3** | 1 | 1 | 1 | 0 | 3 | 0 |
| **Technician, non-U.S.** | **3** | 3 | 0 | 0 | 1 | 2 | 0 |
| **TOTAL** | **270** | **180** | **40** | **50** | **15** | **252** | **3** |

[1] Users using multiple facilities are counted in each facility listed.
[2] NHMFL-Affiliated users are defined as anyone in the lab's personnel system (i.e., on our web site/directory), even if they travel to another site. Local users are defined as any non-NHMFL-Affiliated researchers originating at any of the institutions in proximity to the MagLab sites (i.e., researchers at FSU, UF, FAMU, or LANL), even if they travel to another site.
[3] Users with primary affiliations at NHMFL/LANL are reported in NHMFL-Affiliated Users and National Laboratory.
[4] Users with primary affiliations at FSU, UF, or FAMU are reported in NHMFL-Affiliated Users and National University.
[5] The TOTAL of university, industry, and national lab users will equal the TOTAL number of users.

***Table 3.*** *Users by Discipline*

| | Users[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Bio-chemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **95** | 6 | 28 | 16 | 3 | 35 | 7 |
| **Senior Personnel, non-U.S.** | **32** | 0 | 23 | 0 | 1 | 5 | 3 |
| **Postdocs, U.S.** | **22** | 0 | 9 | 3 | 0 | 9 | 1 |
| **Postdocs, non-U.S.** | **6** | 0 | 5 | 0 | 0 | 0 | 1 |
| **Students, U.S.** | **81** | 0 | 40 | 20 | 0 | 17 | 4 |
| **Students, non-U.S.** | **28** | 0 | 20 | 0 | 0 | 5 | 3 |
| **Technician, U.S.** | **3** | 0 | 0 | 0 | 1 | 2 | 0 |
| **Technician, non-U.S.** | **3** | 0 | 3 | 0 | 0 | 0 | 0 |
| **TOTAL** | **270** | **6** | **128** | **39** | **5** | **73** | **19** |

[1] Users using multiple facilities are counted in each facility listed.

***Table 4a.*** *Subscription Rate (Experiments)*

| Experiments Submitted (Current Year) | Experiments Submitted (Deferred from prev. year) | Experiments w/ Usage | Experiments w/ Usage Percentage | Experi-ments Declined | Experiments Declined Percentage | Experi-ments Reviewed | Experiment Subscription Rate | Experiments Subscription Percentage |
|---|---|---|---|---|---|---|---|---|
| **810** | 11 | 760 | 92.6 % | 61 | 7.4 % | 821 | 1.1 | 108 % |

***Table 4b.*** *Subscription Rate (Magnet Days)*

| Days Submitted | Days Used by External User | Days Used by Local User | Days Used by NHMFL-Affiliated User | Days Used for Inst., Dev., Test and Maintenance[1] | Total Days Used | Days Subscription Rate | Days Subscription Percentage |
|---|---|---|---|---|---|---|---|
| **3,504** | 1,801 | 295 | 599.5 | 97.5 | 2,793 | 1.3 | 125.5 % |

[1] Test/Calibration/ Maintenance, Method Development, Analytical Chemistry, Upgrade Cell Design/Hardware Setup, Repair

***Table 5.*** *Research Proposals Profile (Discipline) with Magnet Time*

| TOTAL Proposals | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|
| **81** | 1 | 23 | 9 | 1 | 39 | 8 |

Find the list of user proposals in **Appendix 5** and on our **[website](website)**

***Table 6.*** *Operations by Magnet System Group*

| | Total Days Used[1] | % of Total Days Used | 900MHz, 105mm bore, 21.1T | 850MHz, 54mm bore, 20T | 800MHz, 63mm bore, (MB) 18.8T #1 | 800MHz, 63mm bore, (MB) 18.8T #2 | 600MHz, 89mm bore, 14T #1 | 600MHz, 89mm bore, 14T #2 | 600MHz, 89mm bore MAS DNP | 600MHz, 52mm bore, 14T | 500MHz, 89mm bore, 11.7T | Cell 14 36T 40mm SCH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **599.5** | 21.5 % | 113 | 38 | 87 | 136 | 117.5 | 39 | 17 | 41 | 8 | 3 |
| **Local** | **295** | 10.6 % | 92 | 0 | 0 | 0 | 27 | 19 | 20 | 0 | 137 | 0 |
| **University, U.S.** | **1,468** | 52.6 % | 105 | 193 | 241 | 160 | 197 | 296 | 68 | 0 | 208 | 0 |
| **University, non-U.S.** | **286** | 10.2 % | 12 | 107 | 36 | 18 | 7 | 7 | 91 | 0 | 8 | 0 |
| **Government Lab, U.S.** | **5** | 0.2 % | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| **Government Lab, non-U.S.** | **0** | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Industry, U.S.** | **42** | 1.5 % | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Industry, non-U.S.** | **0** | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Test/Calibration/ Maintenance** | **43** | 1.5 % | 0 | 16 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 0 |
| **Method Development** | **24.5** | 0.9 % | 0 | 7 | 0 | 0 | 14.5 | 0 | 3 | 0 | 0 | 0 |
| **Analytical Chemistry** | **0** | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **30** | 1.1 % | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 |
| **Setup** | **0** | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Repair** | **0** | 0 % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **2,793** | | **364** | **361** | **364** | **314** | **363** | **366** | **256** | **41** | **361** | **3** |

[1] User Units are defined as magnet days. One magnet day is defined as 24 hours in superconducting magnets.

***Table 7.*** *Operations by Discipline*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **599.5** | 3 | 418 | 11 | 22.5 | 145 | 0 |
| **Local** | **295** | 0 | 15 | 226 | 0 | 23 | 31 |
| **University, U.S.** | **1,468** | 0 | 563.8 | 151 | 0 | 725.7 | 27.5 |
| **University, non-U.S.** | **286** | 0 | 201 | 0 | 15 | 27 | 43 |
| **Government Lab, U.S.** | **5** | 0 | 5 | 0 | 0 | 0 | 0 |
| **Government Lab, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Industry, U.S.** | **42** | 0 | 0 | 0 | 0 | 42 | 0 |
| **Industry, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Test/ Calibration/ Maintenance** | **43** | 0 | 0 | 16 | 0 | 27 | 0 |
| **Method Development** | **24.5** | 0 | 7 | 0 | 14.5 | 3 | 0 |
| **Analytical Chemistry** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **30** | 0 | 0 | 0 | 0 | 30 | 0 |
| **Setup** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Repair** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **2,793** | **3** | **1,209.8** | **404** | **52** | **1,022.7** | **101.5** |

[1] User Units are defined as magnet days. One magnet day is defined as 24 hours in superconducting magnets.

***Table 8.*** *New PIs[1] and New Users*

| | All PIs | New PIs at the MagLab | New PIs at Facility | Returning PIs at Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **48** | 8 | 10 | 38 | **95** | 4 | 10 | 85 |
| **Senior Personnel, non-U.S.** | **16** | 6 | 6 | 10 | **32** | 7 | 7 | 25 |
| **Postdocs, U.S.** | **1** | 1 | 1 | 0 | **22** | 9 | 10 | 12 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | **6** | 1 | 1 | 5 |
| **Students, U.S.** | **0** | 0 | 0 | 0 | **81** | 30 | 30 | 51 |
| **Students, non-U.S.** | **1** | 1 | 1 | 0 | **28** | 14 | 14 | 14 |
| **Technician, U.S.** | **0** | 0 | 0 | 0 | **3** | 1 | 1 | 2 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | **3** | 2 | 2 | 1 |
| **TOTAL** | **66** | **16** | **18** | **48** | **270** | **68** | **75** | **195** |

[1] PIs who received magnet time for the first time.

***Table 9.*** *New[1] User PIs*

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Tracy Centanni | University of Florida | P20455 | Received 2024 | No |
| Shinho Cho | National High Magnetic Field Laboratory | P20646 | Received 2024 | Yes |
| Julius Chung | Emory University | P20731 | Received 2024 | Yes |
| Lyndon Emsley | Ecole Polytechnique Federale de Lausanne | P20655 | Received 2024 | Yes |
| Assaf Gal | Weizmann Institute of Science | P20355 | Received 2024 | Yes |
| Ehud Gazit | Tel Aviv University | P20598 | Received 2024 | Yes |
| Magdalena Ivanova | University of Michigan | P20577 | Received 2024 | Yes |
| Seungwoo Kang | Augusta University | P20750 | Received 2024 | Yes |
| Fan Lam | University of Illinois at Urbana-Champaign | P20584 | Received 2024 | Yes |
| Myungwoon Lee | Drexel University | P20673 | Received 2024 | Yes |
| Xin Li | Harvard University | P20679 | Received 2024 | Yes |
| Marcella Lusardi | Princeton University | P20672 | Received 2024 | Yes |
| Matthew Merritt | University of Florida | P16133 | Received 2024 | No |
| Daniel Rettenwander | Norwegian University of Science and Technology | P20694 | Received 2024 | Yes |
| Valentin Rodionov | Case Western Reserve University | P20576 | Received 2024 | Yes |
| Muniyandi Sankaralingam | National Institute of Technology Calicut | P20558 | Received 2024 | Yes |
| Juergen Senker | University of Bayreuth | P20590 | Received 2024 | Yes |
| James Shogren-Harris | University of Alabama, Tuscaloosa | P20573 | Received 2024 | Yes |
| Dominik Zehender | Heidelberg University | P20176 | Received 2024 | Yes |

[1] PIs who received magnet time for the first time.

# PULSED FIELD FACILITY

***Table 1.*** *Users by Participation*

| | Users[1] | Users Present | User Present Virtually | Users Operating Remotely[2] | Users Sending Sample[3] | Off-Site User[4] |
|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **69** | 21 | 0 | 0 | 8 | 40 |
| **Senior Personnel, non-U.S.** | **19** | 3 | 0 | 0 | 1 | 15 |
| **Postdocs, U.S.** | **27** | 19 | 0 | 0 | 1 | 7 |
| **Postdocs, non-U.S.** | **10** | 2 | 0 | 0 | 0 | 8 |
| **Students, U.S.** | **32** | 19 | 0 | 0 | 3 | 10 |
| **Students, non-U.S.** | **8** | 7 | 0 | 0 | 0 | 1 |
| **Technician, U.S.** | **1** | 1 | 0 | 0 | 0 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **166** | **72** | **0** | **0** | **13** | **81** |

[1] Users using multiple facilities are counted in each facility listed.
[2] "Users Operating Remotely" refers to users who operate the magnet system from a remote location. Remote operations are not currently available in all facilities.
[3] "Users Sending Sample" refers to users who send the sample to the facility and/or research group and the experiment is conducted by other collaborators on the experiment. Users at UF, FSU, and LANL cannot be "sample senders" for facilities located on their campuses.
[4] "Off-Site Users" are scientific or technical participants on the experiment; who will not be present, sending sample, or operating the magnet system remotely; and who are not located on the campus of that facility (i.e., they are off-site).

***Table 2.*** *Users by Organization*

| | Users[1] | External Users | Local Users[2] | NHMFL-Affiliated Users[2,3,4] | Laboratory[3,5] | University[4,5] | Industry[5] |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **69** | 46 | 3 | 20 | 34 | 35 | 0 |
| **Senior Personnel, non-U.S.** | **19** | 19 | 0 | 0 | 8 | 11 | 0 |
| **Postdocs, U.S.** | **27** | 19 | 4 | 4 | 13 | 14 | 0 |
| **Postdocs, non-U.S.** | **10** | 10 | 0 | 0 | 4 | 6 | 0 |
| **Students, U.S.** | **32** | 30 | 2 | 0 | 5 | 27 | 0 |
| **Students, non-U.S.** | **8** | 8 | 0 | 0 | 2 | 6 | 0 |
| **Technician, U.S.** | **1** | 0 | 0 | 1 | 1 | 0 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **166** | **132** | **9** | **25** | **67** | **99** | **0** |

[1] Users using multiple facilities are counted in each facility listed.
[2] NHMFL-Affiliated users are defined as anyone in the lab's personnel system (i.e., on our web site/directory), even if they travel to another site. Local users are defined as any non-NHMFL-Affiliated researchers originating at any of the institutions in proximity to the MagLab sites (i.e., researchers at FSU, UF, FAMU, or LANL), even if they travel to another site.
[3] Users with primary affiliations at NHMFL/LANL are reported in NHMFL-Affiliated Users and National Laboratory.
[4] Users with primary affiliations at FSU, UF, or FAMU are reported in NHMFL-Affiliated Users and National University.
[5] The TOTAL of university, industry, and national lab users will equal the TOTAL number of users.

***Table 3.*** *Users by Discipline*

| | Users[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **69** | 60 | 2 | 4 | 1 | 2 | 0 |
| **Senior Personnel, non-U.S.** | **19** | 14 | 0 | 0 | 0 | 0 | 5 |
| **Postdocs, U.S.** | **27** | 25 | 1 | 1 | 0 | 0 | 0 |
| **Postdocs, non-U.S.** | **10** | 7 | 0 | 0 | 1 | 0 | 2 |
| **Students, U.S.** | **32** | 29 | 1 | 1 | 0 | 0 | 1 |
| **Students, non-U.S.** | **8** | 5 | 0 | 0 | 0 | 0 | 3 |
| **Technician, U.S.** | **1** | 1 | 0 | 0 | 0 | 0 | 0 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **166** | **141** | **4** | **6** | **2** | **2** | **11** |

[1] Users using multiple facilities are counted in each facility listed.

***Table 4a.*** *Subscription Rate (Experiments)*

| Experiments Submitted (Current Year) | Experiments Submitted (Deferred from prev. year) | Experi-ments w/ Usage | Experiments w/ Usage Percentage | Experi-ments Declined | Experiments Declined Percentage | Experi-ments Reviewed | Experiment Subscription Rate | Experiments Subscription Percentage |
|---|---|---|---|---|---|---|---|---|
| **99** | 13 | 82 | 73.2 % | 30 | 26.8 % | 112 | 1.4 | 136.6 % |

***Table 4b.*** *Subscription Rate (Magnet Days)*

| Days Submitted | Days Used by External User | Days Used by Local User | Days Used by NHMFL-Affiliated User | Days Used for Inst., Dev., Test and Maintenance[1] | Total Days Used | Days Subscription Rate | Days Subscription Percentage |
|---|---|---|---|---|---|---|---|
| **823** | 349 | 23 | 137 | 30 | 539 | 1.5 | 152.7 % |

[1] Test/Calibration/ Maintenance, Method Development, Analytical Chemistry, Upgrade Cell Design/Hardware Setup, Repair

***Table 5.*** *Research Proposals Profile (Discipline) with Magnet Time*

| TOTAL Proposals | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|
| **47** | 39 | 2 | 0 | 1 | 1 | 4 |

Find the list of user proposals in **Appendix 5** and on our **website**

***Table 6.*** *Operations by Magnet System Group*

| | Total Days Used[1] | % of Total Days Used | Duplex | Mid Pulse | Short Pulse |
|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **137** | 25.4 % | 7 | 10 | 120 |
| **Local** | **23** | 4.3 % | 5 | 0 | 18 |
| **University, U.S.** | **155** | 28.8 % | 30 | 30 | 95 |
| **University, non-U.S.** | **48** | 8.9 % | 5 | 5 | 38 |
| **Government Lab, U.S.** | **101** | 18.7 % | 25 | 5 | 71 |
| **Government Lab, non-U.S.** | **45** | 8.3 % | 0 | 15 | 30 |
| **Industry, U.S.** | **0** | 0 % | 0 | 0 | 0 |
| **Industry, non-U.S.** | **0** | 0 % | 0 | 0 | 0 |
| **Test/Calibration/Maintenance** | **0** | 0 % | 0 | 0 | 0 |
| **Method Development** | **30** | 5.6 % | 0 | 20 | 10 |
| **Analytical Chemistry** | **0** | 0 % | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **0** | 0 % | 0 | 0 | 0 |
| **Setup** | **0** | 0 % | 0 | 0 | 0 |
| **Repair** | **0** | 0 % | 0 | 0 | 0 |
| **TOTAL** | **539** | | **72** | **85** | **382** |

***Table 7.*** *Operations by Discipline*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochem., Biophys. | Material Science |
|---|---|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **137** | 137 | 0 | 0 | 0 | 0 | 0 |
| **Local** | **23** | 23 | 0 | 0 | 0 | 0 | 0 |
| **University, U.S.** | **155** | 145 | 10 | 0 | 0 | 0 | 0 |
| **University, non-U.S.** | **48** | 33 | 0 | 0 | 0 | 0 | 15 |
| **Government Lab, U.S.** | **101** | 91 | 0 | 0 | 0 | 0 | 10 |
| **Government Lab, non-U.S.** | **45** | 30 | 0 | 0 | 0 | 0 | 15 |
| **Industry, U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Industry, non-U.S.** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Test/ Calibration/ Maintenance** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Method Development** | **30** | 30 | 0 | 0 | 0 | 0 | 0 |
| **Analytical Chemistry** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Setup** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **Repair** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **539** | **489** | **10** | **0** | **0** | **0** | **40** |

***Table 8.*** *New PIs[1] and New Users*

| | All PIs | New PIs at the MagLab | New PIs at Facility | Returning PIs at Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **31** | 5 | 7 | 24 | **69** | 6 | 10 | 59 |
| **Senior Personnel, non-U.S.** | **10** | 4 | 5 | 5 | **19** | 4 | 5 | 14 |
| **Postdocs, U.S.** | **2** | 1 | 1 | 1 | **27** | 7 | 12 | 15 |
| **Postdocs, non-U.S.** | **0** | 0 | 0 | 0 | **10** | 5 | 6 | 4 |
| **Students, U.S.** | **0** | 0 | 0 | 0 | **32** | 5 | 8 | 24 |
| **Students, non-U.S.** | **0** | 0 | 0 | 0 | **8** | 4 | 4 | 4 |
| **Technician, U.S.** | **0** | 0 | 0 | 0 | **1** | 0 | 0 | 1 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 |
| **TOTAL** | **43** | **10** | **13** | **30** | **166** | **31** | **45** | **121** |

[1] PIs who received magnet time for the first time.

***Table 9.*** *New[1] User PIs*

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Charles Ahn | Yale University | P20381 | Received 2024 | No |
| Xiaojian Bai | Louisiana State University | P20701 | Received 2024 | Yes |
| Oliver Bierwagen | Paul Drude Institute for Solid State Electronics | P20639 | Received 2024 | Yes |
| Joanna Blawat | National High Magnetic Field Laboratory | P20538 | Received 2024 | Yes |

| Name | Organization | Proposal | Year of Magnet Time | Is New to MagLab |
|---|---|---|---|---|
| Anthony Bollinger | Brookhaven National Laboratory | P20524 | Received 2024 | Yes |
| Dariusz Kaczorowski | Institute of Low Temperature and Structure Research, Polish Academy of Sciences | P20546 | Received 2024 | Yes |
| Tomasz Klimczuk | Gdansk University of Technology | P20544 | Received 2024 | No |
| Gennady Logvenov | Max Planck Institute for Solid State Research, Stuttgart | P20378 | Received 2024 | Yes |
| Bing Lv | University of Texas, Dallas | P20642 | Received 2024 | No |
| Allen Scheie | Los Alamos National Laboratory | P20517 | Received 2024 | Yes |
| Tyler Slade | Ames Laboratory | P20516 | Received 2024 | Yes |
| Makariy Tanatar | Ames Laboratory | P20338 | Received 2024 | Yes |
| Felix Trier | Technical University of Denmark | P20620 | Received 2024 | Yes |

[1] PIs who received magnet time for the first time.

# APPENDIX 3 – USER FACILITY OVERVIEW

***Table 1a.*** *Users by Participation of All Facilities*

| | Users[1] | Users Present[2] | Users Present Virtually[3] | Users Operating Remotely[4] | Users Sending Sample[5] | Off-Site Users[6] |
|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **564** | 260 | 7 | 15 | 59 | 223 |
| **Senior Personnel, non-U.S.** | **143** | 24 | 5 | 0 | 28 | 86 |
| **Postdocs, U.S.** | **173** | 112 | 2 | 5 | 14 | 40 |
| **Postdocs, non-U.S.** | **31** | 4 | 0 | 1 | 5 | 21 |
| **Students, U.S.** | **501** | 325 | 2 | 12 | 47 | 115 |
| **Students, non-U.S.** | **94** | 45 | 0 | 1 | 27 | 21 |
| **Technician, U.S.** | **43** | 26 | 0 | 0 | 1 | 16 |
| **Technician, non-U.S.** | **5** | 1 | 0 | 0 | 1 | 3 |
| **TOTAL** | **1,554** | **797** | **16** | **34** | **182** | **525** |

[1] Users using multiple facilities are counted in each facility listed. If a user has multiple participations within the facility, it does not double count, instead reports the first occurrence in the following order: *User Present* takes precedence over *User Present Virtually*, next *User Operating Remotely*, and *User Sending Sample* and *Off-Site User* has the least precedence.
[2] *User Present:* This person will be physically present in the MagLab user facility during the experiment.
[3] *User Present Virtually:* This person will participate virtually in the data acquisition process under the control of present MagLab user support personnel. Users at FSU, LANL, and UF cannot be "User Present Virtually" for facilities located at their campuses.
[4] *User Operating Remotely:* This person will be operating the magnet system from a remote location. Remote operations are not currently available in all facilities.
[5] *User Sending Sample:* This person will be sending the sample and the experiment will be conducted by in-house user support personnel. Users at FSU (except ICR), LANL, and UF cannot be "sample senders" for facilities located at their campuses.
[6] *Off-Site User:* This person is a scientific or technical participant on the experiment, but will not be present, sending samples, operating the magnet system remotely nor be present virtually.

***Table 1b.*** *Users by Participation by Facilities*

| | Users | Users Present | Users Present Virtually | Users Operating Remotely | Users Sending Sample | Off-Site Users |
|---|---|---|---|---|---|---|
| **AMRIS – NSF-Funded** | **107** | 87 | 0 | 0 | 0 | 20 |
| **AMRIS – Non-NHMFL Funded** | **172** | 147 | 0 | 0 | 1 | 24 |
| **DC Field** | **539** | 312 | 16 | 0 | 41 | 170 |
| **EMR** | **175** | 44 | 0 | 0 | 56 | 75 |
| **High B/T** | **24** | 16 | 0 | 0 | 0 | 8 |
| **ICR** | **101** | 33 | 0 | 0 | 3 | 65 |
| **NMR** | **270** | 86 | 0 | 34 | 68 | 82 |
| **Pulsed Field** | **166** | 72 | 0 | 0 | 13 | 81 |
| **TOTAL** | **1,554** | **797** | **16** | **34** | **182** | **525** |

***Table 2a.*** *Users by Organization of All Facilities*

| | Users[1] | External Users | Local Users[2] | NHMFL-Affiliated Users[2,3,4] | Laboratory[3,5] | University[4,5] | Industry[5] |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **564** | 325 | 81 | 158 | 75 | 468 | 21 |
| **Senior Personnel, non-U.S.** | **143** | 143 | 0 | 0 | 30 | 108 | 5 |
| **Postdocs, U.S.** | **173** | 107 | 40 | 26 | 27 | 145 | 1 |
| **Postdocs, non-U.S.** | **31** | 31 | 0 | 0 | 8 | 23 | 0 |
| **Students, U.S.** | **501** | 294 | 161 | 46 | 8 | 492 | 1 |
| **Students, non-U.S.** | **94** | 92 | 0 | 2 | 3 | 91 | 0 |
| **Technician, U.S.** | **43** | 15 | 14 | 14 | 1 | 36 | 6 |
| **Technician, non-U.S.** | **5** | 5 | 0 | 0 | 1 | 4 | 0 |
| **TOTAL** | **1,554** | **1,012** | **296** | **246** | **153** | **1,367** | **34** |

[1] Users using multiple facilities are counted in each facility listed.
[2] NHMFL-Affiliated users are defined as anyone in the lab's personnel system (i.e., on our website/directory), even if they travel to another site. Local users are defined as any non-NHMFL-Affiliated researchers originating at any of the institutions in proximity to the MagLab sites (i.e., researchers at FSU, UF, FAMU, or LANL), even if they travel to another site.
[3] Users with primary affiliations at NHMFL/LANL are reported in NHMFL-Affiliated Users and National Laboratory.

⁴ Users with primary affiliations at FSU, UF, or FAMU are reported in NHMFL-Affiliated Users and National University.
⁵ The total of university, industry, and national lab users will equal the total number of users.

***Table 2b.*** *Users by Organization by Facilities*

| | Users | External Users | Local Users | NHMFL-Affiliated Users | Laboratory | University | Industry |
|---|---|---|---|---|---|---|---|
| **AMRIS – NSF-Funded** | **107** | 58 | 36 | 13 | 2 | 105 | 0 |
| **AMRIS – Non-NHMFL Funded** | **172** | 14 | 145 | 13 | 0 | 169 | 3 |
| **DC Field** | **539** | 430 | 29 | 80 | 49 | 469 | 21 |
| **EMR** | **175** | 115 | 23 | 37 | 7 | 168 | 0 |
| **High B/T** | **24** | 12 | 3 | 9 | 4 | 20 | 0 |
| **ICR** | **101** | 71 | 11 | 19 | 9 | 85 | 7 |
| **NMR** | **270** | 180 | 40 | 50 | 15 | 252 | 3 |
| **Pulsed Field** | **166** | 132 | 9 | 25 | 67 | 99 | 0 |
| **TOTAL** | **1,554** | **1,012** | **296** | **246** | **153** | **1,367** | **34** |

***Table 3a.*** *Users by Discipline of All Facilities*

| | Users[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **564** | 220 | 124 | 53 | 25 | 120 | 22 |
| **Senior Personnel, non-U.S.** | **143** | 63 | 55 | 4 | 1 | 11 | 9 |
| **Postdocs, U.S.** | **173** | 85 | 39 | 13 | 3 | 27 | 6 |
| **Postdocs, non-U.S.** | **31** | 14 | 12 | 0 | 1 | 1 | 3 |
| **Students, U.S.** | **501** | 172 | 152 | 51 | 7 | 103 | 16 |
| **Students, non-U.S.** | **94** | 45 | 37 | 0 | 0 | 5 | 7 |
| **Technician, U.S.** | **43** | 1 | 1 | 15 | 8 | 17 | 1 |
| **Technician, non-U.S.** | **5** | 1 | 4 | 0 | 0 | 0 | 0 |
| **TOTAL** | **1,554** | **601** | **424** | **136** | **45** | **284** | **64** |

¹ Users using multiple facilities are counted in each facility listed.

***Table 3b.*** *Users by Discipline by Facilities*

| | Users | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochemistry, Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **AMRIS – NSF-Funded** | **107** | 1 | 27 | 26 | 2 | 51 | 0 |
| **AMRIS – Non-NHMFL Funded** | **172** | 0 | 17 | 22 | 3 | 130 | 0 |
| **DC Field** | **539** | 394 | 60 | 30 | 28 | 2 | 25 |
| **EMR** | **175** | 36 | 114 | 4 | 2 | 11 | 8 |
| **High B/T** | **24** | 23 | 0 | 1 | 0 | 0 | 0 |
| **ICR** | **101** | 0 | 74 | 8 | 3 | 15 | 1 |
| **NMR** | **270** | 6 | 128 | 39 | 5 | 73 | 19 |
| **Pulsed Field** | **166** | 141 | 4 | 6 | 2 | 2 | 11 |
| **TOTAL** | **1,554** | **601** | **424** | **136** | **45** | **284** | **64** |

***Table 4a.*** *Subscription Rate (Experiments) by Facilities*

| | Experiments Submitted (Current Year) | Experiments Submitted (De-ferred from prev. year) | Experi-ments With Usage | Experiments With Usage Percentage | Experiments Declined | Experiments Declined Percentage | Experiments Reviewed | Experiment Subscription Rate | Experiments Subscription Percentage |
|---|---|---|---|---|---|---|---|---|---|
| **AMRIS – NSF-Funded** | 20 | 7 | 27 | 100 % | 0 | 0 % | 27 | 1 | 100 % |
| **AMRIS – Non-NHMFL Funded** | 21 | 6 | 27 | 100 % | 0 | 0 % | 27 | 1 | 100 % |
| **DC Field** | 371 | 29 | 273 | 68.3 % | 127 | 31.8 % | 400 | 1.5 | 146.5 % |
| **EMR** | 134 | 8 | 124 | 87.3 % | 18 | 12.7 % | 142 | 1.1 | 114.5 % |

| | Experiments Submitted (Current Year) | Experiments Submitted (De-ferred from prev. year) | Experi-ments With Usage | Experiments With Usage Percentage | Experiments Declined | Experiments Declined Percentage | Experiments Reviewed | Experiment Subscription Rate | Experiments Subscription Percentage |
|---|---|---|---|---|---|---|---|---|---|
| High B/T | 11 | 1 | 8 | 66.7 % | 4 | 33.3 % | 12 | 1.5 | 150 % |
| ICR | 70 | 5 | 41 | 54.7 % | 34 | 45.3 % | 75 | 1.8 | 182.9 % |
| NMR | 810 | 11 | 760 | 92.6 % | 61 | 7.4 % | 821 | 1.1 | 108 % |
| Pulsed Field | 99 | 13 | 82 | 73.2 % | 30 | 26.8 % | 112 | 1.4 | 136.6 % |
| **TOTAL** | **1,536** | **80** | **1,342** | | **274** | | **1,616** | | |

***Table 4b.*** *Subscription Rate (Magnet Days) by Facilities*

| | Days Submitted | Days Used by External User | Days Used by Local User | Days Used by NHMFL-Affiliated User | Days Used for Inst., Dev., Test, Maintenance | Total Days Used | Days Sub-scription Rate | Days Sub-scription Percentage |
|---|---|---|---|---|---|---|---|---|
| AMRIS – NSF-Funded | 983 | 195.3 | 156.2 | 15 | 616.5 | 983 | 1 | 100 % |
| AMRIS – Non-NHMFL Funded | 649 | 80.3 | 85.3 | 483.3 | 0 | 649 | 1 | 100 % |
| DC Field | 2,972 | 1,396.1 | 43.1 | 501.2 | 71.5 | 2,011.8 | 1.5 | 147.7 % |
| EMR | 1,489 | 356.5 | 44 | 255.5 | 95 | 751 | 2 | 198.3 % |
| High B/T | 638 | 212.5 | 105 | 169 | 151.5 | 638 | 1 | 100 % |
| ICR | 956 | 125 | 26.5 | 19.8 | 323.7 | 495 | 1.9 | 193.1 % |
| NMR | 3,504 | 1,801 | 295 | 599.5 | 97.5 | 2,793 | 1.3 | 125.5 % |
| Pulsed Field | 823 | 349 | 23 | 137 | 30 | 539 | 1.5 | 152.7 % |
| **TOTAL** | **12,014** | **4,515.7** | **778.1** | **2,180.4** | **1,385.6** | **8,859.8** | | |

***Table 5.*** *Research Proposals[1] Profile with Magnet Time by Facilities*

| | Total Proposals[1] | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology Biochem Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| AMRIS – NSF-Funded | **27** | 0 | 4 | 4 | 5 | 14 | 0 |
| AMRIS – Non-NHMFL Funded | **24** | 0 | 0 | 0 | 0 | 24 | 0 |
| DC Field | **146** | 112 | 15 | 1 | 11 | 1 | 6 |
| EMR | **57** | 8 | 32 | 2 | 4 | 7 | 4 |
| High B/T | **6** | 5 | 0 | 0 | 0 | 1 | 0 |
| ICR | **28** | 0 | 23 | 1 | 0 | 4 | 0 |
| NMR | **81** | 1 | 23 | 9 | 1 | 39 | 8 |
| Pulsed Field | **47** | 39 | 2 | 0 | 1 | 1 | 4 |
| TOTAL | **416** | **165** | **99** | **17** | **22** | **91** | **22** |

[1] A "proposal" may have associated a single experiment or a group of closely related experiments with it. A PI may have more than one proposal.
**Note:** The table refers to proposal disciplines.

Find the list of user proposals in **Appendix 5** and on our **website**

***Table 6.*** *Operations by User Type by Facilities*

| | Total Days Used | Days Used by External User[8] | Days Used by Local User[9] | Days Used by NHMFL-Affiliated User[10] | Days of Instrumentation Development and Maintenance[11] |
|---|---|---|---|---|---|
| AMRIS – NSF-Funded[1] | **983** | 195.3 | 156.2 | 15 | 616.5 |
| AMRIS – Non-NHMFL Funded[1] | **649** | 80.3 | 85.3 | 483.3 | 0 |
| DC Field[2] | **2,011.8** | 1,396.1 | 43.1 | 501.2 | 71.5 |
| EMR[3] | **751** | 356.5 | 44 | 255.5 | 95 |
| High B/T[4] | **638** | 212.5 | 105 | 169 | 151.5 |
| ICR[5] | **495** | 125 | 26.5 | 19.8 | 323.7 |
| NMR[6] | **2,793** | 1,801 | 295 | 599.5 | 97.5 |

| | Total Days Used | Days Used by External User[8] | Days Used by Local User[9] | Days Used by NHMFL-Affiliated User[10] | Days of Instrumentation Development and Maintenance[11] |
|---|---|---|---|---|---|
| **Pulsed Field[7]** | **539** | 349 | 23 | 137 | 30 |
| **TOTAL** | **8,859.8** | **4,515.7** | **778.1** | **2,180.4** | **1,385.6** |

[1] User Units are defined as magnet days; time utilized is recorded to the nearest 15 minutes. Magnet day definitions for AMRIS instruments: Verticals (500, 600s, & 750MHz), 1 magnet day = 24 hours. Horizontals (4.7 and 11.1T), 1 magnet day = 8 hours. This accounts for the difficulty in running animal or human studies overnight. Magnet days were calculated by adding the total number of real used for each instrument and dividing by 24 (vertical) or 8 (horizontal). Note: Due to the nature of the 4.7T and 11T studies, almost all studies with external users were collaborative with UF investigators.
[2] Each 20MW resistive magnet requires two power supplies to run, the 45T hybrid magnet requires three power supplies, and the 36T Series Connected Hybrid requires one power supply. Thus, there can be four resistive magnets + three superconducting magnets operating or the 45T hybrid, series connected hybrid, two resistive magnets and three superconducting magnets. User Units are defined as magnet days. Users of water-cooled resistive or hybrid magnets can typically expect to receive enough energy for 7 hours a day of magnet usage, so a magnet day is defined as 7 hours. Superconducting magnets are scheduled typically 24 hours a day.
[3, 4, 5, 6] User Units are defined as magnet days. One magnet day is defined as 24 hours in superconducting magnets.
[7] User Units are defined as magnet days. Magnets are scheduled typically 12 hours a day.
[8] Days to external users at facility => all U.S. University, U.S. Govt. Lab., U.S. Industry, Non-U.S. excluding NHMFL Affiliated, Local, Test, Calibration, Set-up, Maintenance, Inst. Dev.
[9] Days to local => local only
[10] Days to NHMFL-Affiliated (in-house) research => NHMFL-Affiliated only
[11] Days to instrument development and maintenance (combined) => Test/Calibration/ Maintenance, Method Development, Analytical Chemistry, Upgrade Cell Design/Hardware Setup, Repair

***Table 7.*** *Operations by Discipline of All Facilities*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology, Biochemistry Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **NHMFL-Affiliated** | **2,180.4** | 690.9 | 515.8 | 188 | 130.7 | 627.3 | 27.7 |
| **Local** | **778.1** | 161 | 84.6 | 234 | 1.5 | 266 | 31 |
| **University, U.S.** | **3,256.8** | 1,192.8 | 893.3 | 266.5 | 11.8 | 801.5 | 90.9 |
| **University, non-U.S.** | **732.8** | 309.5 | 292.8 | 0 | 15 | 33.5 | 82 |
| **Government Lab, U.S.** | **203.3** | 181.3 | 5 | 0 | 0 | 0 | 17 |
| **Government Lab, non-U.S.** | **109.9** | 62.3 | 10.7 | 22 | 0 | 0 | 15 |
| **Industry, U.S.** | **199.9** | 0 | 105.7 | 0 | 11.6 | 55.5 | 27.2 |
| **Industry, non-U.S.** | **13** | 0 | 13 | 0 | 0 | 0 | 0 |
| **Test/Calibration/ Maintenance** | **736** | 59 | 196 | 77 | 377 | 27 | 0 |
| **Method Development** | **213.7** | 100 | 27 | 12 | 71.7 | 3 | 0 |
| **Analytical Chemistry** | **128.7** | 0 | 128.7 | 0 | 0 | 0 | 0 |
| **Upgrade Cell Design/Hardware** | **202.5** | 77 | 0 | 0 | 95.5 | 30 | 0 |
| **Setup** | **104.8** | 17 | 0 | 0 | 87.8 | 0 | 0 |
| **Repair** | **0** | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **8,859.8** | **2,850.6** | **2,272.5** | **799.5** | **802.6** | **1,843.8** | **290.7** |

***Table 7b.*** *Operations by Discipline of All Facilities*

| | Total Days Used | Condensed Matter Physics | Chemistry | Engineering | Development of Magnet Technology | Biology Biochemistry Biophysics | Material Science |
|---|---|---|---|---|---|---|---|
| **AMRIS – NSF-Funded** | **983** | 0 | 19.5 | 115.5 | 618 | 230 | 0 |
| **AMRIS – Non-NHMFL Funded** | **649** | 0 | 77.8 | 0 | 6 | 565.2 | 0 |
| **DC Field** | **2,011.8** | 1,619.1 | 176.4 | 7 | 123.1 | 0 | 86.2 |
| **EMR** | **751** | 101.5 | 323.5 | 251 | 3.5 | 8.5 | 63 |
| **High B/T** | **638** | 638 | 0 | 0 | 0 | 0 | 0 |
| **ICR** | **495** | 0 | 455.5 | 22 | 0 | 17.5 | 0 |
| **NMR** | **2,793** | 3 | 1,209.8 | 404 | 52 | 1,022.7 | 101.5 |
| **Pulsed Field** | **539** | 489 | 10 | 0 | 0 | 0 | 40 |
| **TOTAL** | 8,859.8 | 2,850.6 | 2,272.5 | 799.5 | 802.6 | 1,843.8 | 290.7 |

***Table 8a.*** *New PIs[1] and New Users of All Facilities*

| | All PIs | New PIs at the MagLab | New PIs at the Facility | Returning PIs at the Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **Senior Personnel, U.S.** | **294** | 41 | 56 | 238 | 564 | 43 | 67 | 497 |
| **Senior Personnel, non-U.S.** | **70** | 20 | 24 | 46 | 143 | 31 | 34 | 109 |
| **Postdocs, U.S.** | **5** | 2 | 2 | 3 | 173 | 42 | 54 | 119 |
| **Postdocs, non-U.S.** | **2** | 1 | 1 | 1 | 31 | 7 | 10 | 21 |
| **Students, U.S.** | **0** | 0 | 0 | 0 | 501 | 155 | 177 | 324 |
| **Students, non-U.S.** | **1** | 1 | 1 | 0 | 94 | 41 | 45 | 49 |
| **Technician, U.S.** | **0** | 0 | 0 | 0 | 43 | 9 | 12 | 31 |
| **Technician, non-U.S.** | **0** | 0 | 0 | 0 | 5 | 3 | 3 | 2 |
| **TOTAL** | **372** | **65** | **84** | **288** | **1,554** | **331** | **402** | **1,152** |

[1] PIs who received magnet time for the first time.

***Table 8b.*** *New PIs and New Users by Facilities*

| | All PIs | New PIs at the MagLab | New PIs at the Facility | Returning PIs at the Facility | All Users | New Users at the MagLab | New Users at Facility | Returning Users at Facility |
|---|---|---|---|---|---|---|---|---|
| **AMRIS – NSF-Funded** | **26** | 2 | 2 | 24 | 107 | 25 | 25 | 82 |
| **AMRIS – Non-NHMFL Funded** | **24** | 2 | 3 | 21 | 172 | 38 | 55 | 117 |
| **DC Field** | **129** | 21 | 27 | 102 | 539 | 117 | 129 | 410 |
| **EMR** | **53** | 6 | 11 | 42 | 175 | 23 | 39 | 136 |
| **High B/T** | **6** | 2 | 4 | 2 | 24 | 1 | 6 | 18 |
| **ICR** | **25** | 6 | 6 | 19 | 101 | 28 | 28 | 73 |
| **NMR** | **66** | 16 | 18 | 48 | 270 | 68 | 75 | 195 |
| **Pulsed Field** | **43** | 10 | 13 | 30 | 166 | 31 | 45 | 121 |
| **TOTAL** | **372** | **65** | **84** | **288** | **1,554** | **331** | **402** | **1,152** |

***Table 9a.*** *Funding Source of Users' Research-Day Allotted (Counts) by Facilities*

| | Total Days Used | NSF[1] | NIH | DOE | DOD[2] | VSP | FFI | UF MBI | EPA | Interna-tional | Na-tional | In-dustry[3] | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AMRIS – NSF-Funded** | **983** | 823.9 | 140.6 | 0 | 0 | 0 | 0 | 0 | 0 | 4.3 | 12 | 2.2 | 0 |
| **AMRIS – Non-NHMFL Funded** | **649** | 70.5 | 392 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 163 | 18.5 | 0 |
| **DC Field** | **2,011.8** | 875.3 | 0 | 600.5 | 102.3 | 3.5 | 0 | 0 | 0 | 240.9 | 156.8 | 32.6 | 0 |
| **EMR** | **751** | 558.2 | 3.2 | 102 | 1.5 | 0 | 0 | 0 | 0 | 48.3 | 37.8 | 0 | 0 |
| **High B/T** | **638** | 287 | 0 | 187.5 | 0 | 0 | 0 | 0 | 0 | 0 | 163.5 | 0 | 0 |
| **ICR** | **495** | 412.2 | 18.5 | 0 | 32.7 | 0 | 0 | 0 | 0 | 14.2 | 3.8 | 13.6 | 0 |
| **NMR** | **2,793** | 799 | 578.8 | 499 | 0 | 0 | 0 | 0 | 0 | 274.3 | 342.8 | 3 | 296 |
| **Pulsed Field** | **539** | 146.7 | 0 | 263 | 23.3 | 0 | 0 | 0 | 0 | 71 | 35 | 0 | 0 |
| **TOTAL** | **8,859.8** | **3,972.7** | **1,133.1** | **1,652** | **164.8** | **3.5** | **0** | **0** | **0** | **653.1** | **914.8** | **69.8** | **296** |

[1] Includes NSF, UCGP, and 'No other support'.
[2] Includes NASA, US Army, US Navy, and US Air Force.
[3] Includes US Industry and Non-US Industry.

***Table 9b.*** *Funding Source of Users' Research-Day Allotted (Percentage) by Facilities*

| | NSF[1] | NIH | DOE | DOD[2] | VSP | FFI | UF MBI | EPA | Interna-tional | National | In-dustry[3] | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AMRIS – NSF-Funded** | 83.8 % | 14.3 % | 0 % | 0 % | 0 % | 0 % | 0 % | 0 % | 0.4 % | 1.2 % | 0.2 % | 0 % |
| **AMRIS – Non-NHMFL Funded** | 10.9 % | 60.4 % | 0 % | 0.8 % | 0 % | 0 % | 0 % | 0 % | 0 % | 25.1 % | 2.9 % | 0 % |
| **DC Field** | 43.5 % | 0 % | 29.8 % | 5.1 % | 0.2 % | 0 % | 0 % | 0 % | 12 % | 7.8 % | 1.6 % | 0 % |

| | NSF[1] | NIH | DOE | DOD[2] | VSP | FFI | UF MBI | EPA | Interna-tional | National | In-dustry[3] | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **EMR** | 74.3 % | 0.4 % | 13.6 % | 0.2 % | 0 % | 0 % | 0 % | 0 % | 6.4 % | 5 % | 0 % | 0 % |
| **High B/T** | 45 % | 0 % | 29.4 % | 0 % | 0 % | 0 % | 0 % | 0 % | 0 % | 25.6 % | 0 % | 0 % |
| **ICR** | 83.3 % | 3.7 % | 0 % | 5.6 % | 0 % | 0 % | 0 % | 0 % | 2.9 % | 0.8 % | 2.7 % | 0 % |
| **NMR** | 28.6 % | 20.7 % | 17.9 % | 0 % | 0 % | 0 % | 0 % | 0 % | 9.8 % | 12.3 % | 0.1 % | 10.6 % |
| **Pulsed Field** | 27.2 % | 0 % | 48.8 % | 4.3 % | 0 % | 0 % | 0 % | 0 % | 13.2 % | 6.5 % | 0 % | 0 % |

# APPENDIX 4 – USER'S GEOGRAPHIC DISTRIBUTION

## AMRIS NSF FUNDED (4 INTERNATIONAL, 103 NATIONAL USERS)

| First Name | Last Name | Organization | State | Country |
|---|---|---|---|---|
| Guillaume | Ferre | Paul Sabatier University, Toulouse | | France |
| John | Jones | Center for Neurosciences and Cell Biology | | Portugal |
| Thomas | Barrick | St George's University of London | | UK |
| Matt | Hall | National Physical Laboratory, Teddington | | UK |
| Sam | Afoullouss | University of South Florida | FL | USA |
| Diba | Allameh Zadeh | University of Florida | FL | USA |
| Bill | Baker | University of South Florida | FL | USA |
| Sara | Bannister | Texas Tech University | TX | USA |
| Jason | Bara | University of Alabama, Tuscaloosa | AL | USA |
| Ayush | Batra | Northwestern University | IL | USA |
| Mousumi | Bepari | University of Alabama, Tuscaloosa | AL | USA |
| Jehangir | Bhadha | Everglades Research and Education Center at UF | FL | USA |
| Rebecca | Bivins | Georgia Institute of Technology | GA | USA |
| Omar | Boloki | University of Florida | FL | USA |
| Warren | Boschen | University of Florida | FL | USA |
| Jeannine | Brady | University of Florida | FL | USA |
| William | Brey | National High Magnetic Field Laboratory | FL | USA |
| A. Caroline | Buchanan | University of Florida | FL | USA |
| Maria Luiza | Caldas Nogueira | University of Florida | FL | USA |
| Tracy | Centanni | University of Florida | FL | USA |
| Coray | Colina | University of Florida | FL | USA |
| Brenton | Cooper | Texas Christian University | TX | USA |
| Ezequiel | Cruz Rosa | University of South Florida | FL | USA |
| Sreyashi | Das | University of Florida | FL | USA |
| German | De Armas Guitart | University of South Florida | FL | USA |
| Ike | de la Pena | Loma Linda University | CA | USA |
| Stephen | DeWitt | Massachusetts Institute of Technology | MA | USA |
| Grace | Dyer | University of Florida | FL | USA |
| Matthew | Eddy | University of Florida | FL | USA |
| Gail | Fanucci | University of Florida | FL | USA |
| Marcelo | Febo | University of Florida | FL | USA |
| Malissa | Fento | University of South Florida | FL | USA |
| Johnny | Figueroa | Loma Linda University | CA | USA |
| Massimo | Graves | University of Florida | FL | USA |
| Camille | Green | University of Florida | FL | USA |
| Sajan | Green | University of Florida | FL | USA |
| Zhongwu | Guo | University of Florida | FL | USA |
| Eric | Hahnert | Massachusetts Institute of Technology | MA | USA |
| Michael | Harris | University of Florida | FL | USA |
| Nathaniel | Hays | University of South Florida | FL | USA |
| Carson | Ingo | Northwestern University | IL | USA |

| First Name | Last Name | Organization | State | Country |
|---|---|---|---|---|
| Philippe | Jean-Baptiste | Massachusetts Institute of Technology | MA | USA |
| Kelly | Jenkins | University of Florida | FL | USA |
| Matthew | Jimenez | University of California, Irvine | CA | USA |
| Jonathan | Judy | University of Florida | FL | USA |
| Amandine | Jullienne | University of California, Irvine | CA | USA |
| Samuel | Kaser | Massachusetts Institute of Technology | MA | USA |
| Sayan | Kundu | University of Florida | FL | USA |
| Sree | Laxmi | University of Florida | FL | USA |
| Ryan | Lively | Georgia Institute of Technology | GA | USA |
| Sandra | Loesgen | University of Florida | FL | USA |
| Joanna | Long | University of Florida | FL | USA |
| MD Anik | Mahmud | University of Florida | FL | USA |
| Joseph | Mangun | University of Florida | FL | USA |
| Thomas | Mareci | University of Florida | FL | USA |
| Erin | Marshall | University of Florida | FL | USA |
| Rachel | Martin | University of California, Irvine | CA | USA |
| Aidan | McFarland | University of South Florida | FL | USA |
| Anil | Mehta | University of Florida | FL | USA |
| Matthew | Merritt | University of Florida | FL | USA |
| Federica | Montesanto | University of Florida | FL | USA |
| Joshua | Moon | University of Florida | FL | USA |
| Mina | Mozafari | University of California, Irvine | CA | USA |
| Venkanna | Mullapudi | University of Florida | FL | USA |
| Emma | Mulry | University of Florida | FL | USA |
| Jennifer | Munson | Virginia Polytechnic Institute and State University | VA | USA |
| Sean | Najmi | University of Delaware | DE | USA |
| Brenda Patricia | Noarbe | University of California, Irvine | CA | USA |
| Chase | Norton | University of Florida | FL | USA |
| Andre | Obenaus | University of California, Irvine | CA | USA |
| Christine | Oberhausen | University of Delaware | DE | USA |
| Katie | O'Harra | University of Alabama, Tuscaloosa | AL | USA |
| Stine Sofie | Olsen | University of South Florida | FL | USA |
| Oziomachi | Onogu | Texas Tech University | TX | USA |
| Qingqing (Emily) | Peng | University of Florida | FL | USA |
| Bastien | Petit | University of Florida | FL | USA |
| Isabel | Rivera Santiago | University of Florida | FL | USA |
| James | Rocca | University of Florida | FL | USA |
| Megan | Rocha | University of California, Irvine | CA | USA |
| Rajendra | Rohokale | University of Florida | FL | USA |
| Malisa | Sarntinoranont | University of Florida | FL | USA |
| Nathaniel | Schmidt | University of South Florida | FL | USA |
| Esun | Selvam | University of Delaware | DE | USA |
| Fransua | Sharafeddin | Loma Linda University | CA | USA |
| Julio | Sierra | Loma Linda University | CA | USA |

| First Name | Last Name | Organization | State | Country |
|---|---|---|---|---|
| Timothy | Simon | Loma Linda University | CA | USA |
| Joshua | Slade | University of Florida | FL | USA |
| Benjamin | Smith | University of South Florida | FL | USA |
| Zachary | Smith | Massachusetts Institute of Technology | MA | USA |
| Collin | Sroge | University of California, Irvine | CA | USA |
| Jaewon | Suk | University of California, Irvine | CA | USA |
| Brent | Sumerlin | University of Florida | FL | USA |
| Wenkai | Sun | University of South Florida | FL | USA |
| Daniel R. | Talham | University of Florida | FL | USA |
| Justin | Teesdale | Massachusetts Institute of Technology | MA | USA |
| Sandhiya | Thiagarajan | University of Alabama, Tuscaloosa | AL | USA |
| Jeremy | Thomas | University of Florida | FL | USA |
| Alain | Tundidor Camba | University of Alabama, Tuscaloosa | AL | USA |
| Sergey | Vasenkov | University of Florida | FL | USA |
| Dionisios | Vlachos | University of Delaware | DE | USA |
| Elizabeth | Vo | Malcom Randall VA Medical Center | FL | USA |
| Xudong | Wang | University of South Florida | FL | USA |
| Jennifer | Williams | University of South Florida | FL | USA |
| Benjamin | Wylie | Texas Tech University | TX | USA |
| Libin | Ye | University of South Florida | FL | USA |
| Young Hee | Yoon | Georgia Institute of Technology | GA | USA |
| Huadong | Zeng | University of Florida | FL | USA |

## AMRIS NON-NHMFL FUNDED (1 INTERNATIONAL, 171 NATIONAL USERS)

| First Name | Last Name | Organization | State | Country |
|---|---|---|---|---|
| Jeremiah | Batucan | University of the Philippines | | Philippines |
| Jose | Abisambra | University of Florida | FL | USA |
| Rabeya Zinnat | Adury | University of Florida | FL | USA |
| David | Alvarez | University of Florida | FL | USA |
| Eiko | Alzamora | University of Florida | FL | USA |
| Kara | Anazia | University of Florida | FL | USA |
| Sanjana | Ande | University of Florida | FL | USA |
| Abigail | Aplin | University of Florida | FL | USA |
| David | Arpin | University of Florida | FL | USA |
| Kalina | Atasanova | University of Florida | FL | USA |
| Guna Teja | Athota | University of Florida | FL | USA |
| Arshee | Badar | University of Florida | FL | USA |
| Jared | Baisden | Scripps Research Institute - Florida | FL | USA |
| Antara | Banerjee | University of Florida | FL | USA |
| Alison | Barnard | University of Florida | FL | USA |
| Abhinandan | Batra | University of Florida | FL | USA |
| Rebecca | Bivins | Georgia Institute of Technology | GA | USA |
| Jen | Bizon | University of Florida | FL | USA |
| Omar | Boloki | University of Florida | FL | USA |
| Chelsea | Brook | University of Florida | FL | USA |
| Ta-Tyonna | Buck | University of Florida | FL | USA |
| Amelia | Bunnell | University of Florida | FL | USA |
| Joy | Buraima | University of Florida | FL | USA |
| Sara | Burke | University of Florida | FL | USA |
| Matthew | Burns | University of Florida | FL | USA |
| Maria Luiza | Caldas Nogueira | University of Florida | FL | USA |
| Eduardo | Candelario-Jalil | University of Florida | FL | USA |
| Alan | Carter | University of Florida | FL | USA |
| Tracy | Centanni | University of Florida | FL | USA |
| Paramita | Chakrabarty | University of Florida | FL | USA |
| Mario | Chang Reyes | University of Florida | FL | USA |
| Manyun | Chen | University of Florida | FL | USA |
| Qiyin | Chen | University of Florida | FL | USA |
| Robin | Chen | University of Florida | FL | USA |
| Haeyeon (Haley) | Choi | University of Florida | FL | USA |
| Evangelos | Christou | University of Florida | FL | USA |
| Brenton | Cooper | Texas Christian University | TX | USA |
| Taylor | Corcoran | University of Florida | FL | USA |
| Rebecca | Correa | University of Florida | FL | USA |
| Larissa | Costa de Almeida | University of Florida | FL | USA |
| Sreyashi | Das | University of Florida | FL | USA |
| Mackenzie | Davenport | University of Florida | FL | USA |
| Savannah | Duff | University of Florida | FL | USA |

| First Name | Last Name | Organization | State | Country |
|---|---|---|---|---|
| Grace | Dyer | University of Florida | FL | USA |
| Matthew | Eddy | University of Florida | FL | USA |
| Emma | Ellis | University of Florida | FL | USA |
| Anna | Farmer (Liner) | University of Florida | FL | USA |
| Matthew | Farrer | University of Florida | FL | USA |
| Marcelo | Febo | University of Florida | FL | USA |
| Phillippe | Fernandes | University of Florida | FL | USA |
| Sean | Forbes | University of Florida | FL | USA |
| Camelia | Foroohar | University of Florida | FL | USA |
| Anthony | Giacalone | University of Florida | FL | USA |
| Max | Glanz | University of Florida | FL | USA |
| Niloofar | Gopal Pour | University of Florida | FL | USA |
| Dalton | Graham | University of Florida | FL | USA |
| Sajan | Green | University of Florida | FL | USA |
| Matteo | Grudny | University of Florida | FL | USA |
| Hala | Hachem | University of Florida | FL | USA |
| Callie | Hardin | University of Florida | FL | USA |
| Michael | Harris | University of Florida | FL | USA |
| Cora | Hart | University of Florida | FL | USA |
| Beining (Kim) | Jin | University of Florida | FL | USA |
| Vishwas | Jindal | University of Florida | FL | USA |
| Amandine | Jullienne | University of California, Irvine | CA | USA |
| Catherine | Kaczorowski | Jackson Laboratory | ME | USA |
| Mallesh | Kathe | University of Florida | FL | USA |
| Sushain | Kaul | University of Florida | FL | USA |
| Owen | Keller | University of Florida | FL | USA |
| Marjan | Khan | University of Florida | FL | USA |
| May | Khanna | University of Florida | FL | USA |
| Chalermchai | Khemtong | University of Florida | FL | USA |
| Benjamin | Kidd | University of Florida | FL | USA |
| Garrett | Knotts | University of Florida | FL | USA |
| Sofia | Kokkaliari | University of Florida | FL | USA |
| John | Koren | University of Florida | FL | USA |
| Abbas | Kothawala | University of Florida | FL | USA |
| Kamalika | Kummathi | University of Florida | FL | USA |
| Orlando | Laitano | University of Florida | FL | USA |
| Sree | Laxmi | University of Florida | FL | USA |
| Jason | León | University of Florida | FL | USA |
| Mark | Lewis | University of Florida | FL | USA |
| Hong | Li | Florida State University | FL | USA |
| Wen | Li | University of Florida | FL | USA |
| Yuqing | Li | University of Florida | FL | USA |
| Max | Lin | University of Florida | FL | USA |
| Ryan | Lively | Georgia Institute of Technology | GA | USA |
| Sandra | Loesgen | University of Florida | FL | USA |

| First Name | Last Name | Organization | State | Country |
|---|---|---|---|---|
| Joanna | Long | University of Florida | FL | USA |
| Christopher | Lopez | University of Florida | FL | USA |
| Mariana | Lopez | University of Florida | FL | USA |
| Donovan | Lott | University of Florida | FL | USA |
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| Manoj | Madheswaran | University of Florida | FL | USA |
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| Vinay | Malut | University of Florida | FL | USA |
| Joseph | Mangun | University of Florida | FL | USA |
| Nesmine | Maptue | University of Florida | FL | USA |
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| Alessandra | Martinez | University of Florida | FL | USA |
| William | McDonald | University of Florida | FL | USA |
| Nikolaus | McFarland | University of Florida | FL | USA |
| Anil | Mehta | University of Florida | FL | USA |
| Matthew | Merritt | University of Florida | FL | USA |
| Aaron | Mickle | University of Florida | FL | USA |
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| Sameer | Naik | University of Florida | FL | USA |
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| John | Neubert | University of Florida | FL | USA |
| Kelsey | Ngo | University of Florida | FL | USA |
| Brenda Patricia | Noarbe | University of California, Irvine | CA | USA |
| Chase | Norton | University of Florida | FL | USA |
| Andre | Obenaus | University of California, Irvine | CA | USA |
| Michael | Okun | University of Florida | FL | USA |
| Caitlin | Orsini | University of Florida | FL | USA |
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| Nessa | Pesaran Afsharian | University of Florida | FL | USA |
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| Bastien | Petit | University of Florida | FL | USA |
| Enzo | Petracco | University of Florida | FL | USA |
| Caroline | Phillips | University of Florida | FL | USA |
| Geraldine | Pierre | University of Florida | FL | USA |
| Isabella | Pinto | University of Florida | FL | USA |
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| Akash | Rajaram | University of Florida | FL | USA |
| Ranjala | Ratnayake | University of Florida | FL | USA |
| Sakthivel | Ravi | University of Florida | FL | USA |
| Arka Prabha | Ray | University of Florida | FL | USA |
| Leah | Reznikov | University of Florida | FL | USA |
| James | Rocca | University of Florida | FL | USA |
| Nicholas | Rodriguez | University of Florida | FL | USA |
| Marina | Rodriguez Sanchez | University of Florida | FL | USA |
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| Regan | Roth | University of Florida | FL | USA |
| Anna | Rushin | University of Florida | FL | USA |
| Nicholas | Salvo | University of Florida | FL | USA |
| Dimitri | Selimos | University of Florida | FL | USA |
| Barry | Setlow | University of Florida | FL | USA |
| Gaurav | Sharma | University of Florida | FL | USA |
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| Jessica | Chapman | University of Cambridge | UK |
| Hanyi | Chen | University of Cambridge | UK |
| Jiasheng | Chen | University of Cambridge | UK |
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| Shay | Sandik | Tel-Aviv University | Israel |
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| Wilson | Brown | Baylor University | TX | USA |
| Isaac | Brown | University of Utah | UT | USA |
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| Nicholas | Butch | National Institute of Standards and Technology MD | MD | USA |
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| John | Cenker | Columbia University | NY | USA |
| Jak | Chakhalian | Rutgers University | NJ | USA |
| Sudip | Chakraborty | Duke University | NC | USA |
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| Yoonseo | Nah | Columbia University | NY | USA |
| Yasuyuki | Nakajima | University of Central Florida | FL | USA |
| William | Nelson | National High Magnetic Field Laboratory | FL | USA |
| Kelly | Neubauer | Rice University | TX | USA |
| Paul | Neves | Massachusetts Institute of Technology | MA | USA |
| Phuong | Nguyen | Cornell University | NY | USA |
| Nhanvan | Nguyen | Brown University | RI | USA |
| Thinh | Nguyen | West Texas A&M University | TX | USA |
| Guangxin | Ni | National High Magnetic Field Laboratory | FL | USA |
| Daniel | Nikiforov | University of Utah | UT | USA |
| Chang | Niu | Purdue University | IN | USA |

| First Name | Last Name | Organization | State | Country |
|---|---|---|---|---|
| Robert | Nowell | National High Magnetic Field Laboratory | FL | USA |
| Kevin | Nuckolls | Massachusetts Institute of Technology | MA | USA |
| Jong Mok | Ok | Oak Ridge National Laboratory | TN | USA |
| Daniel | Ostrom | Columbia University | NY | USA |
| Dmitry | Ovchinnikov | University of Kansas | KS | USA |
| Andrew | Ozarowski | National High Magnetic Field Laboratory | FL | USA |
| Mykhaylo | Ozerov | National High Magnetic Field Laboratory | FL | USA |
| Jordan | Pack | Columbia University | NY | USA |
| Johnpierre | Paglione | University of Maryland, College Park | MD | USA |
| Joyce | Palmer-Fortune | Smith College | MA | USA |
| Chris | Palmstrom | University of California, Santa Barbara | CA | USA |
| Wei | Pan | Sandia National Laboratories | CA | USA |
| Binod | Pandey | University of Utah | UT | USA |
| Joon Young | Park | Harvard University | MA | USA |
| Yunkyu | Park | Oak Ridge National Laboratory | TN | USA |
| Abhay | Pasupathy | Columbia University | NY | USA |
| Alan | Pauling | Cornell University | NY | USA |
| William | Peria | Los Alamos National Laboratory | NM | USA |
| Anton | Petruk | State University of New York, Stony Brook | NY | USA |
| Loren | Pfeiffer | Princeton University | NJ | USA |
| Cole | Phillips | West Texas A&M University | TX | USA |
| Isabelle | Phinney | Harvard University | MA | USA |
| Bal | Pokharel | National High Magnetic Field Laboratory | FL | USA |
| Dragana | Popovic | National High Magnetic Field Laboratory | FL | USA |
| Victoria | Posey | Columbia University | NY | USA |
| Andy | Powell | National High Magnetic Field Laboratory | FL | USA |
| Lucas | Pressley | Johns Hopkins University | MD | USA |
| Peiyu | Qin | Brown University | RI | USA |
| Gang | Qiu | University of Minnesota, Twin Cities | MN | USA |
| Morgan | Raines | Baylor University | TX | USA |
| Abhinna | Rajbanshi | University of South Carolina | SC | USA |
| Sheng | Ran | Washington University in St. Louis | MO | USA |
| Silvia | Rasi | High Temperature Superconductors Inc. | CA | USA |
| Sumedh | Rathi | Georgia Institute of Technology | GA | USA |
| Atul | Regmi | University of Central Florida | FL | USA |
| Jennifer | Reid | National High Magnetic Field Laboratory | FL | USA |
| Arneil | Reyes | National High Magnetic Field Laboratory | FL | USA |
| Daniel | Rhodes | University of Wisconsin, Madison | WI | USA |
| Anthony | Rice | National Renewable Energy Laboratory | CO | USA |
| Rastislav | Ries | Florida State University | FL | USA |
| Elliot | Roberts | University of Colorado, Boulder | CO | USA |

| First Name | Last Name | Organization | State | Country |
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| Elliott | Rosenberg | Stanford University | CA | USA |
| Alex | Roubos | Florida State University | FL | USA |
| Xavier | Roy | Columbia University | NY | USA |
| Aya | Rutherford | University of Tennessee, Knoxville | GA | USA |
| Shanta | Saha | University of Maryland, College Park | MD | USA |
| Brandon | Sanders | University of Tennessee, Knoxville | TN | USA |
| Prathum | Saraf | University of Maryland, College Park | MD | USA |
| Bhabesh | Sarangi | University of Houston | TX | USA |
| Govind | Sasi Kumar | Florida State University | FL | USA |
| Gicela | Saucedo Salas | University of Maryland, College Park | MD | USA |
| Allen | Scheie | Los Alamos National Laboratory | NM | USA |
| Benny | Schundelmier | Florida State University | FL | USA |
| Venkat | Selvamanickam | University of Houston | TX | USA |
| Dmitry | Semenov | National High Magnetic Field Laboratory | FL | USA |
| Jie | Shan | Pennsylvania State University | PA | USA |
| Yinming | Shao | Pennsylvania State University | PA | USA |
| Manish Mani | Sharma | University of Arkansas | AR | USA |
| Michael | Shatruk | National High Magnetic Field Laboratory | FL | USA |
| Mansour | Shayegan | Princeton University | NJ | USA |
| Tengming | Shen | Fermi National Accelerator Laboratory | IL | USA |
| Maise | Shepard | Commonwealth Fusion Systems | MA | USA |
| Jian | Shi | Rensselaer Polytechnic Institute | NY | USA |
| Yue | Shi | University of Washington | WA | USA |
| Keshav | Shrestha | Texas A&M University | TX | USA |
| Kyryl | Shtefiienko | West Texas A&M University | TX | USA |
| Theo | Siegrist | National High Magnetic Field Laboratory | FL | USA |
| Nikolai | Simonov | Georgia Institute of Technology | GA | USA |
| Siddharth Kumar | Singh | Princeton University | NJ | USA |
| Dmitry | Smirnov | National High Magnetic Field Laboratory | FL | USA |
| Julia | Smith | National High Magnetic Field Laboratory | FL | USA |
| G. Alexander | Smith | Los Alamos National Laboratory | NM | USA |
| Kevin | Smith | University of Tennessee, Knoxville | TN | USA |
| Layla | Smith | Norfolk State University | VA | USA |
| Danila | Sokratov | University of Maryland, College Park | MD | USA |
| Xiaoyu | Song | Columbia University | NY | USA |
| Yuan | Song | Columbia University | NY | USA |
| Seunghoon | Song | University of Tennessee, Knoxville | TN | USA |
| Brandon | Sorbom | Commonwealth Fusion Systems | MA | USA |
| Diana | Spulber | Stanford University | CA | USA |
| Lucia | Steinke | Maybell Quantum Industries | CO | USA |
| Sergey | Suchalkin | State University of New York, Stony Brook | NY | USA |
| Mike | Sumption | Ohio State University | OH | USA |

| First Name | Last Name | Organization | State | Country |
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| Alexey | Suslov | National High Magnetic Field Laboratory | FL | USA |
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| Fazel | Tafti | Boston College | MA | USA |
| Lixuan | Tai | University of California, Los Angeles | CA | USA |
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| Yasu | Takano | University of Florida | FL | USA |
| Pukun | Tan | Purdue University | IN | USA |
| Chiara | Tarantini | National High Magnetic Field Laboratory | FL | USA |
| Valentin | Taufour | University of California, Davis | CA | USA |
| Aya Batoul | Tazi | Columbia University | NY | USA |
| Evan | Telford | Columbia University | NY | USA |
| Joshua | Telser | Roosevelt University | IL | USA |
| Michael | Terilli | Rutgers University | NJ | USA |
| Taylor | Terrones | New Mexico Institute of Mining and Technology | NM | USA |
| Pranav | Thekke Madathil | Princeton University | NJ | USA |
| Stanley | Tozer | National High Magnetic Field Laboratory | FL | USA |
| Thao | Tran | Clemson University | SC | USA |
| Henry | Travaglini | Sandia National Laboratories | CA | USA |
| Ulf | Trociewitz | National High Magnetic Field Laboratory | FL | USA |
| Ishika | Tulsian | Brown University | RI | USA |
| FNU | TUSHAR | Ohio State University | OH | USA |
| Arjun | Unnikrishnan | Purdue University | IN | USA |
| Teun | van Schijndel | University of California, Santa Barbara | CA | USA |
| Johan | van Tol | National High Magnetic Field Laboratory | FL | USA |
| Z. Valy | Vardeny | University of Utah | UT | USA |
| Julian | Vigil | University of California, Berkeley | CA | USA |
| Greyson | Voigt | Ohio State University | OH | USA |
| Dung | Vu | Yale University | CT | USA |
| Joshua | Wakefield | Massachusetts Institute of Technology | MA | USA |
| Frederick | Walker | Yale University | CT | USA |
| James | Wampler | National High Magnetic Field Laboratory | NM | USA |
| Kang | Wang | University of California, Los Angeles | CA | USA |
| Yuxin | Wang | Florida State University | FL | USA |
| Xirui | Wang | Massachusetts Institute of Technology | MA | USA |
| Xueqiao | Wang | Massachusetts Institute of Technology | MA | USA |
| Chengyu | Wang | Princeton University | NJ | USA |
| Zixu | Wang | Rensselaer Polytechnic Institute | NY | USA |
| Jiayin | Wang | Ohio State University | OH | USA |
| Yibang | Wang | Brown University | RI | USA |
| Yikai | Wang | University of Wisconsin, Madison | WI | USA |
| Wenzheng | Wei | Yale University | CT | USA |

| First Name | Last Name | Organization | State | Country |
|---|---|---|---|---|
| Kaya | Wei | National High Magnetic Field Laboratory | FL | USA |
| Ulrich | Welp | Argonne National Laboratory | IL | USA |
| Robert | Welser | University of California, Irvine | CA | USA |
| Thomas | Werkmeister | Harvard University | MA | USA |
| Hope | Whitelock | University of Colorado, Boulder | CO | USA |
| Brady | Wilson | Kennesaw State University | GA | USA |
| Stephen | Winter | Wake Forest University | NC | USA |
| Andrew | Woods | National High Magnetic Field Laboratory | FL | USA |
| Tsung-Chi | Wu | Rutgers University | NJ | USA |
| Ines | Wyrsta | High Temperature Superconductors Inc. | CA | USA |
| Li | Xiang | National High Magnetic Field Laboratory | FL | USA |
| Jie | Xing | Oak Ridge National Laboratory | TN | USA |
| Chengkun | Xing | University of Tennessee, Knoxville | TN | USA |
| Peng | Xiong | Florida State University | FL | USA |
| Qiaozhi | Xu | Washington University in St. Louis | MO | USA |
| Xiaodong | Xu | University of Washington | WA | USA |
| Ziling | Xue | University of Tennessee, Knoxville | TN | USA |
| Shengchen | Xue | Ampeers LLC | TX | USA |
| Jiaqiang | Yan | Oak Ridge National Laboratory | TN | USA |
| Hung-Yu | Yang | University of California, Los Angeles | CA | USA |
| Ting-Hsun | Yang | University of California, Los Angeles | CA | USA |
| Birui | Yang | Columbia University | NY | USA |
| Xiaohan | Yao | Boston College | MA | USA |
| Weiliang | Yao | Rice University | TX | USA |
| Kenji | Yasuda | Cornell University | NY | USA |
| Linda | Ye | California Institute of Technology | CA | USA |
| Peide | Ye | Purdue University | IN | USA |
| Sandugash | Yergeshbayeva | Florida State University | FL | USA |
| Kota | Yoshimura | University of Notre Dame | IN | USA |
| Vivien | Zapf | National High Magnetic Field Laboratory | NM | USA |
| Naipeng | Zhang | National High Magnetic Field Laboratory | FL | USA |
| Dechen | Zhang | University of Michigan | MI | USA |
| Shengzhi | Zhang | National High Magnetic Field Laboratory | NM | USA |
| Yifei | Zhang | SuperPower, Inc. | NY | USA |
| Yuxin | Zhang | Ohio State University | OH | USA |
| Zheneng | Zhang | Ohio State University | OH | USA |
| Naiyuan | Zhang | Brown University | RI | USA |
| Zhiren | Zheng | Massachusetts Institute of Technology | MA | USA |
| Guoxin | Zheng | University of Michigan | MI | USA |
| Haidong | Zhou | University of Tennessee, Knoxville | TN | USA |
| Yuan | Zhu | University of Michigan | MI | USA |
| Jun | Zhu | Pennsylvania State University | PA | USA |
| Michael | Ziebel | Columbia University | NY | USA |

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| Juraj | Cernak | Safarik University | Slovakia |
| Satyaki | Chatterjee | University of Iceland | Iceland |
| Nicholas | Chilton | Australian National University | Australia |
| Enrique | Colacio | University of Granada | Spain |
| Emmelyne | Cuza | University College Dublin | Ireland |
| Andreas | Danopoulos | National and Kapodistrian University of Athens | Greece |
| Maja | Dunstan | Technical University of Denmark | Denmark |
| Guillem | Gabarró-Riera | University of Barcelona | Spain |
| Angeliki | Giannoulis | Weizmann Institute of Science | Israel |
| David | Herbert | University of Manitoba | Canada |
| Jun Sung | Kim | Pohang University of Science and Technology | South Korea |
| Panayotis | Kyritsis | National and Kapodistrian University of Athens | Greece |
| Zoi | Lada | University College Dublin | Ireland |
| Suheon | Lee | IBS Center for Artificial Low Dimensional Electronic Systems | South Korea |
| Wonjun | Lee | IBS Center for Artificial Low Dimensional Electronic Systems | South Korea |
| Anna | Manvell | Technical University of Denmark | Denmark |
| Grace | Morgan | University College Dublin | Ireland |
| David | Parker | University of Durham | UK |
| Austin | Peach | French National Center for Scientific Research | France |
| Kasper | Pedersen | Technical University of Denmark | Denmark |
| Cedomir | Petrovic | Shanghai Advanced Research in Physical Sciences | China |
| Yifan | Quan | Paul Scherrer Institute | Switzerland |
| E. Carolina | Sañudo | University of Barcelona | Spain |
| Baldeep | Sidhu | University of Manitoba | Canada |
| Snorri | Sigurdsson | University of Iceland | Iceland |
| Richard | Smolko | Safarik University | Slovakia |
| Choongjae | Won | Pohang University of Science and Technology | South Korea |
| Joachim | Wosnitza | Helmholtz Zentrum Dresden-Rossendorf | Germany |
| En-Che | Yang | Fu-Jen Catholic University | Taiwan |
| Sergei | Zvyagin | Helmholtz Zentrum Dresden-Rossendorf | Germany |

| First Name | Last Name | Organization | State | Country |
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| Carlos | Acosta | Florida International University | FL | USA |
| Pulickel | Ajayan | Rice University | TX | USA |
| Igor | Alabugin | Florida State University | FL | USA |
| Anitha | Alanthadka | University of Nevada Reno | NV | USA |
| Lauren | Anderson-Sanchez | University of California, Irvine | CA | USA |

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| Claudia | Avalos | New York University | NY | USA |
| Martin | Bakker | University of Alabama, Tuscaloosa | AL | USA |
| Audrey | Bartlett | Massachusetts Institute of Technology | MA | USA |
| Florian | Benner | Michigan State University | MI | USA |
| Maximilian | Bernbeck | Georgia Institute of Technology | GA | USA |
| Mrinal | Bhunia | University of Pennsylvania | PA | USA |
| Shubham | Bisht | Florida State University | FL | USA |
| Abhijit | Biswas | Rice University | TX | USA |
| Alexandria | Bone | University of Tennessee, Knoxville | TN | USA |
| ChristiAnna | Brantley | University of Florida | FL | USA |
| Sergey | Bud'ko | Ames Laboratory | IA | USA |
| Huyen | Bui | Florida State University | FL | USA |
| Konstantin | Bukhryakov | Florida International University | FL | USA |
| Jhersie | Cabigting | California State University, East Bay | CA | USA |
| Ian | Campbell | Florida State University | FL | USA |
| Brenna | Cashman | University of Texas, Austin | TX | USA |
| Arka | Chatterjee | Rice University | TX | USA |
| Lilly | Cheek | Florida State University | FL | USA |
| Uchenna | Chinaegbomkpa | Clemson University | SC | USA |
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| George | Christou | University of Florida | FL | USA |
| Judith | Clark | Florida State University | FL | USA |
| Selvan | Demir | Michigan State University | MI | USA |
| Saroshan | Deshapriya | Michigan State University | MI | USA |
| Alexander | Diodati | University of Florida | FL | USA |
| Linda | Doerrer | Boston University | MA | USA |
| Thierry | Dubroca | National High Magnetic Field Laboratory | FL | USA |
| Jessica | Elinburg | Boston University | MA | USA |
| William | Evans | University of California, Irvine | CA | USA |
| Catherine | Fabiano | Florida State University | FL | USA |
| Adiat | Fakolujo | University of Tennessee, Knoxville | TN | USA |
| Ethan | Fisher | University of Florida | FL | USA |
| Natia | Frank | University of Nevada Reno | NV | USA |
| Danna | Freedman | Northwestern University | IL | USA |
| Lucio | Frydman | National High Magnetic Field Laboratory | FL | USA |
| Miguel | Gakiya | Florida State University | FL | USA |
| Subrata | Ghosh | University of Nevada Reno | NV | USA |
| David | Graf | National High Magnetic Field Laboratory | FL | USA |
| Rianna | Greer | Massachusetts Institute of Technology | MA | USA |
| Robert | Griffin | Massachusetts Institute of Technology | MA | USA |
| Brittany | Grimm | Florida State University | FL | USA |

| First Name | Last Name | Organization | State | Country |
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| P. Chris | Hammel | Ohio State University | OH | USA |
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| Adam | Hand | University of Tennessee, Knoxville | TN | USA |
| Neil | Harrison | National High Magnetic Field Laboratory | NM | USA |
| Eduardo | Hernandez-Requejo | Florida State University | FL | USA |
| Stephen | Hill | National High Magnetic Field Laboratory | FL | USA |
| Dewen | Hou | Boise State University | ID | USA |
| Jakub | Hruby | National High Magnetic Field Laboratory | FL | USA |
| Yan-Yan | Hu | Florida State University | FL | USA |
| Natalie | Ibbetson | California State University, East Bay | CA | USA |
| Michael | Jenkins | University of Tennessee, Knoxville | TN | USA |
| Michael | Jensen | Ohio University | OH | USA |
| Dane | Johnson | Massachusetts Institute of Technology | MA | USA |
| Martin | Kirk | University of New Mexico | NM | USA |
| Kirill | Kovnir | Iowa State University | IA | USA |
| Jurek | Krzystek | National High Magnetic Field Laboratory | FL | USA |
| Krishnendu | Kundu | National High Magnetic Field Laboratory | FL | USA |
| Hyunchul | Kwon | University of California, Berkeley | CA | USA |
| Henry | La Pierre | Georgia Institute of Technology | GA | USA |
| Lamahewage Sujeewa | Lamahewage | Iowa State University | IA | USA |
| Inhee | Lee | Ohio State University | OH | USA |
| Jeffrey | Long | University of California, Berkeley | CA | USA |
| Aidan | Lowery | National High Magnetic Field Laboratory | FL | USA |
| Jenica | Lumata | National High Magnetic Field Laboratory | FL | USA |
| Lloyd | Lumata | University of Texas, Dallas | TX | USA |
| Jiaming | Luo | Rice University | TX | USA |
| Amanpreet | Mahmi | University of Tennessee, Knoxville | TN | USA |
| Matthew | Mena | University of Pennsylvania | PA | USA |
| Joshua | Mengel | University of New Mexico | NM | USA |
| Frederic | Mentink | National High Magnetic Field Laboratory | FL | USA |
| Daniel | Mindiola | University of Pennsylvania | PA | USA |
| Hadi | Mohammadigoushki | Florida State University | FL | USA |
| Jacob | Mohar | University of Pennsylvania | PA | USA |
| Dibya | Mondal | Florida State University | FL | USA |
| Ranajit | Mondol | University of Texas, Austin | TX | USA |
| Shawn | Moore | Boston University | MA | USA |
| Danh | Ngo | University of California, Berkeley | CA | USA |
| Quang | Nguyen | Florida State University | FL | USA |
| Lovia | Ofori | University of Texas, El Paso | TX | USA |
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| First Name | Last Name | Organization | State | Country |
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| Brenden | Ortiz | Oak Ridge National Laboratory | TN | USA |
| Yifu | Ouyang | Massachusetts Institute of Technology | MA | USA |
| Ifeoluwa | Oyekunle | Florida State University | FL | USA |
| Andrew | Ozarowski | National High Magnetic Field Laboratory | FL | USA |
| Mykhaylo | Ozerov | National High Magnetic Field Laboratory | FL | USA |
| Ali | Pazoki | Florida State University | FL | USA |
| Dianna | Pledger | Florida State University | FL | USA |
| Yifan | Quan | Massachusetts Institute of Technology | MA | USA |
| Joshua | Queen | University of California, Irvine | CA | USA |
| Michael | Rose | University of Texas, Austin | TX | USA |
| Aaron | Rossini | Iowa State University | IA | USA |
| Aaron | Sadow | Iowa State University | IA | USA |
| Brandon | Sanders | University of Tennessee, Knoxville | TN | USA |
| Govind | Sasi Kumar | Florida State University | FL | USA |
| Robert | Schurko | Florida State University | FL | USA |
| Faith | Scott | National High Magnetic Field Laboratory | FL | USA |
| Kyle | Seabourn | University of Idaho | ID | USA |
| Dmitry | Semenov | National High Magnetic Field Laboratory | FL | USA |
| Michael | Shatruk | National High Magnetic Field Laboratory | FL | USA |
| Javad | Shokraiyan | Ohio University | OH | USA |
| David | Shultz | North Carolina State University | NC | USA |
| Theo | Siegrist | National High Magnetic Field Laboratory | FL | USA |
| Srinivasa Rao | Singamaneni | University of Texas, El Paso | TX | USA |
| Robert | Smith | Florida State University | FL | USA |
| Robert | Smith | National High Magnetic Field Laboratory | FL | USA |
| Robert | Stanton | National High Magnetic Field Laboratory | FL | USA |
| Robert | Stewart | Florida State University | FL | USA |
| Sebastian | Stoian | University of Idaho | ID | USA |
| Geoffrey | Strouse | National High Magnetic Field Laboratory | FL | USA |
| Sanjna | Sukumaran | Rice University | TX | USA |
| Fazel | Tafti | Boston College | MA | USA |
| Joshua | Telser | Roosevelt University | IL | USA |
| Kavipriya | Thangavel | Florida State University | FL | USA |
| Pagnareach | Tin | University of Tennessee, Knoxville | TN | USA |
| Nathan | Tolva | Boston College | MA | USA |
| Léa | Toubiana | Boston University | MA | USA |
| Stanley | Tozer | National High Magnetic Field Laboratory | FL | USA |
| Thao | Tran | Clemson University | SC | USA |
| Yauhen | Tratsiak | University of Tennessee, Knoxville | TN | USA |
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| First Name | Last Name | Organization | State | Country |
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| Sungsool | Wi | National High Magnetic Field Laboratory | FL | USA |
| Grant | Wilkinson | Georgia Institute of Technology | GA | USA |
| Hui | Xiong | Boise State University | IN | USA |
| Ziling | Xue | University of Tennessee, Knoxville | TN | USA |
| Sandugash | Yergeshbayeva | Florida State University | FL | USA |
| Agnes | Yi | Massachusetts Institute of Technology | MA | USA |
| Wen | Zhu | Florida State University | FL | USA |
| Hanyu | Zhu | Rice University | TX | USA |
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## HBT (1 INTERNATIONAL, 23 NATIONAL USERS)

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| Alexander | Donald | University of Florida | FL | USA |
| Rasul | Gazizulin | University of Florida | FL | USA |
| Chengqi | Guo | Pennsylvania State University | PA | USA |
| Tianyi | Han | Massachusetts Institute of Technology | MA | USA |
| Tonghang | Han | Massachusetts Institute of Technology | MA | USA |
| Zahid | Hasan | Princeton University | NJ | USA |
| Md Shafayat | Hossain | Princeton University | NJ | USA |
| Chao | Huan | University of Florida | FL | USA |
| Ke | Huang | Stanford University | CA | USA |
| Long | Ju | Massachusetts Institute of Technology | MA | USA |
| Dominique | Laroche | University of Florida | FL | USA |
| Sangyun | Lee | National High Magnetic Field Laboratory | FL | USA |
| Minseong | Lee | National High Magnetic Field Laboratory | NM | USA |
| Zhengguang | Lu | Massachusetts Institute of Technology | MA | USA |
| Mark | Meisel | University of Florida | FL | USA |
| Chris | Ollmann | University of Florida | FL | USA |
| Allen | Scheie | Los Alamos National Laboratory | NM | USA |
| Nicolas | Silva | University of Florida | FL | USA |
| Andrew | Woods | National High Magnetic Field Laboratory | FL | USA |
| Vivien | Zapf | National High Magnetic Field Laboratory | NM | USA |
| Mingyang | Zheng | University of Florida | FL | USA |
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## ICR (26 INTERNATIONAL, 75 NATIONAL USERS)

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| Patricia | García | National University of Comahue | Argentina |
| Carolina | Mansilla Ferro | National University of Comahue | Argentina |
| Jens | Blotevogel | Commonwealth Scientific and Industrial Research Organization | Australia |
| Wenchao | Lu | Commonwealth Scientific and Industrial Research Organization | Australia |
| Robert | Young | Commonwealth Scientific and Industrial Research Organization | Australia |
| Sommer | Starr | Trent University | Canada |
| Carlos | Afonso | Normandy University | France |
| Brice | Bouyssiere | University of Pau and the Adour Region | France |
| Maxime | Bridoux | French Alternative Energies and Atomic Energy Commission | France |
| German | Gascon | University of Pau and the Adour Region | France |
| Deisy | Giraldo Davila | University of Pau and the Adour Region | France |
| Pierre | Giusti | TotalEnergies | France |
| Julien | Maillard | Versailles Saint-Quentin-en-Yvelines University | France |
| Caroline | Mangote | TotalEnergies | France |
| Charlotte | Mase | University of Rouen | France |
| Christos | Panagiotopoulos | Aix-Marseille University | France |
| Wladimir | Ruiz | Institute of Analytical Sciences and Physical Chemistry for the Environment and Materials | France |
| Helly | Hansen | University of Rostock | Germany |
| Christopher | Rueger | University of Rostock | Germany |
| Ralf | Zimmermann | University of Rostock | Germany |
| Kalliopi | Violaki | Ecole Polytechnique Federale de Lausanne | Switzerland |
| Chiara | Giorio | University of Cambridge | UK |
| Siobhán | Johnson | University of Cambridge | UK |
| Elizabeth | Thomas | British Antarctic Survey | UK |
| Alexander | Zherebker | University of Cambridge | UK |

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| Kaitlyn | Armour | Florida State University | FL | USA |
| Lydia | Babcock-Adams | National High Magnetic Field Laboratory | FL | USA |
| William | Bahureksa | New Mexico State University, Main Campus | NM | USA |
| Greg | Blakney | National High Magnetic Field Laboratory | FL | USA |
| Rene | Boiteau | University of Minnesota, Twin Cities | MN | USA |
| Thomas | Borch | Colorado State University | CO | USA |
| Alyssa | Burns | University of California, Davis | CA | USA |
| Jesse | Canterbury | Thermo Fisher Scientific | VA | USA |
| Peter | Chace | Oregon State University | OR | USA |

| First Name | Last Name | Organization | State | Country |
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| Nicole | Coffey | University of Delaware | DE | USA |
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| Christian | Dewey | Oregon State University | OR | USA |
| Ilana | Farrell | Oregon State University | OR | USA |
| Ryan | Fellers | Northwestern University | IL | USA |
| Nickolas | Fisher | Northwestern University | IL | USA |
| Joseph | Frye-Jones | Woods Hole Oceanographic Institution | MA | USA |
| David | Griffith | Willamette University | OR | USA |
| Kristina | Hakansson | National High Magnetic Field Laboratory | FL | USA |
| Chris | Hendrickson | National High Magnetic Field Laboratory | FL | USA |
| Christopher | Higgins | Colorado School of Mines | CO | USA |
| Michael | Hollas | Northwestern University | IL | USA |
| Amy | Holt | Florida State University | FL | USA |
| Emily | Hughes | National High Magnetic Field Laboratory | FL | USA |
| Jared | Kafader | Northwestern University | IL | USA |
| Nate | Kaiser | National High Magnetic Field Laboratory | FL | USA |
| Nathan | Kaiser | University of Washington | WA | USA |
| Neil | Kelleher | Northwestern University | IL | USA |
| Anne | Kellerman | Florida State University | FL | USA |
| Sung | Kim | Howard University | DC | USA |
| Angela | Knapp | Florida State University | FL | USA |
| Giselle | Knudsen | Alaunus Biosciences, Inc. | CA | USA |
| John | Kornuc | U.S. Naval Research Laboratory | DC | USA |
| Martin | Kurek | Florida State University | FL | USA |
| Parker | Lawrence | University of North Carolina, Wilmington | NC | USA |
| Srinidhi | Lokesh | Colorado State University | CO | USA |
| Sylvia | Long | Florida State University | FL | USA |
| Christian | L'Orange | Colorado State University | CO | USA |
| Rachel | Mackelprang | California State University, Northridge | CA | USA |
| THomas | Manning | Valdosta State University | GA | USA |
| Alan | Marshall | National High Magnetic Field Laboratory | FL | USA |
| Amy | McKenna | National High Magnetic Field Laboratory | FL | USA |
| Shane | Meyer | Florida State University | FL | USA |
| Neven | Mikawy | National High Magnetic Field Laboratory | FL | USA |
| Robert | Nelson | Woods Hole Oceanographic Institution | MA | USA |
| Adam | Norris | Colorado State University | CO | USA |
| Nasim | Pica | Colorado State University | CO | USA |
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| First Name | Last Name | Organization | State | Country |
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| John | Quinn | National High Magnetic Field Laboratory | FL | USA |
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| Clare | Reimers | Oregon State University | OR | USA |
| Ryan | Rodgers | National High Magnetic Field Laboratory | FL | USA |
| Holly | Roth | Colorado State University | CO | USA |
| Jacob | Schmidt | University of California, Santa Barbara | CA | USA |
| Michael | Senko | Thermo Fisher Scientific | VA | USA |
| Hamidreza | Sharifan | Colorado State University | CO | USA |
| Alexandre | Shvartsburg | Wichita State University | KS | USA |
| Cheolho | Sim | Baylor University | TX | USA |
| Alexis | Slentz | Florida State University | FL | USA |
| Robert | Spencer | Florida State University | FL | USA |
| Jonathen | Taye | Florida State University | FL | USA |
| Hayden | Thurman | Wichita State University | KS | USA |
| Bradley | Tolar | University of North Carolina, Wilmington | NC | USA |
| Jillian | Torres | Florida State University | FL | USA |
| Maria | Tzortziou | City College of New York | NY | USA |
| Dave | Valentine | University of California, Santa Barbara | CA | USA |
| Jacob | VanderRoest | Colorado State University | CO | USA |
| Chad | Weisbrod | National High Magnetic Field Laboratory | FL | USA |
| Rachel | White | National High Magnetic Field Laboratory | FL | USA |
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## NMR (69 INTERNATIONAL, 201 NATIONAL USERS)

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| David | Bryce | University of Ottawa | Canada |
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| Danielle | Laurencin | University of Montpellier | France |
| César | Leroy | French National Center for Scientific Research | France |
| Michal | Leskes | Weizmann Institute of Science | Israel |
| Kirill | Levin | McGill University | Canada |
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| Zhencai | Li | Aalborg University | Denmark |
| Mi Hee | Lim | Korea Advanced Institute of Science & Technology | South Korea |
| Nitzan | Livni | Weizmann Institute of Science | Israel |
| Anika | Mauel | University of Bayreuth | Germany |
| Jose | Mejia-Aleman | National Autonomous University of Mexico | Mexico |
| Thomas-Xavier | Métro | Institut des Biomolécules Max Mousseron | France |
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| Olivier | Ouari | Aix-Marseille University | France |
| Bijaylaxmi | Patra | Center of Biomedical Research | India |
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| Vivek | Polshettiwar | Tata Institute of Fundamental Research | India |
| Nikita | Rao | Indian Institute of Science, Bengaluru | India |
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| Daniel | Rettenwander | Norwegian University of Science and Technology | Norway |
| Allan | Rey | Apotex Pharmachem Inc. | Canada |
| Lizbeth | Rodriguez-Cortes | National Autonomous University of Mexico | Mexico |
| Braulio | Rodríguez-Molina | National Autonomous University of Mexico | Mexico |
| Muniyandi | Sankaralingam | National Institute of Technology Calicut | India |
| Vincent | Sarou-Kanian | French National Center for Scientific Research | France |
| Lothar | Schad | Heidelberg University | Germany |
| Juergen | Senker | University of Bayreuth | Germany |
| Snorri | Sigurdsson | University of Iceland | Iceland |
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| Neeraj | Sinha | Center of Biomedical Research | India |
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| Jessica | Spackova | University of Montpellier | France |
| Alexander | Stirk | Apotex Pharmachem Inc. | Canada |
| Rishi | Verma | Tata Institute of Fundamental Research | India |
| Ancy | Wilson | University of Iceland | Iceland |
| Gang | Wu | Queen's University at Kingston | Canada |
| Jiabin | Xu | University of Western Ontario | Canada |
| Yuanzheng | Yue | Aalborg University | Denmark |
| Dominik | Zehender | Heidelberg University | Germany |
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| First Name | Last Name | Organization Name | State | Country |
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| Arshia | Arbabian | Florida State University | FL | USA |
| Jacob | Athey | Florida State University | FL | USA |
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| Yoongyeong | Baek | Drexel University | PA | USA |
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| Brenton | Cooper | Texas Christian University | TX | USA |
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| Samuel | Eddy | West Virginia University | WV | USA |
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| Catherine | Fabiano | Florida State University | FL | USA |
| Michael | Famiano | Western Michigan University | MI | USA |
| Jiaxing | Fan | Florida State University | FL | USA |
| Carl | Fleischer | Florida State University | FL | USA |
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| Evan | Goodell | College of William and Mary | VA | USA |
| Petr | Gor'kov | National High Magnetic Field Laboratory | FL | USA |
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| Terry | Gullion | West Virginia University | WV | USA |
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| Sossina | Haile | Northwestern University | IL | USA |
| Naomi | Halas | Rice University | TX | USA |
| Daniel | Hallinan | Florida State University | FL | USA |
| Michael | Harrington | Huntington Medical Research Institutes | CA | USA |
| Maham | Hasib | Harvard University | MA | USA |
| Shannon | Helsper | National High Magnetic Field Laboratory | FL | USA |
| David | Hike | Florida State University | FL | USA |
| Samuel | Holder | Florida State University | FL | USA |
| Sean | Holmes | Florida State University | FL | USA |
| Yan-Yan | Hu | Florida State University | FL | USA |
| Xingkang | Huang | University of Chicago | IL | USA |
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| Sonjong | Hwang | California Institute of Technology | CA | USA |
| Ethan | Iaia | University of Alabama, Tuscaloosa | AL | USA |
| Stephan | Irle | Oak Ridge National Laboratory | TN | USA |
| Robert | Irving | East Carolina University | NC | USA |
| Robbie | Iuliucci | Washington and Jefferson College | PA | USA |
| Magdalena | Ivanova | University of Michigan | MI | USA |
| Richard | Jeske | Florida State University | FL | USA |
| Zhihua | Jiang | Auburn University | AL | USA |
| Yongkang | Jin | Florida State University | FL | USA |
| Brandon | Johnson | Washington and Jefferson College | PA | USA |
| Gang Seob | Jung | Oak Ridge National Laboratory | TN | USA |
| Seungwoo | Kang | Augusta University | GA | USA |
| Kristen | Kelsall | University of Michigan | MI | USA |
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| Hahnsung | Kim | Emory University | GA | USA |
| James | Kimball | Florida State University | FL | USA |

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| Jason | Kuszynski | Florida State University | FL | USA |
| Sierra | Kuzak | Washington and Jefferson College | PA | USA |
| Dominique | Lagasca | University of Texas, Southwestern | TX | USA |
| Fan | Lam | University of Illinois at Urbana-Champaign | IL | USA |
| Lamahewage Sujeewa | Lamahewage | Iowa State University | IA | USA |
| Edgar | Lara-Curzio | Oak Ridge National Laboratory | TN | USA |
| Myungwoon | Lee | Drexel University | PA | USA |
| Choogon | Lee | Florida State University | FL | USA |
| Cathy | Levenson | Florida State University | FL | USA |
| Xin | Li | Harvard University | MA | USA |
| Jingyao | Li | Washington University in St. Louis | MO | USA |
| Kwang Hun | Lim | East Carolina University | NC | USA |
| Feng | Lin | Virginia Polytechnic Institute and State University | VA | USA |
| Ilya | Litvak | National High Magnetic Field Laboratory | FL | USA |
| Joanna | Long | University of Florida | FL | USA |
| Aidan | Lowery | National High Magnetic Field Laboratory | FL | USA |
| Marcella | Lusardi | Princeton University | NJ | USA |
| Alex | Markunas | Washington and Jefferson College | PA | USA |
| Roxanna | Martinez | Colorado State University | CO | USA |
| Jonathan | Mathews | Pennsylvania State University | PA | USA |
| Hedi | Mattoussi | Florida State University | FL | USA |
| William | McCall | Augusta University | GA | USA |
| Sam | McCalpin | Florida State University | FL | USA |
| Stephen | McGill | National High Magnetic Field Laboratory | FL | USA |
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| Matthew | Merritt | University of Florida | FL | USA |
| Gellert | Mezei | Western Michigan University | MI | USA |
| Jiashan | Mi | Iowa State University | IA | USA |
| John | Miller | Western Michigan University | MI | USA |
| Hadi | Mohammadi-goushki | Florida State University | FL | USA |
| Tim | Murphy | National High Magnetic Field Laboratory | FL | USA |
| Dylan | Murray | University of Connecticut | CT | USA |
| Nhung | Nguyen | Washington and Jefferson College | PA | USA |
| Ryan | O’Hayre | Colorado School of Mines | CO | USA |
| Bright | Ogbolu | Florida State University | FL | USA |
| Jordan | Ogg | Florida State University | FL | USA |
| Pawan | Ojha | Florida State University | FL | USA |
| Ogaga | Okedi | Florida State University | FL | USA |
| Raul | Ortega | Florida State University | FL | USA |
| Peyton | Osborn | Florida State University | FL | USA |

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| Tyler | Ozvat | Colorado State University | CO | USA |
| Chloe | Patterson | Florida State University | FL | USA |
| Ali | Pazoki | Florida State University | FL | USA |
| Qingqing (Emily) | Peng | University of Florida | FL | USA |
| Linda | Petzold | University of California, Santa Barbara | CA | USA |
| Adam | Phillips | University of Buffalo | NY | USA |
| Jack | Potasiewicz | Washington and Jefferson College | PA | USA |
| Andy | Powell | National High Magnetic Field Laboratory | FL | USA |
| Jeff | Procida | Florida State University | FL | USA |
| Wei | Qiang | State University of New York, Binghamton | NY | USA |
| Rosalynn | Quiñones | Marshall University | WV | USA |
| Jenna | Radovich | Florida State University | FL | USA |
| Ayyalusamy | Ramamoorthy | Florida State University | FL | USA |
| Peter | Rassolov | Florida State University | FL | USA |
| Dayna | Richter | Florida State University | FL | USA |
| Valentin | Rodionov | Case Western Reserve University | OH | USA |
| Aaron | Rossini | Iowa State University | IA | USA |
| Anamika | Roy | Florida State University | FL | USA |
| Mandip | Sachdeva | Florida Agricultural and Mechanical University | FL | USA |
| Jhinuk | Saha | National High Magnetic Field Laboratory | FL | USA |
| Stephanie | Sanchez | Colorado State University | CO | USA |
| Jazmine | Sanchez | Florida State University | FL | USA |
| Victor | Schepkin | National High Magnetic Field Laboratory | FL | USA |
| Jasmin | Schoenzart | Florida State University | FL | USA |
| Robert | Schurko | Florida State University | FL | USA |
| Alfredo | Scigliani | Florida State University | FL | USA |
| Faith | Scott | National High Magnetic Field Laboratory | FL | USA |
| Sabyasachi | Sen | University of California, Davis | CA | USA |
| Changgyu | Seok | Virginia Polytechnic Institute and State University | VA | USA |
| Gaurav | Sharma | University of Florida | FL | USA |
| Yewon | Shin | Colorado School of Mines | CO | USA |
| James | Shogren-Harris | University of Alabama, Tuscaloosa | AL | USA |
| Theo | Siegrist | National High Magnetic Field Laboratory | FL | USA |
| Kalpana | Singh | Michigan State University | MI | USA |
| Robert | Smith | Florida State University | FL | USA |
| Robert | Smith | National High Magnetic Field Laboratory | FL | USA |
| Julia | Smith | National High Magnetic Field Laboratory | FL | USA |
| Upasana | Sridharan | University of California, Davis | CA | USA |
| Geoffrey | Strouse | National High Magnetic Field Laboratory | FL | USA |
| Phillip | Sun | Emory University | GA | USA |

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| Sara | Termos | Florida State University | FL | USA |
| Lynmarie | Thompson | University of Massachusetts | MA | USA |
| Fang | Tian | Pennsylvania State University | PA | USA |
| Erica | Truong | Florida State University | FL | USA |
| Okten | Ungor | Colorado State University | CO | USA |
| Johan | van Tol | National High Magnetic Field Laboratory | FL | USA |
| Amrit | Venkatesh | University of Virginia | VA | USA |
| Cameron | Vojvodin | Florida State University | FL | USA |
| Liliya | Vugmeyster | University of Colorado, Denver | CO | USA |
| Katherine | Wahlbeck | University of Massachusetts | MA | USA |
| Tuo | Wang | Michigan State University | MI | USA |
| Sungsool | Wi | National High Magnetic Field Laboratory | FL | USA |
| Aaron | Wilber | Florida State University | FL | USA |
| Ren | Wiscons | Amherst College | MA | USA |
| Yuuki | Wittmer | University of California, Davis | CA | USA |
| Hui | Xiong | Boise State University | IN | USA |
| Christine | Yu | Florida State University | FL | USA |
| Xuegang | Yuan | Florida State University | FL | USA |
| Bing | Yuan | University of California, Davis | CA | USA |
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| Joseph | Zadrozny | Ohio State University | OH | USA |
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| Lin Er | Chow | National University of Singapore | Singapore |
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| Amit | Nathwani | Institute of Science and Technology Austria | Austria |
| Muhammad | Nauman | Institute of Science and Technology Austria | Austria |
| Carsten | Putzke | University of Bristol | UK |
| Susannah | Speller | University of Oxford | UK |
| Hanna | Swiatek | Gdansk University of Technology | Poland |
| Felix | Trier | Technical University of Denmark | Denmark |
| James | Tufnail | University of Oxford | UK |
| Bartlomiej | Wiendlocha | AGH University of Science and Technology | Poland |
| Michal | Winiarski | Gdansk University of Technology | Poland |
| Piotr | Wisniewski | Institute of Low Temperature and Structure Research, Polish Academy of Sciences | Poland |
| Choongjae | Won | Pohang University of Science and Technology | South Korea |
| King Yau | Yip | National University of Singapore | Singapore |
| Valeska | Zambra | Institute of Science and Technology Austria | Austria |

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| Luis | Balicas | National High Magnetic Field Laboratory | FL | USA |
| Alimamy | Bangura | National High Magnetic Field Laboratory | FL | USA |
| Anand | Bhattacharya | Argonne National Laboratory | IL | USA |
| Joanna | Blawat | National High Magnetic Field Laboratory | NM | USA |
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| Ivan | Bozovic | Brookhaven National Laboratory | NY | USA |
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| Nicholas | Butch | National Institute of Standards and Technology MD | MD | USA |
| Volodymyr | Buturlim | Idaho National Laboratory | ID | USA |
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| Chuan | Chang | Cornell University | NY | USA |
| Cui-Zu | Chang | Pennsylvania State University | PA | USA |
| Joseph | Checkelsky | Massachusetts Institute of Technology | MA | USA |
| Alan | Chen | Massachusetts Institute of Technology | MA | USA |
| Kuan-Wen | Chen | University of Michigan | MI | USA |
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| Jimy | Encomendero | Cornell University | NY | USA |
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| David | Graf | National High Magnetic Field Laboratory | FL | USA |
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| Patrick | Lee | Massachusetts Institute of Technology | MA | USA |
| Minseong | Lee | National High Magnetic Field Laboratory | NM | USA |
| Eric | Lee-Wong | University of California, San Diego | CA | USA |
| Sylvia | Lewin | University of Maryland, College Park | MD | USA |
| Lu | Li | University of Michigan | MA | USA |
| Jinyu | Liu | University of California, Irvine | CA | USA |
| Wenhao | Liu | University of Texas, Dallas | TX | USA |
| Jeffrey | Long | University of California, Berkeley | CA | USA |
| Bing | Lv | University of Texas, Dallas | TX | USA |
| Yuanqi | Lyu | University of California, Berkeley | CA | USA |
| Boris | Maiorov | National High Magnetic Field Laboratory | NM | USA |
| David | Mandrus | University of Tennessee, Knoxville | TN | USA |
| Brian | Maple | University of California, San Diego | CA | USA |
| Ross | McDonald | National High Magnetic Field Laboratory | NM | USA |
| Robert | McQueeney | Ames Laboratory | IA | USA |

| First Name | Last Name | Organization | State | Country |
|---|---|---|---|---|
| Christopher | Mizzi | National High Magnetic Field Laboratory | NM | USA |
| Emilia | Morosan | Rice University | TX | USA |
| Ajeesh | Mukkattu Omanakuttan | Los Alamos National Laboratory | NM | USA |
| Janice | Musfeldt | University of Tennessee, Knoxville | TN | USA |
| Vikram | Nagarajan | University of California, Berkeley | CA | USA |
| Paul | Neves | Massachusetts Institute of Technology | MA | USA |
| Doan | Nguyen | National High Magnetic Field Laboratory | NM | USA |
| Martin | Nikolo | Saint Louis University | MO | USA |
| Gary | Noe | National High Magnetic Field Laboratory | NM | USA |
| Chris | Palmstrom | University of California, Santa Barbara | CA | USA |
| Johanna | Palmstrom | National High Magnetic Field Laboratory | NM | USA |
| Jun | Park | Los Alamos National Laboratory | NM | USA |
| William | Peria | Los Alamos National Laboratory | NM | USA |
| Michael | Pettes | Los Alamos National Laboratory | NM | USA |
| Lucas | Pressley | Johns Hopkins University | MD | USA |
| Luke | Pritchard Cairns | University of California, Berkeley | CA | USA |
| Ruslan | Prozorov | Ames Laboratory | IA | USA |
| Brad | Ramshaw | Cornell University | NY | USA |
| Sheng | Ran | Washington University in St. Louis | MO | USA |
| Karthik | Rao | Rice University | TX | USA |
| Sabin | Regmi | Idaho National Laboratory | ID | USA |
| Vikas | Saini | Los Alamos National Laboratory | NM | USA |
| Gicela | Saucedo Salas | University of Maryland, College Park | MD | USA |
| Allen | Scheie | Los Alamos National Laboratory | NM | USA |
| Arkady | Shehter | National High Magnetic Field Laboratory | NM | USA |
| John | Singleton | National High Magnetic Field Laboratory | NM | USA |
| Tyler | Slade | Ames Laboratory | IA | USA |
| G. Alexander | Smith | Los Alamos National Laboratory | NM | USA |
| Kevin | Smith | University of Tennessee, Knoxville | TN | USA |
| Makariy | Tanatar | Ames Laboratory | IA | USA |
| Sean | Thomas | Los Alamos National Laboratory | NM | USA |
| Benjamin | Ueland | Ames Laboratory | IA | USA |
| Dung | Vu | Yale University | CT | USA |
| Joshua | Wakefield | Massachusetts Institute of Technology | MA | USA |
| Frederick | Walker | Yale University | CT | USA |
| Linlin | Wang | Ames Laboratory | IA | USA |
| Wenzheng | Wei | Yale University | CT | USA |
| Laurel | Winter | National High Magnetic Field Laboratory | NM | USA |
| Ziji | Xiang | University of Michigan | MI | USA |
| Huili | Xing | Cornell University | NY | USA |
| Kohtaro | Yamakawa | University of California, Berkeley | CA | USA |
| Junjie | Yang | New Jersey Institute of Technology | NJ | USA |

| First Name | Last Name | Organization | State | Country |
|---|---|---|---|---|
| Hemian | Yi | Pennsylvania State University | PA | USA |
| David | Young | Louisiana State University | LA | USA |
| Vivien | Zapf | National High Magnetic Field Laboratory | NM | USA |
| Dechen | Zhang | University of Michigan | MI | USA |
| Shengzhi | Zhang | National High Magnetic Field Laboratory | NM | USA |
| Yi-Fan | Zhao | Pennsylvania State University | PA | USA |
| Guoxin | Zheng | University of Michigan | MI | USA |
| Haidong | Zhou | University of Tennessee, Knoxville | TN | USA |
| Yuan | Zhu | University of Michigan | MI | USA |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sandra Loesgen (S)** | **PI** | **University of Florida** | **Chemistry** | NSF | IOS - Integrative Organismal Systems | IOS2124120 | P19658 | Structural characterization of novel microbial metabolites and their biological activity | Chemistry | 1 | 25.5 |
| Grace Dyer (G) | C | University of Florida | Whitney Laboratory for Marine Bioscience | NSF | IOS - Integrative Organismal Systems | IOS2314456 | | | | | |
| Sajan Green (G) | C | University of Florida | Whitney Laboratory for Marine Bioscience | | | | | | | | |
| Joseph Mangun (G) | C | University of Florida | Whitney Laboratory for Marine Bioscience | | | | | | | | |
| Erin Marshall (G) | C | University of Florida | Whitney Lab | | | | | | | | |
| Federica Montesanto (P) | C | University of Florida | Whitney Lab | | | | | | | | |
| Bastien Petit (P) | C | University of Florida | Whitney Lab | | | | | | | | |
| James Rocca (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| **Bill Baker (S)** | **PI** | **University of South Florida** | **Chemistry** | NSF | OPP - Office of Polar Programs | OPP2341344 | P19767 | Natural Product Drug Discovery for Infectious Diseases and the need for High-Sensitivity NMR Equipment | Biology, Biochemistry, Biophysics | 1 | 3 |
| Sam Afoullouss (P) | C | University of South Florida | USF Chemistry | | | | | | | | |
| Ezequiel Cruz Rosa (G) | C | University of South Florida | Chemistry | | | | | | | | |
| Stine Sofie Olsen (G) | C | University of South Florida | USF Chemistry | | | | | | | | |
| Nathaniel Schmidt (G) | C | University of South Florida | Chemistry | | | | | | | | |
| Benjamin Smith (G) | C | University of South Florida | Chemistry | | | | | | | | |
| Jennifer Williams (G) | C | University of South Florida | USF Chemistry | | | | | | | | |
| **Libin Ye (S)** | **PI** | **University of South Florida** | **Cell Biology, Microbiology and Molecular Biology** | No other support | | | P19783 | Conformational transition, dynamics, and signaling transductions of GPCRs | Biology, Biochemistry, Biophysics | 1 | 11 |
| German De Armas Guitart (T) | C | University of South Florida | Molecular Biosciences | | | | | | | | |
| Malissa Fento (P) | C | University of South Florida | Molecular Biosciences | | | | | | | | |
| Nathaniel Hays (S) | C | University of South Florida | Molecular Biosciences | | | | | | | | |
| Aidan McFarland (S) | C | University of South Florida | Molecular Biosciences | | | | | | | | |
| Wenkai Sun (S) | C | University of South Florida | Molecular Biosciences | | | | | | | | |
| Xudong Wang (S) | C | University of South Florida | Molecular Biosciences | | | | | | | | |
| **Michael Harris (S)** | **PI** | **University of Florida** | **Chemistry** | NIH | NIGMS - National Institute of General Medical Sciences | GM127100 | P19877 | ML-HARRIS-002: NMR Spectroscopic Characterization of Protein-Polymer Conjugates in Aqueous Solutions | Biology, Biochemistry, Biophysics | 1 | 8 |
| Coray Colina (S) | C | University of Florida | Chemistry | NSF | DMR - Division of Materials Research | DMR2339330 | | | | | |
| Sreyashi Das (G) | C | University of Florida | Chemistry | | | | | | | | |
| Matthew Eddy (S) | C | University of Florida | Chemistry | | | | | | | | |
| Guillaume Ferre' (S) | C | Paul Sabatier University, Toulouse | Institut de Pharmacologie et Biologie Structurale | | | | | | | | |
| Emma Mulry (G) | C | University of Florida | Chemistry | | | | | | | | |
| Brent Sumerlin (S) | C | University of Florida | Chemistry | | | | | | | | |
| **Rachel Martin (S)** | **PI** | **University of California, Irvine** | **Chemistry** | NSF | DMR - Division of Materials Research | DMR2003837 | P19974 | ML-MARTIN-001: Characterizing the dynamics of deamidation variants of human gamma-S crystallin to elucidate aggregation mechanisms | Biology, Biochemistry, Biophysics | 1 | 35.17 |
| Maria Luiza Caldas Nogueira (S) | C | University of Florida | AMRIS | NIH | NEI - National Eye Institute | EY035792 | | | | | |
| Matthew Jimenez (G) | C | University of California, Irvine | Chemistry | | | | | | | | |
| Anil Mehta (S) | C | University of Florida | AMRIS | | | | | | | | |
| Mina Mozafari (P) | C | University of California, Irvine | Chemistry | | | | | | | | |
| Megan Rocha (G) | C | University of California, Irvine | Chemistry | | | | | | | | |
| Collin Sroge (G) | C | University of California, Irvine | Molecular Biology and Biochemistry | | | | | | | | |
| Jaewon Suk (G) | C | University of California, Irvine | Chemistry | | | | | | | | |
| **Daniel R. Talham (S)** | **PI** | **University of Florida** | **Chemistry** | University of Florida | US College and University | UFRF Research Support 00085603 | P20026 | Self-Assembled Polymer Nanostructures as paraCEST MRI Contrast Agents | Chemistry | 1 | 10 |
| Diba Allameh Zadeh (G) | C | University of Florida | Chemistry | | | | | | | | |
| Camille Green (U) | C | University of Florida | Chemistry | | | | | | | | |
| Brent Sumerlin (S) | C | University of Florida | Chemistry | | | | | | | | |
| **Johnny Figueroa (S)** | **PI** | **Loma Linda University** | **Center for Health Disparities and Molecular Medicine** | NIH | NIDDK - National Institute of Diabetes and Digestive and Kidney Diseases | DK124727 | P20078 | Neuroanatomic Abnormalities In Stress-Induced Obesity | Biology, Biochemistry, Biophysics | 1 | 2.33 |
| James H.P. Collins (O) | C | University of Florida | Biochemistry & Molecular Biology | | | | | | | | |
| Ike de la Pena (S) | C | Loma Linda University | Pharmaceutical & Administrative Sciences | | | | | | | | |
| Marcelo Febo (S) | C | University of Florida | Psychiatry | | | | | | | | |
| Amandine Jullienne (P) | C | University of California, Irvine | Pediatrics, Anatomy & Neurobiology | | | | | | | | |
| Brenda Patricia Noarbe (T) | C | University of California, Irvine | Pediatrics | | | | | | | | |
| Andre Obenaus (S) | C | University of California, Irvine | Pediatrics | | | | | | | | |
| Fransua Sharafeddin (G) | C | Loma Linda University | Basic Sciences, Physiology | | | | | | | | |
| Julio Sierra (G) | C | Loma Linda University | Basic Sciences, Neuroscience | | | | | | | | |
| Timothy Simon (U) | C | Loma Linda University | Neuroscience | | | | | | | | |
| **Malisa Sarntinoranont (S)** | **PI** | **University of Florida** | **unknown** | NIH | NCI - National Cancer Institute | CA012185 | P20171 | Multi-modal approach to probe tumor-induced perivascular space disruption | Biology, Biochemistry, Biophysics | 1 | 13.33 |
| Thomas Mareci (S) | C | University of Florida | Biochemistry and Molecular Biology | | | | | | | | |
| Jennifer Munson (S) | C | Virginia Polytechnic Institute and State University | Biomedical Engineering and Mechanics | | | | | | | | |
| Isabel Rivera Santiago (G) | C | University of Florida | Mechanical Engineering | | | | | | | | |
| **Thomas Mareci (S)** | **PI** | **University of Florida** | **Biochemistry and Molecular Biology** | No other support | | | P20193 | Cryocooled X-nucleus Coil | Biology, Biochemistry, Biophysics | 1 | 5 |
| Warren Boschen (U) | C | University of Florida | Physics | | | | | | | | |
| William Brey (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Greg Dowling (O) | C | University of Florida | AMRIS Facility | | | | | | | | |
| Massimo Graves (U) | C | University of Florida | UF Department of Neuroscience | | | | | | | | |
| Matthew Merritt (S) | C | University of Florida | Biochemistry and Molecular Biology | | | | | | | | |
| Jeremy Thomas (P) | C | University of Florida | Biochemistry and Molecular Biology | | | | | | | | |
| Elizabeth Vo (G) | C | Malcom Randall VA Medical Center | Biomedical | | | | | | | | |
| Huadong Zeng (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dionisios Vlachos (S)** | **PI** | **University of Delaware** | **Chemical and Biomolecular Engineering** | Center for Plastics Innovation, an Energy Frontier Research Center funded by the US Dept. of Energy, Office of Science, Office of Basic Energy Sciences | US Ministry | DE-SC0021166 | P20204 | Diffusion of long-chain alkanes as model molecules for polyethylene diffusion through mesoporous aluminosilicates | Engineering | 1 | 2 |
| Sean Najmi (P) | C | University of Delaware | Chemical Engineering | | | | | | | | |
| Christine Oberhausen (G) | C | University of Delaware | Chemical and Biomolecular Engineering | | | | | | | | |
| Esun Selvam (G) | C | University of Delaware | Chemical and Biomolecular Engineering | | | | | | | | |
| **Ryan Lively (S)** | **PI** | **Georgia Institute of Technology** | **School of Chemical & Biomolecular Engineering,** | NSF | CBET - Chemical, Bioengineering, Environmental, and Transport Systems | CBET2135662 | P20207 | Quantifying Microscopic Liquid Diffusion inside Carbon Molecular Sieve Membranes | Engineering | 1 | 38.5 |
| Rebecca Bivins (G) | C | Georgia Institute of Technology | Chemical and Biomolecular Engineering | NSF | CBET - Chemical, Bioengineering, Environmental, and Transport Systems | CBET2135766 | | | | | |
| Sree Laxmi (G) | C | University of Florida | Chemical Engineering Department | | | | | | | | |
| Joshua Moon (S) | C | University of Florida | Department of Chemical Engineering | | | | | | | | |
| Sergey Vasenkov (S) | C | University of Florida | Chemical Engineering | | | | | | | | |
| Young Hee Yoon (G) | C | Georgia Institute of Technology | School of Chemical & Biomolecular Engineering | | | | | | | | |
| **Zachary Smith (S)** | **PI** | **Massachusetts Institute of Technology** | **Chemical Engineering** | NSF | CBET - Chemical, Bioengineering, Environmental, and Transport Systems | CBET2034734 | P20299 | Microscopic Gas Diffusion inside Hybrid Membranes Formed by Dispersing Metal–Organic Framework of the Type UiO-66-NH2 in Polymers | Biology, Biochemistry, Biophysics | 1 | 19.5 |
| Omar Boloki (G) | C | University of Florida | Chemical Engineering | NSF | CBET - Chemical, Bioengineering, Environmental, and Transport Systems | CBET2034742 | | | | | |
| Stephen DeWitt (P) | C | Massachusetts Institute of Technology | Chemical Engineering | | | | | | | | |
| Eric Hahnert (G) | C | Massachusetts Institute of Technology | Chemical Engineering | | | | | | | | |
| Philippe Jean-Baptiste (G) | C | Massachusetts Institute of Technology | Chemical Engineering | | | | | | | | |
| Samuel Kaser (G) | C | Massachusetts Institute of Technology | Chemical Engineering | | | | | | | | |
| Sree Laxmi (G) | C | University of Florida | Chemical Engineering Department | | | | | | | | |
| Justin Teesdale (P) | C | Massachusetts Institute of Technology | Chemical Engineering | | | | | | | | |
| Sergey Vasenkov (S) | C | University of Florida | Chemical Engineering | | | | | | | | |
| **Jeannine Brady (S)** | **PI** | **University of Florida** | **Oral Biology** | NIH | NIDCR - National Institute of Dental and Craniofacial Research | DE021789 | P20327 | ML-BRADY-003: AMRIS components of NMR Facility's P20106 | Biology, Biochemistry, Biophysics | 1 | 57.17 |
| Maria Luiza Caldas Nogueira (S) | C | University of Florida | AMRIS | | | | | | | | |
| Joanna Long (S) | C | University of Florida | Biochemistry & Molecular Biology | | | | | | | | |
| Chase Norton (T) | C | University of Florida | UF Biochemistry | | | | | | | | |
| Qingqing (Emily) Peng (G) | C | University of Florida | Department of Biochemistry and Molecular Biology | | | | | | | | |
| **Jehangir Bhadha (S)** | **PI** | **Everglades Research and Education Center at UF** | **Soil, Water, and Ecosystem Sciences** | NSF | CBET - Chemical, Bioengineering, Environmental, and Transport Systems | CBET2019435 | P20339 | Unlocking legacy phosphorus from soils and sediments to meet agricultural demand and a healthy environment. | Biology, Biochemistry, Biophysics | 1 | 4.5 |
| A. Caroline Buchanan (G) | C | University of Florida | Ag - Soil and Water Science | | | | | | | | |
| Jonathan Judy (S) | C | University of Florida | Soil and Water Sciences | | | | | | | | |
| MD Anik Mahmud (G) | C | University of Florida | Soil, Water, and Ecosystem Sciences | | | | | | | | |
| **Joanna Long (S)** | **PI** | **University of Florida** | **Biochemistry & Molecular Biology** | No other support | | | P20343 | MAINTENANCE: Routine maintenance of existing AMRIS Facility equipment (formerly P09510, P17541, P19543) | Development of Magnet Technology | 1 | 309.33 |
| James H.P. Collins (O) | C | University of Florida | Biochemistry & Molecular Biology | | | | | | | | |
| Greg Dowling (O) | C | University of Florida | AMRIS Facility | | | | | | | | |
| Kelly Jenkins (T) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| Anil Mehta (S) | C | University of Florida | AMRIS | | | | | | | | |
| James Rocca (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| Joshua Slade (T) | C | University of Florida | AMRIS | | | | | | | | |
| Huadong Zeng (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| **Joanna Long (S)** | **PI** | **University of Florida** | **Biochemistry & Molecular Biology** | No other support | | | P20345 | MLDEV-Setup: training new users, workshops, updating cortab, prosol tables, or shim files (formerly P17542 and P19554) | Development of Magnet Technology | 1 | 87.83 |
| James H.P. Collins (O) | C | University of Florida | Biochemistry & Molecular Biology | | | | | | | | |
| Greg Dowling (O) | C | University of Florida | AMRIS Facility | | | | | | | | |
| Anil Mehta (S) | C | University of Florida | AMRIS | | | | | | | | |
| James Rocca (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| Huadong Zeng (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| **Joanna Long (S)** | **PI** | **University of Florida** | **Biochemistry & Molecular Biology** | No other support | | | P20346 | MLDEV-Method: setting up new protocols or pulse sequences; preliminary characterization of samples for feasibility | Development of Magnet Technology | 1 | 56.17 |
| James H.P. Collins (O) | C | University of Florida | Biochemistry & Molecular Biology | | | | | | | | |
| Anil Mehta (S) | C | University of Florida | AMRIS | | | | | | | | |
| Matthew Merritt (S) | C | University of Florida | Biochemistry and Molecular Biology | | | | | | | | |
| James Rocca (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| Huadong Zeng (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| **Joanna Long (S)** | **PI** | **University of Florida** | **Biochemistry & Molecular Biology** | No other support | | | P20347 | MLDEV-Repair: work on magnets, replacing broken amplifiers, troubleshooting consoles, tracking down the source of a problem | Development of Magnet Technology | 1 | 69.17 |
| James H.P. Collins (O) | C | University of Florida | Biochemistry & Molecular Biology | | | | | | | | |
| Greg Dowling (O) | C | University of Florida | AMRIS Facility | | | | | | | | |
| Kelly Jenkins (T) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| Anil Mehta (S) | C | University of Florida | AMRIS | | | | | | | | |
| James Rocca (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| Joshua Slade (T) | C | University of Florida | AMRIS | | | | | | | | |
| Huadong Zeng (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| **Joanna Long (S)** | **PI** | **University of Florida** | **Biochemistry & Molecular Biology** | No other support | | | P20348 | MLDEV-Hardware: installation, calibration, and testing of new probes, consoles, amplifiers, gradients | Development of Magnet Technology | 1 | 95.5 |
| James H.P. Collins (O) | C | University of Florida | Biochemistry & Molecular Biology | | | | | | | | |
| Greg Dowling (O) | C | University of Florida | AMRIS Facility | | | | | | | | |
| Kelly Jenkins (T) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| Anil Mehta (S) | C | University of Florida | AMRIS | | | | | | | | |
| Matthew Merritt (S) | C | University of Florida | Biochemistry and Molecular Biology | | | | | | | | |
| James Rocca (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |
| Joshua Slade (T) | C | University of Florida | AMRIS | | | | | | | | |
| Huadong Zeng (S) | C | University of Florida | AMRIS Affiliated Faculty & Staff | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Jason Bara (S)** | **PI** | * | **University of Alabama, Tuscaloosa** | **Department of Chemical and Biological Engineering** | NSF | CBET - Chemical, Bioengineering, Environmental, and Transport Systems | CBET2312001 | P20361 | Quantification of Microscopic Gas Diffusion in Doubly-Segmented (DS) Ionene Membranes by PFG NMR | Engineering | 1 | 44.5 |
| Mousumi Bepari (G) | C | | University of Alabama, Tuscaloosa | Chemical Engineering | | | | | | | | |
| Katie O'Harra (S) | C | | University of Alabama, Tuscaloosa | Department of Chemical and Biological Engineering | | | | | | | | |
| Sandhiya Thiagarajan (P) | C | | University of Alabama, Tuscaloosa | Chemical Engineering | | | | | | | | |
| Alain Tundidor Camba (S) | C | | University of Alabama, Tuscaloosa | Chemical Engineering | | | | | | | | |
| Sergey Vasenkov (S) | C | | University of Florida | Chemical Engineering | | | | | | | | |
| **John Jones (S)** | **PI** | | **Center for Neurosciences and Cell Biology** | **Metabolic Control Lab** | Pfizer Global Medical Grants "Pentose phosphate pathway and serine oxidation fluxes in NAFLD and NASH" | | 77183119 | P20421 | High-sensitivity 13C NMR isotopomer analysis of human liver metabolite enrichment from [U-13C]glucose via a novel chemical biopsy agent: application to metabolic flux profiling of NAFLD and NASH patients | Biology, Biochemistry, Biophysics | 1 | 6.5 |
| Matthew Merritt (S) | C | | University of Florida | Biochemistry and Molecular Biology | European Commission Horizon Program "PAS GRAS - de-risking metabolic, environmental and behavioural determinants of obesity in children, adolescents and young adults" | Non US Council | HORIZON-HLTH-2022-STAYHLTH-01-101080329-2 | | | | | |
| | | | | | Portuguese Foundation of Science and Technology "Measuring hepatic polyol pathway activity and connecting it with lipogenic glucose metabolism in Type 2 Diabetes patients." | Other Non US Federal Agency | 2023.11517.PEX | | | | | |
| **Zhongwu Guo (S)** | **PI** | | **University of Florida** | **Chemistry** | NIH | NIA - National Institute on Aging | AG083902 | P20426 | 2H and 31P NMR characterization of Novel Glycolipid Analogs | Chemistry | 1 | 4 |
| Gail Fanucci (S) | C | | University of Florida | Chemistry | | | | | | | | |
| Sayan Kundu (G) | C | | University of Florida | Chemistry | | | | | | | | |
| Venkanna Mullapudi (P) | C | | University of Florida | UF Chemistry | | | | | | | | |
| Rajendra Rohokale (P) | C | | University of Florida | UF Chemistry | | | | | | | | |
| **Carson Ingo (S)** | **PI** | * | **Northwestern University** | **Department of Neurology, Department of Physical Therapy & Human Movement Sciences** | No other support | | | P20436 | Investigation of the power-law inflection point diffusion properties in gray and white matter using generalized exponential imaging with a 750 MHz imaging spectrometer | Biology, Biochemistry, Biophysics | 1 | 9.5 |
| Thomas Barrick (S) | C | | St George's University of London | Department of Neurosciences | | | | | | | | |
| Ayush Batra (S) | C | | Northwestern University Feinberg School of Medicine | Neurology | | | | | | | | |
| Matt Hall (S) | C | | National Physical Laboratory, Teddington | Medical, Marine, and Nuclear | | | | | | | | |
| Thomas Mareci (S) | C | | University of Florida | Biochemistry and Molecular Biology | | | | | | | | |
| **Tracy Centanni (S)** | **PI** | | **University of Florida** | **Speech, Language, and Hearing Sciences** | NIH | NICHD - Eunice Kennedy Shriver National Institute of Child Health and Human Development | HD103479 | P20455 | Effect of genetic knockout on neural plasticity in a rat model | Biology, Biochemistry, Biophysics | 1 | 42.17 |
| Brenton Cooper (S) | C | | Texas Christian University | Psychology | | | | | | | | |
| **Zachary Smith (S)** | **PI** | | **Massachusetts Institute of Technology** | **Chemical Engineering** | NSF | CBET - Chemical, Bioengineering, Environmental, and Transport Systems | CBET2034734 | P20583 | Quantifying Dependence of Gas Diffusivity on Concentration of Metal–Organic Framework Particles inside Polymer-Based Membranes for Gas Separations | Engineering | 1 | 11 |
| Omar Boloki (G) | C | | University of Florida | Chemical Engineering | NSF | CBET - Chemical, Bioengineering, Environmental, and Transport Systems | CBET2034742 | | | | | |
| Stephen DeWitt (P) | C | | Massachusetts Institute of Technology | Chemical Engineering | | | | | | | | |
| Eric Hahnert (G) | C | | Massachusetts Institute of Technology | Chemical Engineering | | | | | | | | |
| Philippe Jean-Baptiste (G) | C | | Massachusetts Institute of Technology | Chemical Engineering | | | | | | | | |
| Samuel Kaser (G) | C | | Massachusetts Institute of Technology | Chemical Engineering | | | | | | | | |
| Sree Laxmi (G) | C | | University of Florida | Chemical Engineering Department | | | | | | | | |
| Justin Teesdale (P) | C | | Massachusetts Institute of Technology | Chemical Engineering | | | | | | | | |
| Sergey Vasenkov (S) | C | | University of Florida | Chemical Engineering | | | | | | | | |
| **Bill Baker (S)** | **PI** | | **University of South Florida** | **Chemistry** | NSF | OPP - Office of Polar Programs | OPP2142914 | P20766 | Natural Product Drug Discovery from Museum Specimens and Palmerolide Biosynthesis | Chemistry | 1 | 5.5 |
| Sam Afoullouss (P) | C | | University of South Florida | USF Chemistry | | | | | | | | |
| Ezequiel Cruz Rosa (G) | C | | University of South Florida | Chemistry | | | | | | | | |
| Stine Sofie Olsen (G) | C | | University of South Florida | USF Chemistry | | | | | | | | |
| Nathaniel Schmidt (G) | C | | University of South Florida | Chemistry | | | | | | | | |
| Benjamin Smith (G) | C | | University of South Florida | Chemistry | | | | | | | | |
| Jennifer Williams (G) | C | | University of South Florida | USF Chemistry | | | | | | | | |
| **Benjamin Wylie (S)** | **PI** | | **Texas Tech University Department of Chemistry and Biochemistry** | **Chemistry and Biochemistry** | No other support | | | P20789 | Determining the dynamic structure of the human Kir2.1 channel in the presence of activating and inhibiting lipids | Biology, Biochemistry, Biophysics | 1 | 6.83 |
| Sara Bannister (G) | C | | Texas Tech University | Chemistry & Biochemistry | | | | | | | | |
| Maria Luiza Caldas Nogueira (S) | C | | University of Florida | AMRIS | | | | | | | | |
| Joanna Long (S) | C | | University of Florida | Biochemistry & Molecular Biology | | | | | | | | |
| Oziomachi Onogu (G) | C | | Texas Tech University | Chemistry & Biochemistry | | | | | | | | |
| | | | | | | | | | **Total Proposals: 27** | | **Experiments: 27** | **Days: 983** |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Zahid Hasan (S)** | **PI** | **Princeton University** | **Physics** | Gordon and Betty Moore Foundation | US Foundation | GBMF4547 | P19566 | Magnetotransport studies of topological magnets under hydrostatic pressure | Condensed Matter Physics | 1 | 4.82 |
| Luis Balicas (S) | C | National High Magnetic Field Laboratory | Condensed Matter Experiment | | | | | | | | |
| Md Shafayat Hossain (P) | C | Princeton University | Physics | | | | | | | | |
| **David Mandrus (S)** | **PI** | **University of Tennessee, Knoxville** | **Materials Science and Engineering** | Gordon and Betty Moore Foundation | Other | GBMF9069 | P19572 | Topological Hall Effect in Kagome Lattice Materials | Condensed Matter Physics | 1 | 4.15 |
| Luis Balicas (S) | C | National High Magnetic Field Laboratory | Condensed Matter Experiment | | | | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Shirin Mozaffari (P) | C | University of Tennessee, Knoxville | Materials Science and Engineering | | | | | | | | |
| **Michael Shatruk (S)** | **PI** | **National High Magnetic Field Laboratory** | **Department of Chemistry and Biochemistry** | NSF | CHE - Chemistry | CHE1955754 | P19599 | Investigation of Low-Dimensional Magnetism in Inorganic and Organic Materials | Development of Magnet Technology | 1 | 28 |
| Samuel Adegboyega (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Ian Campbell (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Miguel Gakiya (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Govind Sasi Kumar (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| **Tim Murphy (S)** | **PI** | **National High Magnetic Field Laboratory** | **DC Field Facility** | No other support | | | P19611 | Testing of DCFF magnets, power supplies and associated equipment | Condensed Matter Physics | 3 | 21.02 |
| Alimamy Bangura (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Troy Brumm (T) | C | National High Magnetic Field Laboratory | DC Field | | | | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Elizabeth Green (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Glover Jones (T) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| Robert Nowell (T) | C | National High Magnetic Field Laboratory | DC User Support | | | | | | | | |
| Andy Powell (S) | C | National High Magnetic Field Laboratory | Operations | | | | | | | | |
| Arneil Reyes (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Julia Smith (S) | C | National High Magnetic Field Laboratory | DC Field | | | | | | | | |
| Eric Stiers (O) | C | National High Magnetic Field Laboratory | DC Field | | | | | | | | |
| Sujana Sri Venkat Uppalapati (O) | C | National High Magnetic Field Laboratory | DC Field Facility | | | | | | | | |
| **Peide Ye (S)** | **PI** | **Purdue University** | **School of Electrical and Computer Engineering** | NSF | EFMA - Emerging Frontiers and Multidisciplinary Activities | EFMA1433459 | P19617 | Quantum transport in n-type chiral semiconductor Tellurene | Condensed Matter Physics | 2 | 26.35 |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Chang Niu (G) | C | Purdue University | Electrical and Computer Engineering | | | | | | | | |
| Pukun Tan (G) | C | Purdue University | Electrical Engineering | | | | | | | | |
| **Jun Zhu (S)** | **PI** | **Pennsylvania State University** | **Physics** | DOE | Office of Science | DE-SC0022947 | P19619 | Valley Isospin-Driven Correlated Phenomena in Bilayer Graphene | Condensed Matter Physics | 3 | 19.26 |
| Chengqi Guo (G) | C | Pennsylvania State University | Physics | DOE | BES – Basic Energy Sciences | SC0022947 | | | | | |
| Ke Huang (G) | C | Stanford University | Applied Physics | | | | | | | | |
| Zachary Jernigan (G) | C | Pennsylvania State University | Physics | | | | | | | | |
| **Lu Li (S)** | **PI** | **University of Michigan** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0020184 | P19627 | Search for novel electronic, magnetic, and thermal properties in intense magnetic fields | Condensed Matter Physics | 5 | 30.56 |
| Aaron Chan (G) | C | University of Michigan | Department of Physics | NSF | DMR - Division of Materials Research | DMR2317618 | | | | | |
| Kuan-Wen Chen (P) | C | University of Michigan | Physics | | | | | | | | |
| Kaila Jenkins (G) | C | University of Michigan | Department of Physics | | | | | | | | |
| David Mandrus (S) | C | University of Tennessee, Knoxville | Materials Science and Engineering | | | | | | | | |
| Yuji Matsuda (S) | C | Kyoto University | Physics | | | | | | | | |
| Dmitri Mihaliov (G) | C | University of Michigan | Applied Physics | | | | | | | | |
| Emilia Morosan (S) | C | Rice University | Physics and Astronomy | | | | | | | | |
| Dechen Zhang (G) | C | University of Michigan | Department of Physics | | | | | | | | |
| Guoxin Zheng (G) | C | University of Michigan | Department of Physics | | | | | | | | |
| Yuan Zhu (G) | C | University of Michigan | Department of Physics | | | | | | | | |
| **Dragana Popovic (S)** | **PI** | **National High Magnetic Field Laboratory** | **Condensed Matter Science / Experimental** | NSF | DMR - Division of Materials Research | DMR1707785 | P19628 | Electrical Transport Studies of Quasi-Two-Dimensional Strongly Correlated Materials | Condensed Matter Physics | 3 | 18.21 |
| Bernd Buechner (S) | C | Technical University of Dresden | Institute for Solid State Research | NSF | DMR - Division of Materials Research | DMR2104193 | | | | | |
| Charuni Dissanayake (P) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Masaki Fujita (S) | C | Tohoku University IMR | Materials Property Division | | | | | | | | |
| Jun Sik Lee (S) | C | SLAC National Accelerator Laboratory | XXX | | | | | | | | |
| Bal Pokharel (G) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Takanori Taniguchi (S) | C | Tohoku University IMR | Materials Property Division | | | | | | | | |
| Olesia Voloshyna (P) | C | Technical University of Dresden | Institute for Solid State Research | | | | | | | | |
| Yuxin Wang (G) | C | Florida State University | CMS | | | | | | | | |
| **Xavier Roy (S)** | **PI** | **Columbia University** | **Chemistry** | DOE | BES – Basic Energy Sciences | DE-SC0019443 | P19632 | Magnetic Order and Correlated Electronic Phenomena in Novel 2D van der Waals Materials | Chemistry | 1 | 5.46 |
| Fedor Balakirev (S) | C | National High Magnetic Field Laboratory | PFF | | | | | | | | |
| Daniel Chica (P) | C | Columbia University | Chemistry | | | | | | | | |
| Aravind Devarakonda (S) | C | Columbia University | Applied Physics and Applied Mathematics | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Sae Young Han (G) | C | Columbia University | Chemistry | | | | | | | | |
| Christie Koay (G) | C | Columbia University | Chemistry | | | | | | | | |
| Ross McDonald (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Elena Meirzadeh (P) | C | Columbia University | Chemistry | | | | | | | | |
| Yoonseo Nah (G) | C | Columbia University | Chemistry | | | | | | | | |
| Victoria Posey (G) | C | Columbia University | Chemistry | | | | | | | | |
| Xiaoyu Song (P) | C | Columbia University | Chemistry | | | | | | | | |
| Evan Telford (G) | C | Columbia University | Physics | | | | | | | | |
| Stanley Tozer (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Michael Ziebel (P) | C | Columbia University | Chemistry and Physics | | | | | | | | |
| **Yasu Takano (S)** | **PI** | **University of Florida** | **Physics** | NSF | DMR - Division of Materials Research | DMR1944975 | P19638 | Calorimetric and magnetic studies of quantum spin liquid candidates | Condensed Matter Physics | 2 | 14 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Yanbo Guo (G) | C | University of Florida | Physics | | | | | | | | |
| Yasuyuki Nakajima (S) | C | University of Central Florida | Physics | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **David Herbert (S)** | **PI *** | **University of Manitoba** | **Department of Chemistry** | Natural Sciences and Engineering Research Council of Canada | Other Non US Federal Agency | RGPIN-2014-03733 | P19661 | High-Frequency and High-Field EPR Spectroscopy of Pseudo-Octahedral Ni(II) Complexes of Strongly Absorbing Benzannulated Pincer-Type Amido Ligands with Non-Aufbau Electronic Behavior | Chemistry | 1 | 7 |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Baldeep Sidhu (G) | C | University of Manitoba | Chemistry | | | | | | | | |
| Joshua Telser (S) | C | Roosevelt University | Biological, Physical and Health Sciences | | | | | | | | |
| **Ziling Xue (S)** | **PI** | **University of Tennessee, Knoxville** | **Chemistry** | NSF | CHE - Chemistry | CHE2055499 | P19694 | Probing Molecular Magnetism by Far-IR and Raman Magneto-Spectroscopies | Chemistry | 2 | 14 |
| Adiat Fakolujo (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Adam Hand (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Michael Jenkins (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Amanpreet Mahmi (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Brandon Sanders (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| **Mykhaylo Ozerov (S)** | **PI** | **National High Magnetic Field Laboratory** | **Condensed Matter Science, DC Field CMS** | No other support | | | P19696 | Far-Infrared magneto-spectroscopy at DC-facility, NHMFL: New developments, tests and optimization of experimental protocols | Condensed Matter Physics | 4 | 28 |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| **Nicholas Butch (S)** | **PI** | **National Institute of Standards and Technology MD** | **NIST Center for Neutron Research** | NSF | DMR - Division of Materials Research | DMR2105191 | P19704 | Studies of high-field states of UTe2 | Condensed Matter Physics | 2 | 14 |
| Peter Czajka (P) | C | National Institute of Standards and Technology MD | NCNR | National Institute of Standards and Technology | US Government Lab | | | | | | |
| Corey Frank (P) | C | National Institute of Standards and Technology MD | NCNR | | | | | | | | |
| Audrey Grockowiak (S) | C | Leibniz Institute for Solid State and Materials Research Dresden | Thermodynamics Team | | | | | | | | |
| Thomas Halloran (G) | C | National Institute of Standards and Technology MD | NIST Center for Neutron Research | | | | | | | | |
| Sylvia Lewin (P) | C | University of Maryland, College Park | physics | | | | | | | | |
| Gicela Saucedo Salas (G) | C | University of Maryland, College Park | Physics | | | | | | | | |
| Stanley Tozer (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Jiun-Haw Chu (S)** | **PI** | **University of Washington** | **Physics** | DOD | US Air Force | FA9550-21-1-0068 | P19709 | Probing Lifshitz transitions in Magnetic topological materials | Condensed Matter Physics | 1 | 4.28 |
| Jonathan DeStefano (G) | C | University of Washington | Physics | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Chaowei Hu (G) | C | University of California, Los Angeles | Department of Physics and Astronomy | | | | | | | | |
| Qianni Jiang (P) | C | Stanford University | Applied Physics | | | | | | | | |
| Paul Malinowski (G) | C | University of Washington | Physics | | | | | | | | |
| Elliott Rosenberg (G) | C | Stanford University | Applied Physics | | | | | | | | |
| Yue Shi (G) | C | University of Washington | MSE | | | | | | | | |
| **Denis Karaiskaj (S)** | **PI** | **University of South Florida** | **Physics** | NSF | ECCS - Electrical, Communications, and Cyber Systems | ECCS1952957 | P19712 | Electronic and spin dynamics of materials at very high magnetic fields explored with coherent multidimensional spectroscopy | Condensed Matter Physics | 2 | 8.27 |
| Arup Barua (G) | C | University of South Florida | Physics | | | | | | | | |
| Chevy Boegel (G) | C | University of South Florida | Physics | | | | | | | | |
| David Hilton (S) | C | University of Alabama, Birmingham | Physics | | | | | | | | |
| Sean Knapp (G) | C | University of South Florida | Physics | | | | | | | | |
| Adrienn Komlodi (G) | C | University of South Florida | Physics | | | | | | | | |
| Atul Regmi (G) | C | University of Central Florida | Physics | | | | | | | | |
| **Nathanael Fortune (S)** | **PI** | **Smith College** | **Department of Physics** | No other support | | | P19714 | thermodynamic studies of novel quantum materials as a function of magnetic field strength and orientation | Condensed Matter Physics | 1 | 3.27 |
| Yanbo Guo (G) | C | University of Florida | Physics | | | | | | | | |
| Scott Hannahs (S) | C | National High Magnetic Field Laboratory | Instrumentation | | | | | | | | |
| Joyce Palmer-Fortune (S) | C | Smith College | Physics | | | | | | | | |
| Yasu Takano (S) | C | University of Florida | Physics | | | | | | | | |
| Jiaqiang Yan (S) | C | Oak Ridge National Laboratory | Materials Science and Technology Division | | | | | | | | |
| **Minhyea Lee (S)** | **PI** | **University of Colorado, Boulder** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0021377 | P19717 | Investigating thermal transport properties in strong spin-orbit coupled systems | Condensed Matter Physics | 2 | 14 |
| Gang Cao (S) | C | University of Colorado, Boulder | Department of Physics. | | | | | | | | |
| Nirmal Ghimire (S) | C | George Mason University | Physics and Astronomy | | | | | | | | |
| Elliot Roberts (G) | C | University of Colorado, Boulder | Physics | | | | | | | | |
| Hope Whitelock (G) | C | University of Colorado, Boulder | Physics | | | | | | | | |
| Jie Xing (P) | C | Oak Ridge National Laboratory | Neutron Scattering Division | | | | | | | | |
| **Suchitra Sebastian (S)** | **PI** | **University of Cambridge** | **Physics** | University of Cambridge | Non US College and University | | P19724 | Quantum Oscillations in an Unconventional Insulator | Condensed Matter Physics | 1 | 4.18 |
| Emil Ares (U) | C | University of Cambridge | Department of Physics | | | | | | | | |
| Oishee Banerjee (G) | C | University of Cambridge | Physics | | | | | | | | |
| Alimamy Bangura (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Jessica Chapman (G) | C | University of Cambridge | Physics | | | | | | | | |
| Hanyi Chen (G) | C | University of Cambridge | Physics quantum matter | | | | | | | | |
| Jiasheng Chen (T) | C | University of Cambridge | Physics | | | | | | | | |
| Thenmozhi Elango (G) | C | University of Cambridge | Physics | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Mengmeng Long (G) | C | University of Cambridge | Department of Physics | | | | | | | | |
| Nicholas Popiel (G) | C | University of Cambridge | Physics | | | | | | | | |
| Gilles Rodway-Gant (U) | C | University of Cambridge | Cavendish Laboratory | | | | | | | | |
| Ken Heng Teoh (G) | C | University of Cambridge | Physics | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dmitry Smirnov (S)** | **PI** | **National High Magnetic Field Laboratory** | **Instrumentation & Operations** | No other support | | | P19727 | Testing new probes and techniques for high-field optical magnetospectroscopy | Condensed Matter Physics | 4 | 42 |
| Dmitry Semenov (T) | C | National High Magnetic Field Laboratory | DC Field | | | | | | | | |
| **Guangxin Ni (S)** | **PI** | **National High Magnetic Field Laboratory** | **Physics** | DOE | BES – Basic Energy Sciences | 100792 | P19728 | Study of higher-order topological quantum materials | Condensed Matter Physics | 1 | 7 |
| Naipeng Zhang (P) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Michael Shatruk (S)** | **PI** | **National High Magnetic Field Laboratory** | **Department of Chemistry and Biochemistry** | NSF | DMR - Division of Materials Research | DMR2233901 | P19737 | Investigation of Magnetic Properties of Liquid-Exfoliated 2D Materials | Development of Magnet Technology | 4 | 70 |
| Samuel Adegboyega (G) | C | Florida State University | Chemistry and Biochemistry | NSF | DMR - Division of Materials Research | DMR2216125 | | | | | |
| Ian Campbell (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Judith Clark (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Dibya Mondal (P) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Govind Sasi Kumar (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| **Chetan Dhital (S)** | **PI** | **Kennesaw State University** | **Physics** | No other support | | | P19797 | Investigation of magnetic and electrical transport properties of non-centrosymmetric rare earth magnets. | Condensed Matter Physics | 5 | 29.03 |
| Brady Wilson (U) | C | Kennesaw State University | Physics | NSF | DMR - Division of Materials Research | DMR2213443 | | | | | |
| **Kaveh Ahadi (S)** | **PI** | **Ohio State University** | **Materials Science and Engineering** | NSF | DMR - Division of Materials Research | DMR2327534 | P19812 | **Revealing hidden orders in a 2D superconductor** | **Condensed Matter Physics** | **1** | **3.32** |
| **Chiara Tarantini (S)** | **PI** | **National High Magnetic Field Laboratory** | **Applied Superconductivity Center** | DOE | HEP – High Energy Physics | DE-SC0012083 | P19818 | Characterization of Nb3Sn wires with improved high-field performance | Condensed Matter Physics | 1 | 4.74 |
| David Larbalestier (S) | C | National High Magnetic Field Laboratory | ASC | | | | | | | | |
| Peter Lee (S) | C | Florida State University | Applied Superconductivity Center | | | | | | | | |
| Manish Mandal (G) | C | Florida State University | NHMFL | | | | | | | | |
| **Brandon Sorbom (S)** | **PI** | **Commonwealth Fusion Systems** | **Research & Development** | Commonwealth Fusion Systems | | | P19831 | Angularly Resolved Critical Current Characterization of REBCO High Temperature Superconductors for High-Field Fusion Magnets | Development of Magnet Technology | 2 | 11.58 |
| Yingtai Chen (T) | C | Commonwealth Fusion Systems | R&D | | | | | | | | |
| JL (Jie Lee-Ling) Cheng (S) | C | Commonwealth Fusion Systems | Research & Development | | | | | | | | |
| Rui Diaz-Pacheco (S) | C | Commonwealth Fusion Systems | Research & Development | | | | | | | | |
| Ashleigh Francis (S) | C | Commonwealth Fusion Systems | R&D | | | | | | | | |
| Aliya Greenberg (S) | C | Commonwealth Fusion Systems | Research & Development | | | | | | | | |
| Jan Jaroszynski (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| JP Muncks (S) | C | Commonwealth Fusion Systems | Manufacturing | | | | | | | | |
| Maise Shepard (S) | C | Commonwealth Fusion Systems | R&D | | | | | | | | |
| Aixia Xu (O) | C | Florida State University | ASC | | | | | | | | |
| **Minseong Lee (S)** | **PI** | **National High Magnetic Field Laboratory** | **MPA-MAG** | DOE | BES – Basic Energy Sciences | 0 | P19848 | Kitaev spin liquid phase in a 3d transition metal oxides | Development of Magnet Technology | 2 | 11.56 |
| Craig Bridges (S) | C | Oak Ridge National Laboratory | Chemical Sciences | DOE | BES – Basic Energy Sciences | 0 | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Laura Greene (S) | C | National High Magnetic Field Laboratory | Management and Administration | | | | | | | | |
| Marcelo Jaime (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Sangyun Lee (S) | C | National High Magnetic Field Laboratory | Department of Physics | | | | | | | | |
| William Peria (P) | C | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| Lucas Pressley (G) | C | Johns Hopkins University | Chemistry | | | | | | | | |
| Vivien Zapf (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Shengzhi Zhang (S) | C | National High Magnetic Field Laboratory | MPA-MAGLAB: MPA-MAG LAB NHMFL GROUP | | | | | | | | |
| Haidong Zhou (S) | C | University of Tennessee, Knoxville | Physics and Astronomy | | | | | | | | |
| **Scott Dietrich (S)** | **PI** | **Villanova University** | **Physics** | NSF | DMR - Division of Materials Research | DMR1943389 | P19917 | Microwave spectroscopy of van der Waals heterostructures | Condensed Matter Physics | 1 | 7 |
| Lloyd Engel (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Alex Roubos (G) | C | Florida State University | Physics | | | | | | | | |
| **Minhyea Lee (S)** | **PI** | **University of Colorado, Boulder** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0021377 | P19922 | Investigation of the crystal electric field effects in rare earth magnets | Condensed Matter Physics | 2 | 15 |
| Bob Cava (S) | C | Princeton University | + | | | | | | | | |
| Zhigang Jiang (S) | C | Georgia Institute of Technology | School of Physics | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Elliot Roberts (G) | C | University of Colorado, Boulder | Physics | | | | | | | | |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| Hope Whitelock (G) | C | University of Colorado, Boulder | Physics | | | | | | | | |
| Li Xiang (P) | C | National High Magnetic Field Laboratory | DC field | | | | | | | | |
| Jie Xing (P) | C | Oak Ridge National Laboratory | Neutron Scattering Division | | | | | | | | |
| **Fazel Tafti (S)** | **PI** | **Boston College** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0023124 | P19927 | Chiral Crystals at the Extreme Quantum Limit | Condensed Matter Physics | 2 | 11.43 |
| Sudhaman Balguri (G) | C | Boston College | Physics | DOD | US Air Force | FA-2386-21-1-4059 | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Xiaohan Yao (G) | C | Boston College | Physics | | | | | | | | |
| **Luis Jauregui (S)** | **PI** | **University of California, Irvine** | **Department of Physics and Astronomy** | NSF | DMR - Division of Materials Research | DMR2146567 | P19933 | Magnetotransport of gate-tunable van der Waals topological heterostructures | Condensed Matter Physics | 1 | 7 |
| Marshall Campbell (G) | C | University of California, Irvine | Physics and Astronomy | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Jinyu Liu (P) | C | University of California, Irvine | Department of Physics and Astronomy | | | | | | | | |
| Robert Welser (G) | C | University of California, Irvine | Department of Physics and Astronomy | | | | | | | | |
| **Jian Liu (S)** | **PI** | **University of Tennessee, Knoxville** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0020254 | P19938 | Emergent magnetotransport phenomena of geometrically frustrated heterostructures | Condensed Matter Physics | 3 | 20 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Seunghoon Song (G) | C | University of Tennessee, Knoxville | Department of Physics and Astronomy | | | | | | | | |
| Chengkun Xing (G) | C | University of Tennessee, Knoxville | Physics | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Alex Eaton (S)** | **PI** | **University of Cambridge** | **Physics** | EPSRC UK | Non US Council | | P19943 | High magnetic field study of a spin-triplet superconductor candidate | Condensed Matter Physics | 3 | 19.43 |
| Alimamy Bangura (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Hanyi Chen (G) | C | University of Cambridge | Physics quantum matter | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Mengmeng Long (G) | C | University of Cambridge | Department of Physics | | | | | | | | |
| Michal Valiska (S) | C | Charles University, Prague, Czechia | Physics | | | | | | | | |
| Theo Weinberger (G) | C | University of Cambridge | Cavendish Laboratory | | | | | | | | |
| Zheyu Wu (G) | C | University of Cambridge | Department of Physics | | | | | | | | |
| **Suchitra Sebastian (S)** | **PI** | **University of Cambridge** | **Physics** | No other support | | | P19950 | Phase diagram of a Correlated Insulator | Condensed Matter Physics | 2 | 15.38 |
| Oishee Banerjee (G) | C | University of Cambridge | Physics | European Reseach Council | Non US Council | | | | | | |
| Alimamy Bangura (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Jessica Chapman (G) | C | University of Cambridge | Physics | | | | | | | | |
| Hanyi Chen (G) | C | University of Cambridge | Physics quantum matter | | | | | | | | |
| Thenmozhi Elango (G) | C | University of Cambridge | Physics | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Nicholas Popiel (G) | C | University of Cambridge | Physics | | | | | | | | |
| Gilles Rodway-Gant (U) | C | University of Cambridge | Cavendish Laboratory | | | | | | | | |
| **Geetha Balakrishnan (S)** | **PI** | **University of Warwick** | **Physics** | European Research Council | Non US Council | | P19951 | Quantum Oscillations in New Families of Correlated Insulators | Condensed Matter Physics | 1 | 5.41 |
| Oishee Banerjee (G) | C | University of Cambridge | Physics | | | | | | | | |
| Jessica Chapman (G) | C | University of Cambridge | Physics | | | | | | | | |
| Jiasheng Chen (T) | C | University of Cambridge | Physics | | | | | | | | |
| Thenmozhi Elango (G) | C | University of Cambridge | Physics | | | | | | | | |
| Mengmeng Long (G) | C | University of Cambridge | Department of Physics | | | | | | | | |
| Nicholas Popiel (G) | C | University of Cambridge | Physics | | | | | | | | |
| Gilles Rodway-Gant (U) | C | University of Cambridge | Cavendish Laboratory | | | | | | | | |
| Suchitra Sebastian (S) | C | University of Cambridge | Physics | | | | | | | | |
| **Alexey Suslov (S)** | **PI** | **National High Magnetic Field Laboratory** | **Condensed Matter Science** | No other support | | | P19953 | Improvement of the ultrasonic techniques at the DC field facility: 2022 | Condensed Matter Physics | **1** | 7 |
| **Jak Chakhalian (S)** | **PI** | **Rutgers University** | **physics** | DOE | | | P19954 | Magnetotransport study on Weyl semimetal pyrochlore iridate thin films | Condensed Matter Physics | 4 | 26 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | Gordon and Betty Moore Foundation | Other | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Michael Terilli (G) | C | Rutgers University | Physics | | | | | | | | |
| Tsung-Chi Wu (G) | C | Rutgers University | Physics | | | | | | | | |
| **Christianne Beekman (S)** | **PI** | **National High Magnetic Field Laboratory** | **Physics** | NSF | DMR - Division of Materials Research | DMR1847887 | P19955 | Study of the Magneto-elastic Coupling in Thin Films and Bulk Samples of Frustrated Magnets | Condensed Matter Physics | 10 | 65.38 |
| Ranjit Chandra Das (G) | C | Florida State University | Materials Science and Engineering | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Sangsoo Kim (G) | C | Florida State University | Physics | | | | | | | | |
| Bella Lake (S) | C | Helmholtz Zentrum-Berlin | EM-AQM | | | | | | | | |
| Dillon McNamara (G) | C | Florida State University | Physics | | | | | | | | |
| William Nelson (G) | C | National High Magnetic Field Laboratory | CMS-Physics | | | | | | | | |
| Jennifer Reid (P) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Theo Siegrist (S) | C | National High Magnetic Field Laboratory | Chemical and Biomedical Engineering | | | | | | | | |
| Alexey Suslov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Kaya Wei (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| **Michael Zudov (S)** | **PI** | **University of Minnesota, Twin Cities** | **School of Physics and Astronomy** | DOE | BES – Basic Energy Sciences | DE-SC0002567. | P20023 | Emergent quantum Hall and broken-symmetry states in GaAs/AlGaAs quantum wells | Condensed Matter Physics | 2 | 16 |
| Elliot Bell (G) | C | University of Minnesota, Twin Cities | School of Physics and Astronomy | | | | | | | | |
| Loren Pfeiffer (S) | C | Princeton University | Electrical Engineering | | | | | | | | |
| **Wei Pan (S)** | **PI** | **Sandia National Laboratories** | **Materials Physics Department** | Sandia National Laboratories | US Government Lab | | P20027 | Electronic transport and optical studies of semiconductor artificial quantum materials | Condensed Matter Physics | 2 | 14 |
| Kent Smith (O) | C | Sandia National Laboratories | 8351 | | | | | | | | |
| Layla Smith (U) | C | Norfolk State University | Physics | | | | | | | | |
| Henry Travaglini (P) | C | Sandia National Laboratories | Materials Physics | | | | | | | | |
| **Z. Valy Vardeny (S)** | **PI** | **University of Utah** | **Department of Physics & Astronomy** | DOE | BES – Basic Energy Sciences | DE-AC36-08G028308 | P20028 | Anomalous Landau levels and magneto-excitons in chiral 2D hybrid organic inorganic perovskites with strong Rashba spin orbit coupling | Condensed Matter Physics | 1 | 7 |
| Rikard Bodin (G) | C | University of Utah | Physics & Astronomy | | | | | | | | |
| Isaac Brown (G) | C | University of Utah | Physics & Astronomy | | | | | | | | |
| Heshan Hewa Walpitage (G) | C | University of Utah | Department of Physics and Astronomy | | | | | | | | |
| Uyen Huynh (P) | C | University of Utah | Physics | | | | | | | | |
| Stephen McGill (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Daniel Nikiforov (P) | C | University of Utah | Department of Physics & Astronomy | | | | | | | | |
| Binod Pandey (G) | C | University of Utah | Physics and Astronomy | | | | | | | | |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| **Sergei Zvyagin (S)** | **PI** | **Helmholtz Zentrum Dresden-Rossendorf** | **Dresden High Magnetic Field Laboratory** | Deutsche Forschungsgemeinschaft | Other Non US Federal Agency | | P20035 | Frustration and competing interactions in quantum antiferromagnets | Condensed Matter Physics | 1 | 5.28 |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Joachim Wosnitza (S) | C | Helmholtz Zentrum Dresden-Rossendorf | Dresden High Magnetic Field Laboratory (HLD) | | | | | | | | |
| **Mansour Shayegan (S)** | **PI** | **Princeton University** | **Department of Electrical and Computer Engineering** | NSF | DMR - Division of Materials Research | DMR2104771 | P20041 | Role of layer thickness on enhancement of spin susceptibility of an interacting 2DES | Condensed Matter Physics | 2 | 28 |
| Casey Calhoun (G) | C | Princeton University | Electrical and Computer Engineering | DOE | BES – Basic Energy Sciences | DEFG02-00-ER45841 | | | | | |
| Adbhut Gupta (P) | C | Princeton University | Electrical and Computer Engineering | | | | | | | | |
| Siddharth Kumar Singh (G) | C | Princeton University | Electrical Engineering | | | | | | | | |
| Chia-Tse Tai (G) | C | Princeton University | Electrical and Computer Engineering | | | | | | | | |
| Pranav Thekke Madathil (G) | C | Princeton University | Electrical Engineering | | | | | | | | |
| Chengyu Wang (G) | C | Princeton University | Electrical and Computer Engineering | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Jia Li (S)** | **PI** | **Brown University** | **Department of Physics** | NSF | DMR - Division of Materials Research | DMR2143384 | P20045 | Nematicity, nonreciprocity, and their interplay in a moire flatband | Condensed Matter Physics | 2 | 13.44 |
| Sarah Alkidim (G) | C | Brown University | Department of Physics | NSF | OIA - Office of Integrative Activities | 2327206 | | | | | |
| Jiang-Xiazi Lin (P) | C | Brown University | Physics | | | | | | | | |
| Erin Morissette (G) | C | Brown University | Physics | | | | | | | | |
| Nhanvan Nguyen (G) | C | Brown University | Physics | | | | | | | | |
| Peiyu Qin (G) | C | Brown University | Physics | | | | | | | | |
| Ishika Tulsian (U) | C | Brown University | Physics | | | | | | | | |
| Yibang Wang (G) | C | Brown University | Physics | | | | | | | | |
| Naiyuan Zhang (G) | C | Brown University | Department of Physics | | | | | | | | |
| **Venkat Selvamanickam (S)** | **PI** | **University of Houston** | **Mechanical Engineering** | DOE | HEP – High Energy Physics | DE-SC0016220 | P20049 | Critical current characterization of STAR® REBCO wires at 4.2 K and very high magnetic fields | Development of Magnet Technology | 1 | 2.77 |
| Nghia Mai (G) | C | Ampeers LLC | Mechanical Engineering | | | | | | | | |
| Bhabesh Sarangi (G) | C | University of Houston | Material Science and Engineering | | | | | | | | |
| Shengchen Xue (S) | C | Ampeers LLC | Technology Bridge | | | | | | | | |
| **Julia Chan (S)** | **PI** | **Baylor University** | **Chemistry and Biochemistry** | DOE | BES – Basic Energy Sciences | DE-SC0022854 | P20085 | Characterization of Highly Correlated f-Electron Systems | Chemistry | 6 | 51 |
| Melissa Anderson (G) | C | Baylor University | Chemistry and Biochemistry | DOE | BES – Basic Energy Sciences | DE-SC0022854 | | | | | |
| Luis Balicas (S) | C | National High Magnetic Field Laboratory | Condensed Matter Experiment | Welch Foundation | Other | AA-2056-20220101 | | | | | |
| Ryan Baumbach (S) | C | University of California, Santa Cruz | Physics | | | | | | | | |
| Wilson Brown (G) | C | Baylor University | Chemistry and Biochemistry | | | | | | | | |
| Alexis Dominguez (G) | C | Baylor University | Chemistry and Biochemistry | | | | | | | | |
| Mehak Ghafoor (G) | C | Florida State University | Physics | | | | | | | | |
| Morgan Raines (G) | C | Baylor University | Chemistry and Biochemistry | | | | | | | | |
| Benny Schundelmier (G) | C | Florida State University | Physics | | | | | | | | |
| Kaya Wei (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| **Luis Balicas (S)** | **PI** | **National High Magnetic Field Laboratory** | **Condensed Matter Experiment** | DOE | BES – Basic Energy Sciences | DE-SC0002613 | P20119 | Understanding the topological spin textures in the magnetic topological semi-metallic candidates Fe3GeTe2 and Fe5GeTe2 | Condensed Matter Physics | 3 | 27 |
| Brian Casas (P) | C | National High Magnetic Field Laboratory | Condensed Matter Sciences | | | | | | | | |
| Shyam Raj Karullithodi (G) | C | National High Magnetic Field Laboratory | Condensed matter science | | | | | | | | |
| Vadym Kulichenko (S) | C | National High Magnetic Field Laboratory | Condensed matter science | | | | | | | | |
| Sang-Eon Lee (P) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Alex Moon (G) | C | National High Magnetic Field Laboratory | Condensed Matter | | | | | | | | |
| **Keshav Shrestha (S)** | **PI** | **Texas A&M University** | **Chemistry and Physics** | VSP | | 227000-110 | P20127 | Electronic properties of topological materials under high pressure | Condensed Matter Physics | 2 | 7.15 |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | West Texas A&M University | US College and University | | | | | | |
| Thinh Nguyen (G) | C | West Texas A&M University | Chemistry and Physics | | | | | | | | |
| Cole Phillips (G) | C | West Texas A&M University | Chemistry and Physics | | | | | | | | |
| Keshav Shrestha (S) | C | Texas A&M University | Chemistry and Physics | | | | | | | | |
| Kyryl Shtefiienko (U) | C | West Texas A&M University | Chemistry and Physics | | | | | | | | |
| **Albert Gapud (S)** | **PI** | **University of South Alabama** | **Department of Physics** | No other support | | | P20131 | Low-temperature measurements of 51V NMR relaxation times in single crystal of V3Si | Condensed Matter Physics | 2 | 14 |
| Arneil Reyes (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| **Jin Hu (S)** | **PI** | **University of Arkansas** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0022006 | P20144 | Unusual Magnetotransport in Layered Materials | Condensed Matter Physics | 2 | 26.34 |
| Gokul Acharya (G) | C | University of Arkansas | Physics | NSF | DMR - Division of Materials Research | DMR2238254 | | | | | |
| Santosh Chhetri (G) | C | University of Arkansas | Physics | | | | | | | | |
| Sagar Dahal (G) | C | University of Arkansas | Department of Physics | | | | | | | | |
| Manish Mani Sharma (P) | C | University of Arkansas | Department of Physics | | | | | | | | |
| **Xiang Yuan (S)** | **PI** | **East China Normal University** | **state key laboratory of precision spectroscopy** | East China Normal University | Non US College and University | | P20145 | Magneto-infrared spectroscopy of magnetic Weyl semimetals | Condensed Matter Physics | 2 | 14 |
| Yuhan Du (G) | C | East China Normal University | State Key Laboratory of Precision Spectroscopy | | | | | | | | |
| Xiangyu Jiang (G) | C | East China Normal University | State Key Laboratory of Precision Spectroscopy | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Zeping Shi (P) | C | East China Normal University | State Key Laboratory of Precision Spectroscopy | | | | | | | | |
| Wenbin Wu (G) | C | East China Normal University | State Key Laboratory of Precision Spectroscopy | | | | | | | | |
| Cheng Zhang (S) | C | Fudan University | Institute for Nanoelectronic Devices and Quantum Computing | | | | | | | | |
| **Haidong Zhou (S)** | **PI** | **University of Tennessee, Knoxville** | **Physics and Astronomy** | DOE | Other | 0 | P20149 | New multiferroicity of new layered compounds | Condensed Matter Physics | 1 | 7 |
| Alexander Brassington (G) | C | University of Tennessee, Knoxville | Physics | | | | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Minseong Lee (S) | C | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Sangyun Lee (S) | C | National High Magnetic Field Laboratory | Department of Physics | | | | | | | | |
| Christopher Mizzi (S) | C | National High Magnetic Field Laboratory | MPA-MAGLAB: MPA-MAG LAB NHMFL GROUP | | | | | | | | |
| **Sangyun Lee (S)** | **PI** * | **National High Magnetic Field Laboratory** | **Department of Physics** | DOE | BES – Basic Energy Sciences | 0 | P20151 | High field studies of a new Shastry-Sutherland lattice compound. | Condensed Matter Physics | 1 | 7 |
| Huibo Cao (S) | C | Oak Ridge National Laboratory | Neutron scattering | | | | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Marcelo Jaime (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Tai Kong (S) | C | University of Arizona | Department of Physics | | | | | | | | |
| Minseong Lee (S) | C | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Vivien Zapf (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Woun Kang (S)** | **PI** | **Ewha Womans University** | **Department of Physics** | National Science Foundation of Korea | Non US Foundation | | P20154 | Search for the Fermi surface of the organic line node semi-metal HMTSF-TCNQ | Condensed Matter Physics | 1 | 7 |
| Reizo Kato (S) | C | RIKEN | Condensed Molecular Materials Laboratory - Wako Institute | | | | | | | | |
| Keizo Murata (S) | C | Osaka City University | Department of Physics, Graduate School of Science | | | | | | | | |
| **Dmytro Abraimov (S)** | **PI** | **National High Magnetic Field Laboratory** | **The Applied Superconductivity Center** | DOE | Other | DE-SC0023177 | P20160 | Performance-structure characterization to improve the growth process of HM ReBCO conductor with 15% Zr doping | Development of Magnet Technology | 2 | 10.52 |
| Griffin Bradford (O) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| Lance Cooley (S) | C | National High Magnetic Field Laboratory | ASC | | | | | | | | |
| Jan Jaroszynski (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Jonathan Lee (G) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| Jeremy Levitan (T) | C | National High Magnetic Field Laboratory | MS&T | | | | | | | | |
| Jun Lu (S) | C | National High Magnetic Field Laboratory | MS&T | | | | | | | | |
| Yifei Zhang (S) | C | SuperPower, Inc. | R&D and Applications | | | | | | | | |
| **Suchitra Sebastian (S)** | **PI** | **University of Cambridge** | **Physics** | european research council | Non US Council | | P20163 | Novel Magnetism in a Strongly Correlated Insulator | Condensed Matter Physics | 2 | 14 |
| Oishee Banerjee (G) | C | University of Cambridge | Physics | | | | | | | | |
| Jessica Chapman (G) | C | University of Cambridge | Physics | | | | | | | | |
| Jiasheng Chen (T) | C | University of Cambridge | Physics | | | | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Damien Dooley (U) | C | University of Cambridge | Department of Physics | | | | | | | | |
| Thenmozhi Elango (G) | C | University of Cambridge | Physics | | | | | | | | |
| Nicholas Popiel (G) | C | University of Cambridge | Physics | | | | | | | | |
| Naina Reddy (U) | C | University of Cambridge | Department of Physics, Cavendish Laboratory, Maxwell Centre | | | | | | | | |
| Gilles Rodway-Gant (U) | C | University of Cambridge | Cavendish Laboratory | | | | | | | | |
| **Jun Sung Kim (S)** | **PI** | **Pohang University of Science and Technology** | **Physics** | Pohang University of Science and Technology | Non US College and University | | P20165 | Novel electronic phases and high-magnetic-field transport of nodal-line fermions proximate to a topological phase transition | Condensed Matter Physics | 1 | 6.3 |
| Joonyoung Choi (G) | C | Kyungpook National University | Physics | | | | | | | | |
| Min Hyuk Choi (G) | C | Pohang University of Science and Technology | Physics | | | | | | | | |
| Ho Seong Jeon (G) | C | Pohang University of Science and Technology | Physics | | | | | | | | |
| YounJung Jo (S) | C | Kyungpook National University | Physics | | | | | | | | |
| Woun Kang (S) | C | Ewha Womans University | Department of Physics | | | | | | | | |
| Seohee Kim (G) | C | Pusan National University | Physics | | | | | | | | |
| MINSIK KONG (G) | C | Pusan National University | Physics | | | | | | | | |
| Jun seong Lee (G) | C | Pohang University of Science and Technology | Physics | | | | | | | | |
| Jong Mok Ok (G) | C | Oak Ridge National Laboratory | Physics | | | | | | | | |
| Hyeongwoo Seo (G) | C | Pohang University of Science and Technology | Physics Department | | | | | | | | |
| **Hongcheng Lu (S)** | **PI** * | **Huazhong University of Science and Technology** | **School of Chemistry and Chemical Engineering** | Huazhong University of Science and Technology | Non US College and University | | P20228 | Field-induced transition study in the doped nearly-ideal 1D chain systems Fe1-xMxF3(4,4'-bipyridyl) (M = Cr, Mn, V, Ga, Al) | Chemistry | 1 | 6 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| **Deepshikha Jaiswal-Nagar (S)** | **PI** | **IISER Thiruvananthapuram** | **Physics** | No other support | | | P20237 | milli-Kelvin ac susceptibility measurements of a spin 1/2 Heisenberg antiferromagnet | Condensed Matter Physics | 1 | 7 |
| Shalinee Chikara (S) | C | National High Magnetic Field Laboratory | CMS, DC Field Facility | | | | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Tim Murphy (S) | C | National High Magnetic Field Laboratory | DC Field Facility | | | | | | | | |
| **Dmitri Basov (S)** | **PI** | **Columbia University** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0018426 | P20238 | Magneto-infrared spectroscopy and quantum oscillations of novel quantum materials | Condensed Matter Physics | 1 | 7 |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Seng Huat Lee (S) | C | Pennsylvania State University | Physics | | | | | | | | |
| Zhiqiang Mao (S) | C | Pennsylvania State University | Department of Physics | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Xavier Roy (S) | C | Columbia University | Chemistry | | | | | | | | |
| Yinming Shao (S) | C | Pennsylvania State University | Physics | | | | | | | | |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| **Panayotis Kyritsis (S)** | **PI** | **National and Kapodistrian University of Athens** | **Chemistry** | Special Account for Research Grants of the National and Kapodistrian University of Athens | Other | | P20241 | Zero-field splitting in S = 3/2 Co(II) and S = 2 Fe(II) complexes probed by HFEPR and far-infrared magnetic spectroscopy (FIRMS) | Chemistry | 1 | 14 |
| Andreas Danopoulos (S) | C | National and Kapodistrian University of Athens | Chemistry | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Andrew Ozarowski (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| **Haidong Zhou (S)** | **PI** | **University of Tennessee, Knoxville** | **Physics and Astronomy** | NSF | DMR - Division of Materials Research | DMR2003117 | P20243 | The exploration of field induced quantum spin liquid state in new quantum magnets | Condensed Matter Physics | 2 | 14 |
| Alexander Brassington (G) | C | University of Tennessee, Knoxville | Physics | DOD | US Air Force | FA9550-23-1-0502 | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Aya Rutherford (G) | C | University of Tennessee, Knoxville | Institute for Advanced Materials and Manufacturing | | | | | | | | |
| Seunghoon Song (G) | C | University of Tennessee, Knoxville | Department of Physics and Astronomy | | | | | | | | |
| Chengkun Xing (G) | C | University of Tennessee, Knoxville | Physics | | | | | | | | |
| **Chris Palmstrom (S)** | **PI** | **University of California, Santa Barbara** | **ECE-Material Science** | NSF | MRSEC - Materials Research Science and Engineering Centers | PIRE-1743717 | P20251 | Transport studies of epitaxial ultrathin topological materials | Condensed Matter Physics | 2 | 13 |
| Paul Corbae (P) | C | University of California, Santa Barbara | ECE/Materials | | | | | | | | |
| Connor Dempsey (G) | C | University of California, Santa Barbara | ECE | | | | | | | | |
| Jason Dong (G) | C | University of California, Santa Barbara | Materials | | | | | | | | |
| Yilmaz Gul (P) | C | University of California, Santa Barbara | Electronic and Computer engineering | | | | | | | | |
| Teun van Schijndel (G) | C | University of California, Santa Barbara | ECE | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Kang Wang (S)** | **PI** | **University of California, Los Angeles** | **Electrical Engineering** | NSF | Other | 1936383 | P20252 | Searching for Unconventional Superconductivity in 2D van der Waals material-based superconductor heterostructures | Condensed Matter Physics | 1 | 7 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | Army Research Office | Other US Federal Agency | W911NF20- 2-0166 | | | | | |
| Yaochen Li (G) | C | University of California, Los Angeles | Electrical and Computer Engineering | | | | | | | | |
| Gang Qiu (S) | C | University of Minnesota, Twin Cities | Electrical and Computer Engineering | | | | | | | | |
| Lixuan Tai (G) | C | University of California, Los Angeles | Electrical and Computer Engineering | | | | | | | | |
| Ting-Hsun Yang (G) | C | University of California, Los Angeles | Electric and Computer Engineering | | | | | | | | |
| **Ho Nyung Lee (S)** | **PI** | **Oak Ridge National Laboratory** | **Materials Science and Technology Division** | DOE | BES – Basic Energy Sciences | KC0202024 | P20254 | Understanding extreme quantum limit in oxide Dirac semimetals | Condensed Matter Physics | 1 | 5.86 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Seohee Kim (G) | C | Pusan National University | Physics | | | | | | | | |
| Minsik Kong (G) | C | Pusan National University | Physics | | | | | | | | |
| Shan Lin (P) | C | Oak Ridge National Laboratory | Materials Science and Technology | | | | | | | | |
| Jong Mok Ok (G) | C | Oak Ridge National Laboratory | Physics | | | | | | | | |
| Yunkyu Park (P) | C | Oak Ridge National Laboratory | Materials Science and Technology Division | | | | | | | | |
| **Jian Wang (S)** | **PI** | **Peking University** | **International Center for Quantum Materials, School of Physics** | Smith College | US College and University | SD-60175 CFCD - Fortune, Nathanael | P20256 | Specific heat measurements of log-periodic oscillations under high magnetic field in Dirac materials ZrTe5 and HfTe5 | Condensed Matter Physics | 1 | 5.48 |
| Alimamy Bangura (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Nathanael Fortune (S) | C | Smith College | Department of Physics | | | | | | | | |
| Scott Hannahs (S) | C | National High Magnetic Field Laboratory | Instrumentation | | | | | | | | |
| Robert Joynt (S) | C | University of Wisconsin, Madison | Physics | | | | | | | | |
| Yanzhao Liu (G) | C | Peking University | School of Physics | | | | | | | | |
| Joyce Palmer-Fortune (S) | C | Smith College | Physics | | | | | | | | |
| Danilo Roberto Ratkovski (O) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Ziqiao Wang (P) | C | Peking University | Physics | | | | | | | | |
| **Jun Lu (S)** | **PI** | **National High Magnetic Field Laboratory** | **MS&T** | No other support | | | P20258 | REBCO delamination strength under electromagnetic force | Development of Magnet Technology | 1 | 4.89 |
| Iain Dixon (S) | C | National High Magnetic Field Laboratory | MS&T | | | | | | | | |
| **Antonio Politano (S)** | **PI** | **University of L'Aquila** | **Physical and Chemical Sciences** | No other support | | | P20261 | High Magnetic Fields to explore Shubnikov–de Haas quantum oscillations in Pt3Te4 | Condensed Matter Physics | 3 | 28 |
| Shermane Benjamin (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Tsotne Dadiani (G) | C | University of L'Aquila | Physics | | | | | | | | |
| **Zhigang Jiang (S)** | **PI** | **Georgia Institute of Technology** | **School of Physics** | DOE | BES – Basic Energy Sciences | DE-FG02-07ER46451 | P20265 | Magneto-infrared Spectroscopy Study of Emerging Quantum Materials with Layered Structures | Condensed Matter Physics | 3 | 35 |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Sumedh Rathi (G) | C | Georgia Institute of Technology | Physics | | | | | | | | |
| Nikolai Simonov (G) | C | Georgia Institute of Technology | School of Physics | | | | | | | | |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| Naipeng Zhang (P) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **E. Dan Dahlberg (S)** | **PI** | **University of Minnesota, Twin Cities** | **School of Physics and Astronomy** | DOE | BES – Basic Energy Sciences | DE-SC0013599 | P20269 | Determination of the exchange energy distribution in spin glasses | Condensed Matter Physics | 1 | 20.57 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Scott Hannahs (S) | C | National High Magnetic Field Laboratory | Instrumentation | | | | | | | | |
| **Dmitry Ovchinnikov (S)** | **PI** | **University of Kansas** | **Department of Physics and Astronomy** | Ovchinnikov Startup (University of Kansas) | Other | N/A | P20270 | Dynamic tuning of quantum phases in low-dimensional materials by simultaneous modulation of carrier densities and lattice constants | Condensed Matter Physics | 3 | 21 |
| Md Salman Ahsanullah (G) | C | University of Kansas | Physics and Astronomy | University of Kansas | US College and University | Ovchinnikov KU startup funding | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | Ovchinnikov KU startup | Other | N/A | | | | | |
| Alex Guardiola (U) | C | University of Kansas | Department of Physics & Astronomy | | | | | | | | |
| Jared Madsen (U) | C | University of Kansas | Physics and Astronomy | | | | | | | | |
| Michael McGuire (S) | C | Oak Ridge National Laboratory | Materials Science and Technology Division | | | | | | | | |
| Xiaodong Xu (S) | C | University of Washington | Physics | | | | | | | | |
| Jiaqiang Yan (S) | C | Oak Ridge National Laboratory | Materials Science and Technology Division | | | | | | | | |
| **Zachery Enderson (P)** | **PI** | **Georgia Institute of Technology** | **School of Physics** | DOE | Other | N/A | P20271 | Band structure Engineering using Artificial Moirè Quantum Materials | Condensed Matter Physics | 5 | 44 |
| Zhigang Jiang (S) | C | Georgia Institute of Technology | School of Physics | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Wei Pan (S) | C | Sandia National Laboratories | Materials Physics Department | | | | | | | | |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| **Philip Moll (S)** | **PI** | **Max Planck Institute for Structure and Dynamics of Matter, Hamburg** | **Max Planck Institute for Structure and Dynamics of Matter** | ERC | Non US Council | No. 715730 | P20283 | True nature of exotic high field state in UTe2: a field-polarized metal or a field-boosted superconductor? | Condensed Matter Physics | 2 | 10 |
| Priscila Ferrari Silveira Rosa (P) | C | Los Alamos National Laboratory | MPA-CMMS | Swiss National Science Foundation | Non US Council | | | | | | |
| Chunyu Guo (S) | C | Max Planck Institute for Structure and Dynamics of Matter, Hamburg | MQM | | | | | | | | |
| Carsten Putzke (U) | C | University of Bristol | Physics | | | | | | | | |
| Ling Zhang (G) | C | Max Planck Institute for Structure and Dynamics of Matter, Hamburg | MQM | | | | | | | | |
| **David Graf (S)** | **PI** | **National High Magnetic Field Laboratory** | **DC Field / CMS** | No other support | | | P20295 | Instrumentation and Technique Development | Condensed Matter Physics | 7 | 54.35 |
| Md Sazedul Islam (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Benny Schundelmier (G) | C | Florida State University | Physics | | | | | | | | |
| Kaya Wei (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Michael Shatruk (S)** | **PI** | **National High Magnetic Field Laboratory** | **Department of Chemistry and Biochemistry** | DOE | BES – Basic Energy Sciences | DESC0019330 | P20300 | Crystal Structure of Valence Tautomeric Cobalt Complex in High Magnetic Fields | Material Science | 2 | 9.85 |
| Shubham Bisht (G) | C | Florida State University | Chemistry and Biochemistry | NSF | CHE - Chemistry | CHE2300779 | | | | | |
| Miguel Gakiya (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Dibya Mondal (P) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Theo Siegrist (S) | C | National High Magnetic Field Laboratory | Chemical and Biomedical Engineering | | | | | | | | |
| James Wampler (P) | C | National High Magnetic Field Laboratory | MPA-MAGLAB | | | | | | | | |
| Sandugash Yergeshbayeva (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Vivien Zapf (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Louise Debefve (S)** | **PI** | **Cornell University** | **Cornell High Energy Synchrotron Source** | NSF | DMR - Division of Materials Research | DMR1946998 | P20304 | Testing x-ray detectors in high magnetic fields | Development of Magnet Technology | 1 | 5.13 |
| Vittorio Boccone (S) | C | Dectris Ltd. | Development | | | | | | | | |
| Elisabeth Bodnaruk (T) | C | Cornell University | Wilson Lab | | | | | | | | |
| Zachary Brown (T) | C | Dectris Ltd. | Support & Commissioning | | | | | | | | |
| Melanie Cardona (O) | C | Dectris Ltd. | Support & Commissioning | | | | | | | | |
| Tania Fernández Félix (G) | C | Cornell University | Cornell High Energy Synchrotron Source | | | | | | | | |
| Lisa Glatt (T) | C | Dectris Ltd. | Marketing and Sales | | | | | | | | |
| Rigel Lochner (T) | C | Cornell University | CLASSE | | | | | | | | |
| Alan Pauling (T) | C | Cornell University | CHESS | | | | | | | | |
| Kate Shanks (O) | C | Cornell University | Cornell High Energy Synchrotron Source | | | | | | | | |
| Keith Surrena (T) | C | Cornell University | CHESS | | | | | | | | |
| **Janice Musfeldt (S)** | **PI** | **University of Tennessee, Knoxville** | **Department of Chemistry** | NSF | DMR - Division of Materials Research | DMR2226109 | P20344 | High field spectroscopy of materials with broken symmetries and strong spin-orbit coupling | Chemistry | 1 | 5.84 |
| Yanhong Gu (P) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Stephen McGill (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Daniel Morris (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Kevin Smith (P) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| **Grace Morgan (S)** | **PI** | **University College Dublin** | **School of Chemistry and Chemical Biology** | No other support | | | P20360 | High Field EPR Analysis of Redox and Spin State in Spin Crossover Complexes | Chemistry | 1 | 7 |
| Francesca Adami (G) | C | University College Dublin | School of Chemistry | | | | | | | | |
| Emmelyne Cuza (P) | C | University College Dublin | Chemistry | | | | | | | | |
| Brittany Grimm (G) | C | Florida State University | Physics | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Zoi Lada (P) | C | University College Dublin | School of Chemistry | | | | | | | | |
| Andrew Ozarowski (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Christianne Beekman (S)** | **PI** | **National High Magnetic Field Laboratory** | **Physics** | NSF | DMR - Division of Materials Research | DMR1847887 | P20367 | Characterization of novel magnetic phases in quantum material thin films and bulk crystals | Condensed Matter Physics | 3 | 15.59 |
| Kaylee Biggart (G) | C | University of Waterloo | Physics and Astronomy | Natural Sciences and Engineering Research Council of Canada | Non US Council | | | | | | |
| Jessica Chapman (G) | C | University of Cambridge | Physics | | | | | | | | |
| Laura Greene (S) | C | National High Magnetic Field Laboratory | Management and Administration | | | | | | | | |
| Robert Hill (S) | C | University of Waterloo | Physics and Astronomy | | | | | | | | |
| Robert Huber (U) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Mohammad Irfan (G) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Sangsoo Kim (G) | C | Florida State University | Physics | | | | | | | | |
| Scott Maier (O) | C | National High Magnetic Field Laboratory | Instrumentation and Operations | | | | | | | | |
| Dillon McNamara (G) | C | Florida State University | Physics | | | | | | | | |
| Jennifer Reid (P) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Suchitra Sebastian (S) | C | University of Cambridge | Physics | | | | | | | | |
| Alexey Suslov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| **Guillaume Gervais (S)** | **PI** | **McGill University** | **Physics department** | nserc | Other | | P20369 | Ultra high mobility bismuth and GaAs 2DEGs | Biology, Biochemistry, Biophysics | 1 | 6.2 |
| Frédéric Boivin (G) | C | McGill University | Physics | | | | | | | | |
| Thomas Szkopek (S) | C | McGill University | Electrical and Computer Engineering | | | | | | | | |
| Oulin Yu (G) | C | McGill University | Physics | | | | | | | | |
| **Gennady Logvenov (S)** | **PI** * | **Max Planck Institute for Solid State Research, Stuttgart** | **Thin Film Technology Facility** | Max Plank Institute for Solid State Research | Non US Government Lab | | P20378 | High Magnetic Field Magnetotransport in Artificial Cuprate Superlattices | Condensed Matter Physics | 1 | 8 |
| Andrea Alimenti (S) | C | Roma Tre University | Dept. of Industrial, Electronic and Mechanical Engineering | | | | | | | | |
| Fedor Balakirev (S) | C | National High Magnetic Field Laboratory | PFF | | | | | | | | |
| Luis Balicas (S) | C | National High Magnetic Field Laboratory | Condensed Matter Experiment | | | | | | | | |
| Antonio Bianconi (S) | C | National Research Council CNR | Institute of Crystallography | | | | | | | | |
| G. Alexander Smith (P) | C | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| **Charles Ahn (S)** | **PI** | **Yale University** | **Applied Physics** | DOE | BES – Basic Energy Sciences | DE-SC0019211 | P20381 | High field magneto-transport study of Nd1-xEuxNiO2 thin films | Condensed Matter Physics | 1 | 4.93 |
| Dung Vu (P) | C | Yale University | Applied Physics | | | | | | | | |
| Frederick Walker (S) | C | Yale University | Applied Physics | | | | | | | | |
| Wenzheng Wei (G) | C | Yale University | Applied Physics | | | | | | | | |
| **Pengcheng Dai (S)** | **PI** | **Rice University** | **Physics** | NSF | PHY - Physics | PHY2100741 | P20385 | Magnetization and Electric Transport Studies on Fe-based Kagome Antiferromagnets | Condensed Matter Physics | 1 | 7.87 |
| Ananya Biswas (G) | C | Rice University | Physics and Astronomy | | | | | | | | |
| Kelly Neubauer (G) | C | Rice University | Physics & Astronomy | | | | | | | | |
| Weiliang Yao (P) | C | Rice University | Physics | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Artem Pronin (S)** | **PI** | **University of Stuttgart** | **Mathematics and Physics** | No other support | | | P20389 | Probing the low-energy electron dynamics in chiral quantum materials by magneto-optical spectroscopy | Condensed Matter Physics | 1 | 14 |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| **Chun Ning (Jeanie) Lau (S)** | **PI** | **Ohio State University** | **Department of Physics and Astronomy** | NSF | DMR - Division of Materials Research | DMR2219048 | P20390 | Symmetry-broken Phases and Phase Transitions in Layered Quantum Materials | Condensed Matter Physics | 2 | 11.19 |
| Luis Balicas (S) | C | National High Magnetic Field Laboratory | Condensed Matter Experiment | DOE | BES – Basic Energy Sciences | will provide later | | | | | |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| Greyson Voigt (G) | C | Ohio State University | Dept of Physics | | | | | | | | |
| Jiayin Wang (G) | C | Ohio State University | Physics | | | | | | | | |
| Yuxin Zhang (G) | C | Ohio State University | Physics | | | | | | | | |
| Zheneng Zhang (G) | C | Ohio State University | Physics | | | | | | | | |
| **Jan Jaroszynski (S)** | **PI** | **National High Magnetic Field Laboratory** | **CMS** | NSF | DMR - Division of Materials Research | DMR2128556 | P20394 | Critical Current in REBCO Superconducting Tapes Assessed by Torque | Development of Magnet Technology | 2 | 10.45 |
| Jeseok Bang (P) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| Griffin Bradford (O) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| JL (Jie Lee-Ling) Cheng (S) | C | Commonwealth Fusion Systems | Research & Development | | | | | | | | |
| Ashleigh Francis (S) | C | Commonwealth Fusion Systems | R&D | | | | | | | | |
| Jonathan Lee (G) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| Garfield Murphhy (T) | C | Florida State University | Applied Superconductivity Center (ASC) | | | | | | | | |
| Aixia Xu (O) | C | Florida State University | ASC | | | | | | | | |
| **Guangxin Ni (S)** | **PI** | **National High Magnetic Field Laboratory** | **Physics** | DOE | BES – Basic Energy Sciences | 100792 | P20396 | High-Field exploration of elementary excitations in 2D MultiferroicFamily MX2 (M=Co, Ni, Mn; X = Br, I) through Optical Spectroscopy | Condensed Matter Physics | 4 | 24.8 |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | DOE | BES – Basic Energy Sciences | DE-SC0022022 | | | | | |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | NSF | DMR - Division of Materials Research | DMR2145074 | | | | | |
| Naipeng Zhang (P) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Nikolai Kalugin (S)** | **PI** | **New Mexico Institute of Mining and Technology** | **Department of Materials Engineering** | NSF | DMR - Division of Materials Research | DMR2120475 | P20397 | Quantum Hall states under periodic driving | Condensed Matter Physics | 1 | 14 |
| Paola Barbara (S) | C | Georgetown University | Physics | NSF | DMR - Division of Materials Research | DMR2104770 | | | | | |
| Luis Foa Torres (S) | C | University of Chile | Department of Physics, FCFM | | | | | | | | |
| Yijing Liu (G) | C | Georgetown University | Physics | | | | | | | | |
| Alexey Suslov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Taylor Terrones (U) | C | New Mexico Institute of Mining and Technology | Materials Engineering Department | | | | | | | | |
| **Philip Kim (S)** | **PI** | **Harvard University** | **Department of Physics** | DOE | BES – Basic Energy Sciences | DOE DE-SC0012260 | P20403 | Probing Fractional Quantum Hall Quasiparticles in Graphene van der Waals Heterostructures | Condensed Matter Physics | 1 | 4.37 |
| Abhishek Banerjee (P) | C | Harvard University | Physics | | | | | | | | |
| James Ehrets (G) | C | Harvard University | Physics | | | | | | | | |
| Zeyu Hao (G) | C | Harvard University | Physics | | | | | | | | |
| Joon Young Park (P) | C | Harvard University | Physics | | | | | | | | |
| Isabelle Phinney (G) | C | Harvard University | Physics | | | | | | | | |
| Thomas Werkmeister (G) | C | Harvard University | Applied Physics | | | | | | | | |
| **Linda Ye (S)** | **PI** * | **California Institute of Technology** | **Mathematics, Physics and Astronomy** | NSF | PHY - Physics | PHY2317110 | P20405 | Modulating frustration in strongly spin-orbit coupled magnets via strain and magnetic fields | Condensed Matter Physics | 1 | 4.02 |
| Zili Feng (P) | C | California Institute of Technology | Physics, Mathematics and Astronomy | | | | | | | | |
| Takashi Kurumaji (S) | C | California Institute of Technology | Physics | | | | | | | | |
| Tao Lu (G) | C | California Institute of Technology | Mathematics, Physics and Astronomy | | | | | | | | |
| **Abhay Pasupathy (S)** | **PI** | **Columbia University** | **Physics** | NSF | MRSEC - Materials Research Science and Engineering Centers | DMR-2011738 | P20407 | Pressure tuning of flatbands in twisted homobilayer WSe2: in search of correlated topological states, superconductivity and magnetic ordering | Condensed Matter Physics | 1 | 5 |
| Jacob Amontree (G) | C | Columbia University | Mechanical Engineering | | | | | | | | |
| Augusto Ghiotto (P) | C | University of California, Berkeley | Physics | | | | | | | | |
| Daniel Ostrom (G) | C | Columbia University | Physics | | | | | | | | |
| Jordan Pack (G) | C | Columbia University | Physics | | | | | | | | |
| Yuan Song (G) | C | Columbia University | Physics | | | | | | | | |
| Aya Batoul Tazi (G) | C | Columbia University | Physics | | | | | | | | |
| **Ian Fisher (S)** | **PI** | **Stanford University** | **Applied Physics** | Gordon and Betty Moore Foundation | US Foundation | GBMF9068 | P20409 | Probing strain-tuned Fermi surfaces via quantum oscillations in the elastocaloric effect | Condensed Matter Physics | 1 | 3.49 |
| Sayak Ghosh (P) | C | Stanford University | Applied Physics | | | | | | | | |
| Qianni Jiang (P) | C | Stanford University | Applied Physics | | | | | | | | |
| Diana Spulber (G) | C | Stanford University | Applied Physics | | | | | | | | |
| Linda Ye (S) | C | California Institute of Technology | Mathematics, Physics and Astronomy | | | | | | | | |
| **Daniel Rhodes (S)** | **PI** | **University of Wisconsin, Madison** | **Materials Science and Engineering** | No other support | | | P20410 | Electronic Properties of Superconducting and Topological Bulk and Few-Layer 1T' Transition Metal Chalcogenides | Material Science | 4 | 31.41 |
| Brenna Bierman (G) | C | University of Wisconsin, Madison | Chemistry | DOE | BES – Basic Energy Sciences | DE-SC0023866 | | | | | |
| Yangchen He (G) | C | University of Wisconsin, Madison | Department of Material Science and Engineering | DOE | BES – Basic Energy Sciences | DE-SC0023866 | | | | | |
| Zizhong Li (G) | C | University of Wisconsin, Madison | Department of Materials Science and Engineering | | | | | | | | |
| Yikai Wang (G) | C | University of Wisconsin, Madison | Material Science and Engineering | | | | | | | | |
| **Kin Fai Mak (S)** | **PI** | **Cornell University** | **Physics** | NSF | DMR - Division of Materials Research | DMR2039380 | P20428 | Strong correlation physics in transition metal dichalcogenide | Condensed Matter Physics | 1 | 4.58 |
| Raghav Chaturvedi (G) | C | Cornell University | Applied & Engineering Physics | | | | | | | | |
| Phuong Nguyen (G) | C | Cornell University | Applied and Engineering Physics | | | | | | | | |
| Jie Shan (S) | C | Pennsylvania State University | Physics | | | | | | | | |
| **Emilia Morosan (S)** | **PI** | **Rice University** | **Physics and Astronomy** | AFOSR | Other US Federal Agency | G10000206 | P20432 | Angle dependent magnetoresistance measurements on InTaS2 single crystals in DC magnetic field | Condensed Matter Physics | 1 | 5 |
| Luis Balicas (S) | C | National High Magnetic Field Laboratory | Condensed Matter Experiment | | | | | | | | |
| Yuxiang Gao (G) | C | Rice University | Physics and Astronomy | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Zahir Islam (S)** | **PI *** | **Argonne National Laboratory** | **X-RAY SCIENCE DIVISION** | DOE | BES – Basic Energy Sciences | DE-AC02-06CH11357 | P20446 | High-Tc trapped flux magnet characterization for synchrotron applications with unrestricted optical access in magnetic field | Material Science | 1 | 7 |
| Ramakanta Chapai (P) | C | Argonne National Laboratory | Materials Science Division | | | | | | | | |
| Scott Hannahs (S) | C | National High Magnetic Field Laboratory | Instrumentation | | | | | | | | |
| Jong-Woo Kim (S) | C | Argonne National Laboratory | Advanced Photon Source | | | | | | | | |
| Jung Ho Kim (S) | C | Argonne National Laboratory | X RAY SCIENCE DIVISION | | | | | | | | |
| Matthew Krogstad (S) | C | Argonne National Laboratory | X-Ray Science Division | | | | | | | | |
| Ulrich Welp (S) | C | Argonne National Laboratory | Materials Science Division | | | | | | | | |
| **YounJung Jo (S)** | **PI** | **Kyungpook National University** | **Physics** | National Research Foundation of Korea (NRF) | Non US Foundation | | P20492 | The role of Kondo interactions in d-electron systems and the emergence of exotic phenomena | Condensed Matter Physics | 3 | 33.5 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Joonyoung Choi (G) | C | Kyungpook National University | Physics | | | | | | | | |
| Min Hyuk Choi (G) | C | Pohang University of Science and Technology | Physics | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Ho Seong Jeon (G) | C | Pohang University of Science and Technology | Physics | | | | | | | | |
| Woun Kang (S) | C | Ewha Womans University | Department of Physics | | | | | | | | |
| Jun Sung Kim (S) | C | Pohang University of Science and Technology | Physics | | | | | | | | |
| Sangjin Kim (G) | C | Seoul National University | Physics | | | | | | | | |
| Jun seong Lee (G) | C | Pohang University of Science and Technology | Physics | | | | | | | | |
| Sang-Eon Lee (P) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Hyeongwoo Seo (G) | C | Pohang University of Science and Technology | Physics Department | | | | | | | | |
| **Scott Hannahs (S)** | **PI** | **National High Magnetic Field Laboratory** | **Instrumentation** | No other support | | | P20500 | Instrumentation Testing, Calibration and Evaluation | Condensed Matter Physics | 1 | 1.99 |
| Craig Beaumier (S) | C | Lake Shore Cryotronics | Sales | | | | | | | | |
| Jason Chonko (S) | C | Lake Shore Cryotronics | Business Development | | | | | | | | |
| Charles Cimino (S) | C | Lake Shore Cryotronics | Marketing/Sales | | | | | | | | |
| Emilio Codecido (O) | C | Ohio State University | Physics | | | | | | | | |
| Robert Green (T) | C | Lake Shore Cryotronics | Sales | | | | | | | | |
| Alexey Suslov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| **Yoram Dagan (S)** | **PI** | **Tel-Aviv University** | **School of Physics and Astronomy** | Israeli Science Foundation | Non US Foundation | 1711/23 | P20501 | Nonlinear transport properties of oxide interfaces at high magnetic fields | Condensed Matter Physics | 1 | 4.82 |
| Shay Sandik (U) | C | Tel-Aviv University | Physics | | | | | | | | |
| Itai Silber (G) | C | Tel-Aviv University | Physics | | | | | | | | |
| Asaf Yagoda (G) | C | Tel-Aviv University | Physics | | | | | | | | |
| **Valentin Taufour (S)** | **PI** | **University of California, Davis** | **Department of Physics and Astronomy** | University of California, Davis | US College and University | LFR-20-653926 | P20502 | High Field Study Proposal on CeVGe3 | Condensed Matter Physics | 1 | 4.08 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| **Alexey Suslov (S)** | **PI** | **National High Magnetic Field Laboratory** | **Condensed Matter Science** | No other support | | | P20503 | High-frequency conductivity in InSb/InAlSb Structures: Acoustic Studies. | Condensed Matter Physics | 1 | 7 |
| Irina Drichko (S) | C | Ioffe Physical-Technical Institute of the Russian Academy of Sciences | Physics of Semiconductors and Dielectrics | | | | | | | | |
| Ivan Smirnov (S) | C | Ioffe Physical-Technical Institute of the Russian Academy of Sciences | Physics of Semiconductors and Dielectrics | | | | | | | | |
| **Sheng Ran (S)** | **PI** | **Washington University in St. Louis** | **Physics** | NSF | DMR - Division of Materials Research | DMR2236528 | P20506 | Study the Fermi surface of spin triplet superconductor UTe2 | Condensed Matter Physics | 1 | 4.94 |
| Christopher Broyles (G) | C | Washington University in St. Louis | Physics | | | | | | | | |
| Shannon Gould (G) | C | Washington University in St. Louis | Physics | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Qiaozhi Xu (G) | C | Washington University in St. Louis | Physics | | | | | | | | |
| **Kirstin Alberi (S)** | **PI *** | **National Renewable Energy Laboratory** | **Materials Science** | DOE | BES – Basic Energy Sciences | Division of Materials Sciences and Engineering, Physical Behavior of Materials Program | P20510 | Investigating Magnetoelectrical Transport in Topological Semimetal Thin Films | Condensed Matter Physics | 3 | 15.31 |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Ian Leahy (P) | C | National Renewable Energy Laboratory | Materials, Chemical, and Computational Science | | | | | | | | |
| Wei Pan (S) | C | Sandia National Laboratories | Materials Physics Department | | | | | | | | |
| Anthony Rice (S) | C | National Renewable Energy Laboratory | Materials, Chemical, and Computational Science | | | | | | | | |
| **Bryan Kudisch (S)** | **PI *** | **Florida State University** | **Chemistry & Biochemistry** | No other support | | | P20514 | Ultrafast Spin Dynamics as a Mechanistic Tool in Synthetic Photocatalysis | Chemistry | 1 | 3.06 |
| Rachel Clark (G) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Stephen McGill (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| **Pablo Jarillo-Herrero (S)** | **PI** | **Massachusetts Institute of Technology** | **Physics** | DOE | BES – Basic Energy Sciences | DE-AC02-07CH11358 | P20515 | In plane magnetic field anisotropy of ferroelectric 2D materials | Condensed Matter Physics | 1 | 7 |
| Xirui Wang (G) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Xueqiao Wang (G) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Kenji Yasuda (S) | C | Cornell University | School of Applied and Engineering Physics | | | | | | | | |
| Zhiren Zheng (G) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| **Allen Scheie (S)** | **PI *** | **Los Alamos National Laboratory** | **MPA-Q** | DOE | Office of Science | DE-SC0000000 | P20517 | Quantum spin liquid phase in rare-earth triangular lattice antiferromagnets | Condensed Matter Physics | 1 | 7 |
| Minseong Lee (S) | C | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Vivien Zapf (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Myung-Hwa Jung (S)** | **PI *** | **Sogang University** | **Physics** | National Research Foundation of Korea | Non US Foundation | 2020R1A2C3008044 | P20520 | Exploring Weyl orbit-driven quantum phenomena in Zn-doped Cd3As2 synthesized via molecular beam epitaxy | Condensed Matter Physics | 2 | 14 |
| Kirstin Alberi (S) | C | National Renewable Energy Laboratory | Materials Science | | | | | | | | |
| Joonyoung Choi (G) | C | Kyungpook National University | Physics | | | | | | | | |
| YounJung Jo (S) | C | Kyungpook National University | Physics | | | | | | | | |
| Sang-Eon Lee (P) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Hyebin Son (G) | C | Sogang University | Department of Physics | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radu Coldea (S)** | **PI *** | **University of Oxford** | **Clarendon Laboratory, Department of Physics** | European Research Council | Non US Council | 788814 | P20523 | Exploring the high-field phase diagrams of candidate Kitaev systems | Condensed Matter Physics | 2 | 8.28 |
| Daniel Antoniou (G) | C | University of Oxford | Physics | | | | | | | | |
| Alimamy Bangura (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Ryutaro Okuma (S) | C | University of Tokyo | Quantum Materials Group | | | | | | | | |
| Matthew Pearce (P) | C | University of Oxford | Physics | | | | | | | | |
| Danilo Roberto Ratkovski (O) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| **David Larbalestier (S)** | **PI** | **National High Magnetic Field Laboratory** | **ASC** | DOE | Office of Science | DE-SC0022011 | P20525 | REBCO CC High-Field Technology Development Program at ASC | Material Science | 2 | 11.8 |
| Jeseok Bang (P) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| Griffin Bradford (O) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| Kwangmin Kim (O) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| Jonathan Lee (G) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| Rastislav Ries (P) | C | Florida State University | ASC | | | | | | | | |
| **Gael Grissonnanche (S)** | **PI *** | **Institute Polytechnic De Paris** | **Physics** | Ecole Polytechnique | Non US College and University | ANR grant | P20527 | Probing scattering times in quantum materials | Condensed Matter Physics | 2 | 8.5 |
| Patrick Fournier (S) | C | University of Sherbrooke | Physics | Ecole Polytechnique | Non US College and University | | | | | | |
| Adrien Gourgout (P) | C | University of Sherbrooke | Physics | | | | | | | | |
| Charles Ioro-Duval (G) | C | University of Sherbrooke | Physics | | | | | | | | |
| Juan Santana Gonzalez (G) | C | ecole polytechnique | Physics | | | | | | | | |
| Louis Taillefer (S) | C | University of Sherbrooke | Physics | | | | | | | | |
| **Joseph Checkelsky (S)** | **PI** | **Massachusetts Institute of Technology** | **Physics** | DOD | ARO - Army Research Office | | P20531 | High Field Studies of Superconducting Superlattices | Condensed Matter Physics | 7 | 66.32 |
| Alan Chen (G) | C | Massachusetts Institute of Technology | EECS | NSF | DMR - Division of Materials Research | DMR1231319 | | | | | |
| Roei Dery (G) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Chi Ian Ip (G) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Alex Mayo (P) | C | Massachusetts Institute of Technology | Department of Physics | | | | | | | | |
| Paul Neves (G) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Kevin Nuckolls (P) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Joshua Wakefield (G) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| **Mike Sumption (S)** | **PI** | **Ohio State University** | **CSMM, MSE** | DOE | HEP – High Energy Physics | DE-SC0011721 | P20532 | Magnetization of HTS Cables at High Fields | Development of Magnet Technology | 1 | 3.92 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Milan Majoros (S) | C | Ohio State University | Materials Science and Engineering | | | | | | | | |
| FNU TUSHAR (G) | C | Ohio State University | Material Science and Engineering | | | | | | | | |
| **Cory Dean (S)** | **PI** | **Columbia University** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC00167703 | P20533 | Tuning electronic correlations and topology in van der Waals heterostructures under high magnetic fields | Condensed Matter Physics | 5 | 30.36 |
| John Cenker (P) | C | Columbia University | Physics | | | | | | | | |
| Ziyu Liu (P) | C | Columbia University | Physics Department | | | | | | | | |
| Jordan Pack (G) | C | Columbia University | Physics | | | | | | | | |
| Josh Swann (G) | C | Columbia University | Physics | | | | | | | | |
| Birui Yang (G) | C | Columbia University | Physics | | | | | | | | |
| **Sergey Suchalkin (S)** | **PI** | **State University of New York, Stony Brook** | **Electrical and Computer Engineering** | DOD | ARO - Army Research Office | | P20539 | Faraday effect in metamorphic InAsSb-based semiconductor structures | Condensed Matter Physics | 1 | 6 |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Anton Petruk (G) | C | State University of New York, Stony Brook | Electrical Engineering | | | | | | | | |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| **Mykhaylo Ozerov (S)** | **PI** | **National High Magnetic Field Laboratory** | **Condensed Matter Science, DC Field CMS** | No other support | | | P20547 | Magneto-Optical Study Of Spin-Phonon Coupling Effects In Van Der Waals Magnets. | Condensed Matter Physics | 2 | 11.89 |
| Luis Balicas (S) | C | National High Magnetic Field Laboratory | Condensed Matter Experiment | | | | | | | | |
| Vadym Kulichenko (S) | C | National High Magnetic Field Laboratory | Condensed matter science | | | | | | | | |
| Dmitry Smirnov (S) | C | National High Magnetic Field Laboratory | Instrumentation & Operations | | | | | | | | |
| Stephen Winter (S) | C | Wake Forest University | Department of Physics | | | | | | | | |
| **Konstantin Bukhryakov (S)** | **PI *** | **Florida International University** | **Chemistry and Biochemistry** | NSF | CHE - Chemistry | CHE2212944 | P20604 | Advanced EMR Studies of Mononuclear Four-Coordinate Bis-Fluoride Bis-NHC Complexes of Chromium(II), Iron(II), and Cobalt(II) | Chemistry | 1 | 14 |
| Carlos Acosta (G) | C | Florida International University | Chemistry and Biochemistry | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Joshua Telser (S) | C | Roosevelt University | Biological, Physical and Health Sciences | | | | | | | | |
| **Bumjoon Kim (S)** | **PI *** | **Pohang University of Science and Technology** | **Physics** | Samsung Future Technology Foundation | Non US Foundation | 4.0024400.04 | P20613 | Thermodynamic evidence for spin nematic transition | Condensed Matter Physics | 3 | 21 |
| Alimamy Bangura (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Gwansuk Oh (G) | C | Pohang University of Science and Technology | Department of Physics | | | | | | | | |
| Danilo Roberto Ratkovski (O) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| **Badih Assaf (S)** | **PI** | **University of Notre Dame** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0024291 | P20616 | Probing engineered topological phases at high magnetic fields | Condensed Matter Physics | 3 | 17.34 |
| Muhsin Abdul Karim (G) | C | University of Notre Dame | Physics | NSF | DMR - Division of Materials Research | DMR2313441 | | | | | |
| Sara Bey (G) | C | University of Notre Dame | Physics and Astronomy | DOE | BES – Basic Energy Sciences | DE-SC-0024291 | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Xinyu Liu (S) | C | University of Notre Dame | Department of Physics and Astronomy | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Kota Yoshimura (G) | C | University of Notre Dame | Physics | | | | | | | | |
| **Hemamala Karunadasa (S)** | **PI *** | **Stanford University** | **Chemistry** | Brown Investigator Award | Other | 1267187–10UAKHZ | P20617 | Investigation of Low–Dimensional Magnetism in Halide Perovskite Intergrowths Synthesized by Aqueous Self–Assembly | Chemistry | 1 | 7 |
| Caravaggio Caniglia (G) | C | Stanford University | Chemistry | | | | | | | | |
| Julian Vigil (P) | C | University of California, Berkeley | College of Chemistry | | | | | | | | |
| Clara Zwanziger (G) | C | Stanford University | Chemistry | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Eun Sang Choi (S)** | **PI** | **National High Magnetic Field Laboratory** | **Physics Department** | No other support | | | P20619 | User Instrumentation and Technique Development | Condensed Matter Physics | 2 | 14 |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | NSF | DMR - Division of Materials Research | DMR2128556 | | | | | |
| **Johnpierre Paglione (S)** | **PI** | **University of Maryland, College Park** | **Maryland Quantum Materials Center and Department of Physics** | DOE | BES – Basic Energy Sciences | DESC0019154 | P20621 | High Magnetic Field Induced Magnetic Order in New Rare-Earth Metals and Unconventional Insulating Phases in Topological Kondo Insulator Candidate | Condensed Matter Physics | 1 | 5.94 |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Jarryd Horn (G) | C | University of Maryland, College Park | Physics | | | | | | | | |
| Ram Kumar (P) | C | University of Maryland, College Park | QMC, Physics | | | | | | | | |
| Shanta Saha (P) | C | University of Maryland, College Park | Physics | | | | | | | | |
| Prathum Saraf (G) | C | University of Maryland, College Park | Physics | | | | | | | | |
| Danila Sokratov (G) | C | University of Maryland, College Park | Physics | | | | | | | | |
| **Shin-ichi Ohkoshi (S)** | **PI *** | **University of Tokyo** | **Chemistry** | Japan Society for the Promotion of Science KAKENHI | Non US Foundation | 23KJ0736 | P20624 | FIRMS measurements on terahertz absorbing materials | Chemistry | 1 | 7 |
| Nicholas Chilton (S) | C | Australian National University | Research School of Chemistry | | | | | | | | |
| Guanping Li (G) | C | University of Tokyo | Chemistry | | | | | | | | |
| Olaf Stefanczyk (S) | C | University of Tokyo | School of Science, Department of Chemistry | | | | | | | | |
| **Subhash Thota (S)** | **PI** | **Indian Institute of Technology, Guwahati** | **Physics** | No other support | | | P20626 | Probing the Magnetic Phase Transitions in Gd-based Antiferromagnetic Pyrochlores | Condensed Matter Physics | 1 | 6 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Mouli Roy Chowdhury (G) | C | Indian Institute of Technology, Guwahati | Physics | | | | | | | | |
| **Duminda Liurukara (S)** | **PI *** | **Oak Ridge National Laboratory** | **University of Missouri Research reactor/Chemistry** | NSF | DMR - Division of Materials Research | DMR2219129 | P20627 | Magnetic Phase Diagram of a Novel Kagome-Strip Lattice: K2Mn3(AsO4)2(OH)2 | Condensed Matter Physics | 1 | 7 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| **Rongying Jin (S)** | **PI** | **University of South Carolina** | **Department of Physics and Astronomy** | DOE | MSE - Materials Science and Engineering | DE-SC0024501 | P20628 | High-field comparative investigation of GeSb2Te4 and MnBi2Te4 | Condensed Matter Physics | 1 | 5.63 |
| Daniel Duong (G) | C | University of South Carolina | Department of physics and astronomy | | | | | | | | |
| Abhinna Rajbanshi (G) | C | University of South Carolina | Department of Physics and Astronomy | | | | | | | | |
| **Jian Shi (S)** | **PI *** | **Rensselaer Polytechnic Institute** | **Materials Science and Engineering** | NSF | DMR - Division of Materials Research | DMR2328906 | P20630 | Fermi Surfaces of Strained CoSi Nanowire | Condensed Matter Physics | 1 | 4.18 |
| Denis Aglagul (G) | C | Rensselaer Polytechnic Institute | Physics, applied physics, and astronomy | | | | | | | | |
| Zixu Wang (G) | C | Rensselaer Polytechnic Institute | Materials Science and Engineering | | | | | | | | |
| **Stephen Holmes (S)** | **PI *** | **University of Missouri, St Louis** | **Chemistry and Biochemistry** | NSF | CHE - Chemistry | CHE1800578 | P20632 | FIRMS Investigations of Low-Coordinate Co(II) Single-Molecule Magnets | Chemistry | **1** | **6** |
| **Xavier Roy (S)** | **PI** | **Columbia University** | **Chemistry** | DOE | BES – Basic Energy Sciences | DE-SC0023406 | P20634 | Tunable Electron Correlations in 2D and Quasi-2D Materials | Condensed Matter Physics | 1 | 8 |
| Michael Ziebel (P) | C | Columbia University | Chemistry and Physics | | | | | | | | |
| **Seng Huat Lee (S)** | **PI** | **Pennsylvania State University** | **Physics** | NSF | MIP - Materials Innovation Platform | DMR-2039351 | P20643 | Seeking for Exotic Quantum State in Possible Intrinsic Ferromagnetic Topological Insulator SnMnBi2Te5 | Condensed Matter Physics | 1 | 5.72 |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | DOE | BES – Basic Energy Sciences | DE-SC0019068 | | | | | |
| Yingdong Guan (G) | C | Pennsylvania State University | Physics Department | | | | | | | | |
| Zhiqiang Mao (S) | C | Pennsylvania State University | Department of Physics | | | | | | | | |
| **Kang Wang (S)** | **PI** | **University of California, Los Angeles** | **Electrical Engineering** | DOD | ARO - Army Research Office | W911NF20-2-0166 | P20644 | Searching for Parity Anomaly in Axion Insulator | Condensed Matter Physics | 1 | 7 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | NSF | Other | 1936383 | | | | | |
| Yaochen Li (G) | C | University of California, Los Angeles | Electrical and Computer Engineering | | | | | | | | |
| Gang Qiu (S) | C | University of Minnesota, Twin Cities | Electrical and Computer Engineering | | | | | | | | |
| Hung-Yu Yang (P) | C | University of California, Los Angeles | ECE | | | | | | | | |
| Ting-Hsun Yang (G) | C | University of California, Los Angeles | Electric and Computer Engineering | | | | | | | | |
| **Thao Tran (S)** | **PI *** | **Clemson University** | **Chemistry** | NSF | OIA - Office of Integrative Activities | NSF-OIA-2227933 | P20648 | Understanding the Spin Dynamics of Eu2+ for Molecular Qubit Design | Chemistry | 1 | 7 |
| Uchenna Chinaegbomkpa (G) | C | Clemson University | Chemistry | | | | | | | | |
| Michal Winiarski (S) | C | Gdansk University of Technology | Faculty of Applied Physics and Mathematics | | | | | | | | |
| **Peng Xiong (S)** | **PI *** | **Florida State University** | **Physics** | NSF | DMR - Division of Materials Research | DMR1905843 | P20660 | Spin-Charge Interconversion in Chiral Crystal Tellurium | Condensed Matter Physics | 2 | 19 |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | NSF | DMR - Division of Materials Research | DMR2325147 | | | | | |
| Zhenqi Hua (G) | C | Florida State University | Physics | | | | | | | | |
| **Daniel Davis (S)** | **PI *** | **National High Magnetic Field Laboratory** | **ASC** | DOE | Other | DE-AC02-05CH11231 | P20663 | High temperature Superconductor Bi-2212 Development Towards Ultra-High-Field Solenoids for Research, Accelerators, & Fusion | Development of Magnet Technology | 1 | 3.83 |
| Griffin Bradford (O) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| Eric Hellstrom (S) | C | National High Magnetic Field Laboratory | Applied Superconductivity Center | | | | | | | | |
| Jianyi Jiang (S) | C | National High Magnetic Field Laboratory | ASC | | | | | | | | |
| Youngjae Kim (S) | C | National High Magnetic Field Laboratory | ASC | | | | | | | | |
| David Larbalestier (S) | C | National High Magnetic Field Laboratory | ASC | | | | | | | | |
| Rastislav Ries (P) | C | Florida State University | ASC | | | | | | | | |
| Tengming Shen (S) | C | Fermi National Accelerator Laboratory | Magnet Systems Department | | | | | | | | |
| Ulf Trociewitz (S) | C | National High Magnetic Field Laboratory | ASC | | | | | | | | |
| **Tim Murphy (S)** | **PI** | **National High Magnetic Field Laboratory** | **DC Field Facility** | No other support | | | P20671 | Testing DCFF magnets, power supplies & instrumentation | Condensed Matter Physics | 2 | 21 |
| Alimamy Bangura (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Troy Brumm (T) | C | National High Magnetic Field Laboratory | DC Field | | | | | | | | |
| Scott Maier (O) | C | National High Magnetic Field Laboratory | Instrumentation and Operations | | | | | | | | |
| Clyde Martin (T) | C | National High Magnetic Field Laboratory | DC Instrumentation | | | | | | | | |
| Robert Nowell (T) | C | National High Magnetic Field Laboratory | DC User Support | | | | | | | | |
| Danilo Roberto Ratkovski (O) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Julia Smith (S) | C | National High Magnetic Field Laboratory | DC Field | | | | | | | | |
| **Hadi Mohammadigoushki (S)** | **PI *** | **Florida State University** | **Chemical and Biomedical Engineering** | Rare Earth Initiative/gypstack project | Other | | P20674 | measuring magnetization of steel wires and balls | Engineering | 1 | 7 |
| Mohd Khan (P) | C | National High Magnetic Field Laboratory | Chemical and Biomedical Engineering | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Madalynn Marshall (S)** | **PI *** | **Kennesaw State University** | **Chemistry and Biochemistry** | Kennesaw State University | US College and University | N/A | P20676 | Investigate the Magnetic Behavior of the Breathing Spinel AA'Cr4Se8 Family | Chemistry | 1 | 14 |
| Rupali Mangotra (G) | C | Kennesaw State University | Department of Chemistry and Biochemistry | | | | | | | | |
| **Lucia Steinke (S)** | **PI *** | **Maybell Quantum Industries** | **N/A** | Maybell Quantum Industries | | | P20680 | Low temperature characterization of construction and wiring materials used in commercial dilution refrigerators. | Material Science | 1 | 21 |
| Andrew Woods (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| **Minhyea Lee (S)** | **PI** | **University of Colorado, Boulder** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0021377 | P20695 | Magnetotransport Properties in Rare-Earth Magnetic Materials | Condensed Matter Physics | 2 | 14 |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Elliot Roberts (G) | C | University of Colorado, Boulder | Physics | | | | | | | | |
| Hope Whitelock (G) | C | University of Colorado, Boulder | Physics | | | | | | | | |
| Jie Xing (P) | C | Oak Ridge National Laboratory | Neutron Scattering Division | | | | | | | | |
| **David Mandrus (S)** | **PI** | **University of Tennessee, Knoxville** | **Materials Science and Engineering** | Gordon and Betty Moore Foundation's EPiQS Initiative | Other | GBMF9069 | P20705 | Hall effect in LuMn6Sn6 | Condensed Matter Physics | 1 | 5.64 |
| Luis Balicas (S) | C | National High Magnetic Field Laboratory | Condensed Matter Experiment | | | | | | | | |
| Shirin Mozaffari (P) | C | University of Tennessee, Knoxville | Materials Science and Engineering | | | | | | | | |
| **Sara Haravifard (S)** | **PI** | **Duke University** | **Department of Physics** | NSF | DMR - Division of Materials Research | DMR2218058 | P20711 | Investigating Physical Properties of Chemically Disordered Quantum Materials as a Function of Magnetic Field and Pressure | Condensed Matter Physics | 1 | 7 |
| Rabindranath Bag (P) | C | Duke University | Physics | | | | | | | | |
| Sudip Chakraborty (P) | C | Duke University | Physics | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| **Zahid Hasan (S)** | **PI** | **Princeton University** | **Physics** | Gordon and Betty Moore Foundation | Other | GBMF9461 | P20715 | Electrical and thermal transport of Kagome lattice materials | Condensed Matter Physics | 2 | 14 |
| Luis Balicas (S) | C | National High Magnetic Field Laboratory | Condensed Matter Experiment | | | | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Md Shafayat Hossain (P) | C | Princeton University | Physics | | | | | | | | |
| **Michelle Jamer (S)** | **PI** | **U.S. Naval Academy** | **Physics** | DOD | ONR - Office of Naval Research | | P20719 | Understanding chiral effects in Fe3Ga4 through magnetoresistance | Condensed Matter Physics | 1 | 14 |
| Don Heiman (S) | C | Northeastern University | Physics | | | | | | | | |
| **Arnab Banerjee (S)** | **PI *** | **Purdue University** | **Physics and Astronomy** | DOE | Office of Science | DE-SC0022986 | P20720 | Low-Temperature Heat Capacity and AC Magnetic Susceptibility Measurement on a Geometrically Frustrated Triangular Delafossite | Condensed Matter Physics | 1 | 7 |
| Bishnu Belbase (G) | C | Purdue University | Physics and Astronomy | | | | | | | | |
| Arjun Unnikrishnan (P) | C | Purdue University | Physics and Astronomy | | | | | | | | |
| **Ines Wyrsta (S)** | **PI *** | **High Temperature Superconductors Inc.** | **High Temperature Superconductors Inc.** | DOE | ARPA-E - Advanced Research Projects Agency-Energy | DE-AR0001815 | P20722 | Critical current characterization for REBCO coated conductors | Material Science | 1 | 6.17 |
| Fumitake Kametani (P) | C | National High Magnetic Field Laboratory | ASC | | | | | | | | |
| David Larbalestier (S) | C | National High Magnetic Field Laboratory | ASC | | | | | | | | |
| Silvia Rasi (S) | C | High Temperature Superconductors Inc. | R&D | | | | | | | | |
| Aixia Xu (O) | C | Florida State University | ASC | | | | | | | | |
| **Dmitry Smirnov (S)** | **PI** | **National High Magnetic Field Laboratory** | **Instrumentation & Operations** | DOE | BES – Basic Energy Sciences | DE-FG02-07ER46451 | P20727 | Magneto-Raman Spectroscopy Study of Unconventional Magnetic Phases in 2D Magnetic Lattices | Condensed Matter Physics | 3 | 19.82 |
| Zhigang Jiang (S) | C | Georgia Institute of Technology | School of Physics | | | | | | | | |
| Martin Mourigal (P) | C | Johns Hopkins University | Physics and Astronomy | | | | | | | | |
| Nikolai Simonov (G) | C | Georgia Institute of Technology | School of Physics | | | | | | | | |
| Naipeng Zhang (P) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Haidong Zhou (S) | C | University of Tennessee, Knoxville | Physics and Astronomy | | | | | | | | |
| **Audrey Grockowiak (S)** | **PI** | **Leibniz Institute for Solid State and Materials Research Dresden** | **Thermodynamics Team** | ct.qmat | Other | LU 0042023 BB | P20729 | Pressure induced superconductivity in the quantum spin liquid systems Delafossite | Condensed Matter Physics | 1 | 14 |
| Bernd Buechner (S) | C | Technical University of Dresden | Institute for Solid State Research | | | | | | | | |
| Stanley Tozer (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| | | | | | | | | **Total Proposals: 146** | | **Experiments: 273** | **Days: 2,011.79** |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Enrique Colacio (S)** | **PI** | **University of Granada** | **Inorganic Chemistry** | No other support | | | P19485 | High-frequency and -field EPR and FIRMS of prismatic trigonal Co(II) and pentagonal bipyramidal Dy(III) SIMs complexes | Chemistry | 1 | 2 |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| **Michael Shatruk (S)** | **PI** | **National High Magnetic Field Laboratory** | **Department of Chemistry and Biochemistry** | NSF | CHE - Chemistry | CHE2300779 | P19599 | Investigation of Low-Dimensional Magnetism in Inorganic and Organic Materials | Development of Magnet Technology | 2 | 3.5 |
| Ferdous Ara (P) | C | National High Magnetic Field Laboratory | NHMFL | NSF | DMR - Division of Materials Research | DMR2233902 | | | | | |
| Shubham Bisht (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Miguel Gakiya (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Manoj Vinayaka Hanabe Subramanya (P) | C | Florida State University | Physics | | | | | | | | |
| Eduardo Hernandez-Requejo (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Jakub Hruby (P) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Dibya Mondal (P) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Andrew Ozarowski (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Robert Stewart (G) | C | Florida State University | Physics | | | | | | | | |
| Sandugash Yergeshbayeva (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| **Ziling Xue (S)** | **PI** | **University of Tennessee, Knoxville** | **Chemistry** | NSF | CHE - Chemistry | CHE2055499 | P19694 | Probing Molecular Magnetism by Far-IR and Raman Magneto-Spectroscopies | Chemistry | 3 | 8.5 |
| Alexandria Bone (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Adam Hand (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Michael Jenkins (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Pagnareach Tin (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Michael Shatruk (S)** | **PI** | **National High Magnetic Field Laboratory** | **Department of Chemistry and Biochemistry** | DOE | BES – Basic Energy Sciences | DESC0019330 | P19737 | Investigation of Magnetic Properties of Liquid-Exfoliated 2D Materials | Development of Magnet Technology | 2 | 7 |
| Ferdous Ara (P) | C | National High Magnetic Field Laboratory | NHMFL | | | | | | | | |
| Shubham Bisht (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Ian Campbell (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Judith Clark (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| Govind Sasi Kumar (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| **Martin Bakker (S)** | **PI** | **University of Alabama, Tuscaloosa** | **Chemistry and Biochemistry** | NSF | CBET - Chemical, Bioengineering, Environmental, and Transport Systems | CBET2050507 | P19771 | High Field EPR of Transition Metal Phthalocyanines for Oxidation Reactions | Chemistry | 1 | 5 |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Sebastian Stoian (S) | PI | University of Idaho | Chemistry | University of Idaho | US College and University | | P19784 | Elucidating the Electronic Structure and Magnetic Ordering of Extended Chains Incorporating Co(II) and Fe(II) Ions | Chemistry | 2 | 2.5 |
| Andrew Ozarowski (S) | C | National High Magnetic Field Laboratory | EMR | American Chemical Society PRF | US Foundation | 62278-DNI3 | | | | | |
| Kyle Seabourn (G) | C | University of Idaho | Chemistry | | | | | | | | |
| **Srinivasa Rao Singamaneni (S)** | **PI** | **University of Texas, El Paso** | **Physics** | NSF | DMR - Division of Materials Research | DMR2105109 | P19791 | Magnetic Correlations and Anisotropy in Layered quasi-2D van der Waals Magnets: A VeryHigh Frequency Electron Paramagnetic Resonance Study | Condensed Matter Physics | 4 | 24 |
| Lovia Ofori (G) | C | University of Texas, El Paso | Physics | | | | | | | | |
| Cedomir Petrovic (S) | C | Shanghai Advanced Research in Physical Sciences | none | | | | | | | | |
| Fazel Tafti (S) | C | Boston College | Physics | | | | | | | | |
| Nathan Tolva (U) | C | Boston College | Physics | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Martin Kirk (S)** | **PI *** | **University of New Mexico** | **Department of Chemistry** | DOE | BES – Basic Energy Sciences | DE-SC0020199 | P19926 | Magneto-photoluminescence and Magneto-vibrational Studies of Exchange-Coupled Systems | Chemistry | 1 | 10 |
| Joshua Mengel (G) | C | University of New Mexico | Chemistry and Chemical Biology | | | | | | | | |
| David Shultz (S) | C | North Carolina State University | Chemistry | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Sergei Zvyagin (S)** | **PI** | **Helmholtz Zentrum Dresden-Rossendorf** | **Dresden High Magnetic Field Laboratory** | Deutsche Forschungsgemeinschaft | Other Non US Federal Agency | | P20035 | Frustration and competing interactions in quantum antiferromagnets | Condensed Matter Physics | 1 | 5 |
| David Graf (S) | C | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Joachim Wosnitza (S) | C | Helmholtz Zentrum Dresden-Rossendorf | Dresden High Magnetic Field Laboratory (HLD) | | | | | | | | |
| **Robert Griffin (S)** | **PI** | **Massachusetts Institute of Technology** | **Chemistry** | NIH | NIGMS - National Institute of General Medical Sciences | GM132997 | P20068 | High field pulsed DNP | Chemistry | 1 | 1 |
| Thierry Dubroca (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Manoj Vinayaka Hanabe Subramanya (P) | C | Florida State University | Physics | | | | | | | | |
| Yifu Ouyang (G) | C | Massachusetts Institute of Technology | Chemistry | | | | | | | | |
| Yifan Quan (G) | C | Paul Scherrer Institute | LDM | | | | | | | | |
| Yifan Quan (P) | C | Massachusetts Institute of Technology | Francis Bitter Magnet Laboratory | | | | | | | | |
| **Natia Frank (S)** | **PI** | **University of Nevada Reno** | **Chemistry** | NSF | CHE - Chemistry | CHE1956301 | P20070 | EPR Investigation of Optically Gated Spin State Switching in Photochromic Cobalt Dioxolenes for Quantum Information Science | Chemistry | 1 | 8 |
| Anitha Alanthadka (P) | C | University of Nevada Reno | Department of Chemistry | | | | | | | | |
| Subrata Ghosh (P) | C | University of Nevada Reno | Chemistry | | | | | | | | |
| Brittany Grimm (G) | C | Florida State University | Physics | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Michael Jensen (S)** | **PI** | **Ohio University** | **Chemistry & Biochemistry** | No other support | | | P20071 | High-Frequency and -Field EPR Spectroscopy of High-Spin, Pseudo-tetrahedral Nickel(II)–Phenylchalcogenide Complexes | Biology, Biochemistry, Biophysics | 1 | 1 |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Andrew Ozarowski (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Javad Shokraiyan (G) | C | Ohio University | Chemistry and Biochemistry | | | | | | | | |
| Joshua Telser (S) | C | Roosevelt University | Biological, Physical and Health Sciences | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Daniel Mindiola (S)** | **PI** | **University of Pennsylvania** | **Chemistry** | NSF | CHE - Chemistry | CHE0848248 | P20072 | Applying High-Frequency and -Field EPR Spectroscopy of High-Spin First Row Transition Metal Ions that Hold Relevance as Catalysts for Cyclic Polymers | Chemistry | 1 | 5 |
| MRINAL BHUNIA (P) | C | University of Pennsylvania | Chemistry | NSF | CHE - Chemistry | CHE1152123 | | | | | |
| Matthew Mena (G) | C | University of Pennsylvania | Chemistry | | | | | | | | |
| Jacob Mohar (G) | C | University of Pennsylvania | Chemistry | | | | | | | | |
| Andrew Ozarowski (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Joshua Telser (S) | C | Roosevelt University | Biological, Physical and Health Sciences | | | | | | | | |
| **Xiaoling Wang (S)** | **PI** | **California State University, East Bay** | **Chemistry** | Laboratory Directed Research and Development Program of Oak Ridge National Laboratory | US Government Lab | | P20077 | Investigation of Magnetic Properties of Quantum Spin Ice Candidates using High Field EPR | Condensed Matter Physics | 2 | 22 |
| Jhersie Cabigting (U) | C | California State University, East Bay | Chemistry/Biochemistry | | | | | | | | |
| Manoj Vinayaka Hanabe Subramanya (P) | C | Florida State University | Physics | | | | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| Brenden Ortiz (S) | C | Oak Ridge National Laboratory | Material Science and Technology Division | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Michael Rose (S)** | **PI** | **University of Texas, Austin** | **Chemistry** | NSF | CHE - Chemistry | CHE2109175 | P20117 | Frequency- and Field-Domain Magnetic Resonance Investigation of Bismuth-Ligated Co(I) Complexes | Chemistry | 1 | 1 |
| Brenna Cashman (P) | C | University of Texas, Austin | Chemistry | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Ranajit Mondol (P) | C | University of Texas, Austin | Chemistry | | | | | | | | |
| Joshua Telser (S) | C | Roosevelt University | Biological, Physical and Health Sciences | | | | | | | | |
| **Johan van Tol (S)** | **PI** | **National High Magnetic Field Laboratory** | **EMR** | No other support | | | P20140 | Maintenance and testing | Condensed Matter Physics | 2 | 9 |
| **George Christou (S)** | **PI** | **University of Florida** | **Chemistry** | DOE | BES – Basic Energy Sciences | DE-SC0019330 | P20172 | EPR Investigation of 3d Transition Metal Complexes as Molecular Qubits | Chemistry | 2 | 14 |
| Ferdous Ara (P) | C | National High Magnetic Field Laboratory | NHMFL | | | | | | | | |
| ChristiAnna Brantley (P) | C | University of Florida | Chemistry | | | | | | | | |
| Wei-Hao Chou (G) | C | Florida State University | Physics | | | | | | | | |
| Alexander Diodati (G) | C | University of Florida | Chemistry | | | | | | | | |
| Ethan Fisher (G) | C | University of Florida | Chemistry | | | | | | | | |
| Manoj Vinayaka Hanabe Subramanya (P) | C | Florida State University | Physics | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| Robert Stewart (G) | C | Florida State University | Physics | | | | | | | | |
| **William Evans (S)** | **PI** | **University of California, Irvine** | **Department of Chemistry** | No other support | | | P20194 | Investigation of clock transitions in lanthanide-based molecular qubits | Chemistry | 4 | 20.5 |
| Lauren Anderson-Sanchez (G) | C | University of California, Irvine | Department of Chemistry | | | | | | | | |
| Manoj Vinayaka Hanabe Subramanya (P) | C | Florida State University | Physics | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Jakub Hruby (P) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Krishnendu Kundu (P) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Joshua Queen (P) | C | University of California, Irvine | Department of Chemistry | | | | | | | | |
| **Danna Freedman (S)** | **PI** | **Northwestern University** | **Chemistry** | DOE | BES – Basic Energy Sciences | DE-SC0019356 | P20197 | Developing the next generation of optically addressable molecular qubits | Chemistry | 3 | 14 |
| Rianna Greer (G) | C | Massachusetts Institute of Technology | Chemistry | | | | | | | | |
| Manoj Vinayaka Hanabe Subramanya (P) | C | Florida State University | Physics | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Dane Johnson (G) | C | Massachusetts Institute of Technology | Chemistry | | | | | | | | |
| Kavipriya Thangavel (P) | C | Florida State University | Physics | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Agnes Yi (G) | C | Massachusetts Institute of Technology | chemistry | | | | | | | | |
| **Aaron Sadow (S)** | **PI** | **Iowa State University** | **Chemistry** | DOE | BES – Basic Energy Sciences | DE-AC02-07CH11358 | P20206 | EPR spectroscopy of gadolinium homoleptic organometallics | Chemistry | 1 | 2 |
| Sergey Bud'ko (S) | C | Ames Laboratory | Physics and Astronomy | | | | | | | | |
| Thierry Dubroca (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Aaron Rossini (S) | C | Iowa State University | Chemistry | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Andreas Danopoulos (S)** | **PI** | **National and Kapodistrian University of Athens** | **Chemistry** | National and Kapodistrain University of Athens | Non US College and University | | P20208 | Zero-field splitting in mononuclear 3-coordinate S = 2 Cr(II) and oligonuclear lower oxidation state chromium complexes, probed by HFEPR | Chemistry | 1 | 3 |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Panayotis Kyritsis (S) | C | National and Kapodistrian University of Athens | Chemistry | | | | | | | | |
| **Selvan Demir (S)** | **PI** | **Michigan State University** | **Department of Chemistry** | No other support | | | P20218 | Magnetic Properties of Radical-Bridged Lanthanide Complexes | Chemistry | 4 | 19 |
| Florian Benner (G) | C | Michigan State University | Department of Chemistry | | | | | | | | |
| Saroshan Deshapriya (G) | C | Michigan State University | Chemistry | | | | | | | | |
| Manoj Vinayaka Hanabe Subramanya (P) | C | Florida State University | Physics | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Jakub Hruby (P) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Juraj Cernak (S)** | **PI *** | **Safarik University** | **Department of Inorganic Chemistry of the Institute of Chemistry** | Ministry of Education, Science, Research and Sport of the Slovak Republic | Non US Ministry | APVV-18-0016 | P20220 | FIRMS and HFEPR methods for study of penta-coordinated Ni(II) complexes | Chemistry | 1 | 2 |
| Roman Boca (S) | C | Slovak University of Technology in Bratislava | Inorganic Chemistry | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Richard Smolko (G) | C | Safarik University | Department of Inorganic Chemistry of the Institute of Chemistry | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lloyd Lumata (S)** | **PI** | **University of Texas, Dallas** | **Physics** | DOD | CDMRP - Congressionally Directed Medical Research Programs | HT9425-23-1-0062 | P20245 | EPR and Hyperpolarization studies of Potential DNP Polarizing Agents TEMPO-loaded Q-beta and TMV Viral Shells | Biology, Biochemistry, Biophysics | 1 | 1.5 |
| Thierry Dubroca (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Jenica Lumata (P) | C | National High Magnetic Field Laboratory | NMR/CIMAR | | | | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| **Linda Doerrer (S)** | **PI** | **Boston University** | **Chemistry Department** | NSF | CHE - Chemistry | CHE1800313 | P20278 | Dimeric {MnIII2(□2-CO3)} Compound, Mixed-valent {Mn6} Cluster and Related MnIV Species | Chemistry | 5 | 9 |
| Jessica Elinburg (G) | C | Boston University | Chemistry | | | | | | | | |
| Shawn Moore (G) | C | Boston University | Chemistry | | | | | | | | |
| Andrew Ozarowski (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Léa Toubiana (G) | C | Boston University | Department of Chemistry | | | | | | | | |
| **Mary Ellen Zvanut (S)** | **PI** | **University of Alabama, Birmingham** | **Physics** | No other support | | | P20280 | Field Dependence of Electron Spin Lattice Relaxation in Spin Qubit Candidates | Condensed Matter Physics | 1 | 5 |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Kirill Kovnir (S)** | **PI** | **Iowa State University** | **Chemistry** | NSF | DMR - Division of Materials Research | DMR2003783 | P20296 | EPR investigation of the metastable 3d transition metal layered compounds | Chemistry | 1 | 3 |
| Yao Abusa (G) | C | Iowa State University | Chemistry | | | | | | | | |
| Andrew Ozarowski (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Michael Shatruk (S)** | **PI** | **National High Magnetic Field Laboratory** | **Department of Chemistry and Biochemistry** | NSF | CHE - Chemistry | CHE2300779 | P20300 | Crystal Structure of Valence Tautomeric Cobalt Complex in High Magnetic Fields | Material Science | 3 | 15 |
| Ferdous Ara (P) | C | National High Magnetic Field Laboratory | NHMFL | DOE | EFRC - Energy Frontier Research Centers | DESC0019330 | | | | | |
| Shubham Bisht (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Miguel Gakiya (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Dibya Mondal (P) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Andrew Ozarowski (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Thierry Dubroca (S)** | **PI** | **National High Magnetic Field Laboratory** | **EMR** | NSF | DMR - Division of Materials Research | DMR2128556 | P20301 | Hardware development, upgrades and maintenance of Electron Magnetic Resonance spectrometers | Engineering | 10 | 171 |
| Manoj Vinayaka Hanabe Subramanya (P) | C | Florida State University | Physics | NSF | DMR - Division of Materials Research | DMR1644779 | | | | | |
| Kavipriya Thangavel (P) | C | Florida State University | Physics | | | | | | | | |
| Bianca Trociewitz (O) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **E. Carolina Sañudo (S)** | **PI** | **University of Barcelona** | **Inorganic and Organic Chemistry** | No other support | | | P20305 | Phase-Memory Time of Large Area Arrays of Qubits | Material Science | 3 | 24 |
| Guillem Gabarró-Riera (G) | C | University of Barcelona | Inorganic and Organic Chemistry department. Inorganic Chemistry Section. | | | | | | | | |
| Manoj Vinayaka Hanabe Subramanya (P) | C | Florida State University | Physics | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Jakub Hruby (P) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **P. Chris Hammel (S)** | **PI** | **Ohio State University** | **Physics** | No other support | | | P20308 | High Frequency Electron Magnetic Resonance of Two-Dimensional van der Waals Magnets | Condensed Matter Physics | 1 | 14 |
| Inhee Lee (S) | C | Ohio State University | Physics | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Geoffrey Strouse (S)** | **PI** | **National High Magnetic Field Laboratory** | **Chemistry** | NSF | DMR - Division of Materials Research | DMR1905757 | P20318 | Multinuclear solid-state NMR investigation of plasmonic andphotoluminsecent nanocrystals | Chemistry | 2 | 26 |
| Catherine Fabiano (G) | C | Florida State University | Chemistry | | | | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| Raul Ortega (G) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Ali Pazoki (G) | C | Florida State University | Chemistry | | | | | | | | |
| Austin Peach (P) | C | French National Center for Scientific Research | D1 - Materials Chemistry | | | | | | | | |
| Dianna Pledger (U) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Robert Schurko (S) | C | Florida State University | Chemistry | | | | | | | | |
| Robert Smith (G) | C | National High Magnetic Field Laboratory | | | | | | | | | |
| Robert Smith (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Sanjna Sukumaran (G) | C | Rice University | Materials Science and NanoEngineering | | | | | | | | |
| **Suheon Lee (P)** | **PI** | **IBS Center for Artificial Low Dimensional Electronic Systems** | **Center for Artificial Low Dimensional Electronic Systems** | Institute for Basic Science, Republic of Korea | Non US Government Lab | | P20330 | ESR study of the nodal-line semiconductor Mn3Si2Te6 | Condensed Matter Physics | 2 | 24 |
| Jun Sung Kim (S) | C | Pohang University of Science and Technology | Physics | Institute for Basic Science, Repulbic of Korea | Non US Government Lab | | | | | | |
| Wonjun Lee (S) | C | IBS Center for Artificial Low Dimensional Electronic Systems | Center for Artifical Low Dimensional Electronic Systems | | | | | | | | |
| Choongjae Won (P) | C | Pohang University of Science and Technology | Physics | | | | | | | | |
| **Grace Morgan (S)** | **PI** | **University College Dublin** | **School of Chemistry and Chemical Biology** | No other support | | | P20360 | High Field EPR Analysis of Redox and Spin State in Spin Crossover Complexes | Chemistry | 2 | 6 |
| Francesca Adami (G) | C | University College Dublin | School of Chemistry | NSF | DMR - Division of Materials Research | DMR1644779 | | | | | |
| Emmelyne Cuza (P) | C | University College Dublin | Chemistry | | | | | | | | |
| Brittany Grimm (G) | C | Florida State University | Physics | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Zoi Lada (P) | C | University College Dublin | School of Chemistry | | | | | | | | |
| Andrew Ozarowski (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Thierry Dubroca (S)** | **PI** | **National High Magnetic Field Laboratory** | **EMR** | No other support | | | P20379 | Performance improvement of high-resolution THz EPR spectrometer based on the series-connected hybrid | Development of Magnet Technology | 4 | 16 |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| Bianca Trociewitz (O) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Henry La Pierre (S)** | **PI** | **Georgia Institute of Technology** | **School of Chemistry and Biochemistry** | DOE | BES – Basic Energy Sciences | DE-SC0023455 | P20424 | Measuring and Tuning the Effects of Crystal Field and Vibrational Degrees of Freedom onthe Static and Dynamic Properties of Lanthanide and Actinide Molecular Nanomagnets | Chemistry | 3 | 3 |
| Maximilian Bernbeck (P) | C | Georgia Institute of Technology | Chemistry | | | | | | | | |
| Thierry Dubroca (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Kavipriya Thangavel (P) | C | Florida State University | Physics | | | | | | | | |
| Grant Wilkinson (G) | C | Georgia Institute of Technology | School of Chemistry | | | | | | | | |
| **Tomas Orlando (S)** | **PI** | **National High Magnetic Field Laboratory** | **Electron Magnetic Resonance** | No other support | | | P20433 | Characterization of EPR properties of organic radicals in liquids at high frequencies | Chemistry | 8 | 38 |
| Huyen Bui (U) | C | Florida State University | EMR | UCGP | | 5218 | | | | | |
| Jhersie Cabigting (U) | C | California State University, East Bay | Chemistry/Biochemistry | Florida State University | US College and University | | | | | | |
| Thierry Dubroca (S) | C | National High Magnetic Field Laboratory | EMR | Florida State University | US College and University | CRC Seed Grant | | | | | |
| Angeliki Giannoulis (S) | C | Weizmann Institute of Science | Chemical and biological physics | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Natalie Ibbetson (U) | C | California State University, East Bay | Chemistry | | | | | | | | |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Hui Xiong (S)** | **PI** | **Boise State University** | **Materials Science and Engineering** | DOE | ASCR - Advanced Scientific Computing Research | DE-SC0019121 | P20451 | Understanding the synergy of anion and transition metal redox in in P2-type cathodes for sodium-ion batteries using EPR spectroscopy. | Material Science | 2 | 8 |
| Dewen Hou (P) | C | Boise State University | Department of Materials Science and Engineering | | | | | | | | |
| Yan-Yan Hu (S) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| Ifeoluwa Oyekunle (G) | C | Florida State University | Chemistry | | | | | | | | |
| Erica Truong (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| **Claudia Avalos (S)** | **PI** | **New York University** | **Chemistry** | New York University | US College and University | | P20459 | Optically induced spin polarization in strongly-coupled chromophore-radical systems studied via transient electron magnetic resonance | Chemistry | 1 | 5 |
| Martin Kirk (S) | C | University of New Mexico | Department of Chemistry | | | | | | | | |
| David Shultz (S) | C | North Carolina State University | Chemistry | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Wen Zhu (S)** | **PI *** | **Florida State University** | **Chemistry and Biochemistry** | NSF | CHE - Chemistry | CHE2320338 | P20508 | Dissecting the Reaction Mechanism of Radical SAM Enzymes | Biology, Biochemistry, Biophysics | 1 | 7 |
| Lilly Cheek (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| **Snorri Sigurdsson (S)** | **PI *** | **University of Iceland** | **Chemistry** | NIH | NIGMS - National Institute of General Medical Sciences | GM148766 | P20530 | Improving biradicals for MAS-DNP at high field:a combined approach of Spin-Dynamics theory, DFT and high-field EPR | Biology, Biochemistry, Biophysics | 3 | 6.5 |
| Satyaki Chatterjee (G) | C | University of Iceland | Department of Chemistry | Icelandic Research Funds | Other | 239662 | | | | | |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | European Union's Horizon 2020 research and innovation programme | Other | 101008500 | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Sungsool Wi (S)** | **PI** | **National High Magnetic Field Laboratory** | **NMR** | NSF | CHE - Chemistry | CHE2203405 | P20552 | Development of Novel NMR Techniques for Studies at High Magnetic Fields and under Fast Magic-Angle Spinning: Utilization of 1H-detection and Natural 13C Abundance | Biology, Biochemistry, Biophysics | 1 | 2 |
| Lucio Frydman (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| **Mariya Zhuravleva (S)** | **PI** | **University of Tennessee, Knoxville** | **Materials Science and Engineering** | NSF | DMR - Division of Materials Research | DMR1846935 | P20554 | Investigation of paramagnetic centers and their contribution to scintillation mechanism in cutting-edge scintillators | Material Science | 1 | 2 |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| Yauhen Tratsiak (P) | C | University of Tennessee, Knoxville | Scintillation Materials Research Center | | | | | | | | |
| **Andrew Ozarowski (S)** | **PI** | **National High Magnetic Field Laboratory** | **EMR** | No other support | | | P20555 | Calibration And Maintenance Of The 15/17 T Epr Instrument | Development of Magnet Technology | 2 | 79 |
| Robert Stanton (S) | C | National High Magnetic Field Laboratory | MS&T - Resistive Magnets | | | | | | | | |
| **Aaron Rossini (S)** | **PI** | **Iowa State University** | **Chemistry** | DOE | BES – Basic Energy Sciences | Internal Ames Lab Funding | P20568 | Dynamic Nuclear Polarization and EPR of ?-Irradiated Solids | Biology, Biochemistry, Biophysics | 4 | 27 |
| Thierry Dubroca (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Lamahewage Sujeewa Lamahewage (G) | C | Iowa State University | Chemistry | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Hadi Mohammadigoushki (S)** | **PI *** | **Florida State University** | **Chemical and Biomedical Engineering** | Rare Earth Initiative/gypstack project | Other | | P20600 | Dynamics and characterization of cluster formation via inhomogeneous NMR spectroscopy | Engineering | 1 | 1 |
| Aidan Lowery (G) | C | National High Magnetic Field Laboratory | Chemical and Biomedical Engineering | | | | | | | | |
| Theo Siegrist (S) | C | National High Magnetic Field Laboratory | Chemical and Biomedical Engineering | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Konstantin Bukhryakov (S)** | **PI *** | **Florida International University** | **Chemistry and Biochemistry** | NSF | CHE - Chemistry | CHE2212944 | P20604 | Advanced EMR Studies of Mononuclear Four-Coordinate Bis-Fluoride Bis-NHC Complexes of Chromium(II), Iron(II), and Cobalt(II) | Chemistry | 3 | 9.5 |
| Carlos Acosta (G) | C | Florida International University | Chemistry and Biochemistry | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Joshua Telser (S) | C | Roosevelt University | Biological, Physical and Health Sciences | | | | | | | | |
| **Thao Tran (S)** | **PI *** | **Clemson University** | **Chemistry** | NSF | OIA - Office of Integrative Activities | NSF-OIA-2227933 | P20648 | Understanding the Spin Dynamics of Eu2+ for Molecular Qubit Design | Chemistry | 1 | 2 |
| Uchenna Chinaegbomkpa (G) | C | Clemson University | Chemistry | | | | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| **En-Che Yang (S)** | **PI** | **Fu-Jen Catholic University** | **Chemistry** | UCGP | | | P20650 | Accurate measurement of spin parameters of single-ion magnets by FIRMS and HFEPR | Chemistry | 1 | 1 |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Abhijit Biswas (S)** | **PI *** | **Rice University** | **Materials Science and Nanoengineering** | No other support | | | P20662 | Investigation of defects in h-BN thin films as a source of quantum emitters | Condensed Matter Physics | 5 | 20.5 |
| Pulickel Ajayan (S) | C | Rice University | Materials Science and Nano Engineering | | | | | | | | |
| Arka Chatterjee (G) | C | Rice University | 2Department of Electrical and Computer Engineering | | | | | | | | |
| Manoj Vinayaka Hanabe Subramanya (P) | C | Florida State University | Physics | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Jakub Hruby (P) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Jiaming Luo (G) | C | Rice University | Materials Science and NanoEngineering | | | | | | | | |
| Quang Nguyen (G) | C | Florida State University | EMR | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Hanyu Zhu (S) | C | Rice University | Materials Science and NanoEngineering | | | | | | | | |
| **Kasper Pedersen (S)** | **PI *** | **Technical University of Denmark** | **Department of Chemistry** | No other support | | | P20666 | A Triangular Eu(II)–Organic Tessellation for Ultra-Low Temperature Refrigeration | Chemistry | 1 | 1 |
| Maja Dunstan (P) | C | Technical University of Denmark | Department of Chemistry | | | | | | | | |
| Stephen Hill (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Jakub Hruby (P) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Anna Manvell (G) | C | Technical University of Denmark | Department of Chemistry | | | | | | | | |
| **Jeffrey Long (S)** | **PI** | **University of California, Berkeley** | **Chemistry** | No other support | | | P20690 | Hard Permanent Magnetism from Mixed-Valence Dilanthanide Complexes with Metal-Metal Bonding | Biology, Biochemistry, Biophysics | 2 | 6 |
| Audrey Bartlett (G) | C | Massachusetts Institute of Technology | Chemistry | | | | | | | | |
| Eun Sang Choi (S) | C | National High Magnetic Field Laboratory | Physics Department | | | | | | | | |
| Neil Harrison (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Jakub Hruby (P) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Emi Ito (O) | C | University of California, Berkeley | Chemistry | | | | | | | | |
| Hyunchul Kwon (G) | C | University of California, Berkeley | Chemistry | | | | | | | | |
| Danh Ngo (G) | C | University of California, Berkeley | Chemistry | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Stanley Tozer (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Ziling Xue (S)** | **PI** | **University of Tennessee, Knoxville** | **Chemistry** | NSF | CHE - Chemistry | CHE2349345 | P20696 | Studies of Molecular Quantum Materials by Magneto-Spectroscopies | Chemistry | 3 | 6 |
| Adiat Fakolujo (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Michael Jenkins (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Amanpreet Mahmi (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Brandon Sanders (G) | C | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Dmitry Semenov (T) | C | National High Magnetic Field Laboratory | DC Field | | | | | | | | |
| Johan van Tol (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Igor Alabugin (S)** | **PI *** | **Florida State University** | **Department of Chemistry & Biochemistry** | NSF | CHE - Chemistry | CHE2102579 | P20726 | Synthesis and Characterization of Polyaromatic Diradicals with Tunable Electronic and Spin Properties | Chemistry | 1 | 6 |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| Michael Shatruk (S) | C | National High Magnetic Field Laboratory | Department of Chemistry and Biochemistry | | | | | | | | |
| **Nicholas Chilton (S)** | **PI** | **Australian National University** | **Research School of Chemistry** | Australian National University | Non US College and University | | P20733 | Narrow linewidth Gd(III) spin labels | Chemistry | 1 | 5 |
| Thierry Dubroca (S) | C | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| David Parker (S) | C | University of Durham | Chemistry | | | | | | | | |
| **Thomas Gunnoe (S)** | **PI *** | **University of Virginia** | **Chemistry** | DOE | BES – Basic Energy Sciences | DE-SC00234430 | P20734 | EPR Spectroscopy to Characterize 1st Row Transition Metal Complexes | Chemistry | 1 | 7 |
| Tomas Orlando (S) | C | National High Magnetic Field Laboratory | Electron Magnetic Resonance | | | | | | | | |
| **David Herbert (S)** | **PI** | **University of Manitoba** | **Department of Chemistry** | Natural Sciences and Engineering Research Council of Canada | Other Non US Federal Agency | RGPIN-04501-2022 | P20747 | High-Frequency / -Field EPR and FIRMS Spectroscopy of Structurally Distorted High-Spin Fe(II) Complexes and High-/Low-Spin Fe(III) Complexes of Methylated Pincer-Type Amido Ligands With Complicated Electronic Structures | Chemistry | 1 | 5 |
| Jurek Krzystek (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Mykhaylo Ozerov (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science, DC Field CMS | | | | | | | | |
| Baldeep Sidhu (G) | C | University of Manitoba | Chemistry | | | | | | | | |
| Joshua Telser (S) | C | Roosevelt University | Biological, Physical and Health Sciences | | | | | | | | |
| | | | | | | | | **Total Proposals: 57** | | **Experiments: 124** | **Days: 751** |

2024 HBT

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Long Ju (S)** | **PI** | **Massachusetts Institute of Technology** | **Physics** | NSF | DMR - Division of Materials Research | DMR1231319 | **P19811** | Study of Electron Correlation in 2D Moire Superlattices | Condensed Matter Physics | 2 | 106 |
| Rasul Gazizulin (S) | C | University of Florida | Physics | NSF | DMR - Division of Materials Research | DMR2225925 | | | | | |
| Tianyi Han (P) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Tonghang Han (G) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Gregory Labbe (O) | C | University of Florida | Physics | | | | | | | | |
| Zhengguang Lu (P) | C | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Mark Meisel (S) | C | University of Florida | Department of Physics | | | | | | | | |
| Chris Ollmann (T) | C | University of Florida | High B/T | | | | | | | | |
| Nicolas Silva (P) | C | University of Florida | High B/T | | | | | | | | |
| **Dominique Laroche (S)** | **PI** | **University of Florida** | **Physics** | UCGP | | | **P20507** | Coulomb drag of spin-polarized Luttinger liquids at ultra-lowtemperatures - continuation of NHMFL-UCGP due to pandemic | Biology, Biochemistry, Biophysics | 2 | 129 |
| Sadhvikas Addamane (S) | C | Sandia National Laboratories | Center for Integrated Nanotechnologies (CINT) | No other support | | | | | | | |
| Alexander Donald (G) | C | University of Florida | Physics | | | | | | | | |
| Rasul Gazizulin (S) | C | University of Florida | Physics | | | | | | | | |
| Guillaume Gervais (S) | C | McGill University | Physics department | | | | | | | | |
| Chao Huan (P) | C | University of Florida | Physics | | | | | | | | |
| Gregory Labbe (O) | C | University of Florida | Physics | | | | | | | | |
| Sangyun Lee (S) | C | National High Magnetic Field Laboratory | Department of Physics | | | | | | | | |
| Chris Ollmann (T) | C | University of Florida | High B/T | | | | | | | | |
| Nicolas Silva (P) | C | University of Florida | High B/T | | | | | | | | |
| Mingyang Zheng (G) | C | University of Florida | Physics Department | | | | | | | | |
| **Allen Scheie (S)** | **PI *** | **Los Alamos National Laboratory** | **MPA-Q** | DOE | Office of Science | DE-SC0000000 | **P20517** | Quantum spin liquid phase in rare-earth triangular lattice antiferromagnets | Condensed Matter Physics | 1 | 167.5 |
| Chao Huan (P) | C | University of Florida | Physics | | | | | | | | |
| Minseong Lee (S) | C | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Sangyun Lee (S) | C | National High Magnetic Field Laboratory | Department of Physics | | | | | | | | |
| Chris Ollmann (T) | C | University of Florida | High B/T | | | | | | | | |
| Nicolas Silva (P) | C | University of Florida | High B/T | | | | | | | | |
| Vivien Zapf (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Zahid Hasan (S)** | **PI *** | **Princeton University** | **Physics** | Gordon and Betty Moore Foundation | Other | GBMF4547 | **P20560** | Superconductivity in topological materials | Condensed Matter Physics | 1 | 163.5 |
| Md Shafayat Hossain (P) | C | Princeton University | Physics | | | | | | | | |
| Chao Huan (P) | C | University of Florida | Physics | | | | | | | | |
| Mark Meisel (S) | C | University of Florida | Department of Physics | | | | | | | | |
| Nicolas Silva (P) | C | University of Florida | High B/T | | | | | | | | |
| **Rasul Gazizulin (S)** | **PI *** | **University of Florida** | **Physics** | UCGP | | | **P20605** | Enhancing the Temperature Range of the Cryogen-free Dilution Cryostat at High B/T Facility: Assessing the Viability of Copper Powder Demagnetization Technique | Condensed Matter Physics | 1 | 52 |
| Alexander Donald (G) | C | University of Florida | Physics | | | | | | | | |
| Chao Huan (P) | C | University of Florida | Physics | | | | | | | | |
| Sangyun Lee (S) | C | National High Magnetic Field Laboratory | Department of Physics | | | | | | | | |
| Mark Meisel (S) | C | University of Florida | Department of Physics | | | | | | | | |
| Chris Ollmann (T) | C | University of Florida | High B/T | | | | | | | | |
| Nicolas Silva (P) | C | University of Florida | High B/T | | | | | | | | |
| Andrew Woods (S) | C | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| **Jun Zhu (S)** | **PI *** | **Pennsylvania State University** | **Physics** | DOE | BETO - Bioenergy Technologies Office | SC0022947 | **P20654** | Probing the physics of anyons and non-Abelians in ultra-high quality bilayer graphene devices | Condensed Matter Physics | 1 | 20 |
| Rasul Gazizulin (S) | C | University of Florida | Physics | | | | | | | | |
| Chengqi Guo (G) | C | Pennsylvania State University | Physics | | | | | | | | |
| Ke Huang (G) | C | Stanford University | Applied Physics | | | | | | | | |
| Mark Meisel (S) | C | University of Florida | Department of Physics | | | | | | | | |
| Chris Ollmann (T) | C | University of Florida | High B/T | | | | | | | | |
| Nicolas Silva (P) | C | University of Florida | High B/T | | | | | | | | |
| | | | | | | | | **Total Proposals:** 6 | | **Experiments:** 8 | **Days:** 638 |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rene Boiteau (S)** | **PI** | **University of Minnesota, Twin Cities** | **Chemistry** | UCGP | | | P19547 | Deciphering the sources of trace element binding organic ligands in coastal sediments. | Chemistry | 1 | 1.33 |
| Lydia Babcock-Adams (P) | C | National High Magnetic Field Laboratory | CIMAR, ICR | NSF | OCE - Ocean Sciences | OCE1829761 | | | | | |
| Peter Chace (G) | C | Oregon State University | College of Earth, Ocean and Atmospheric Science | Manchester-Liverpool Earth Atmosphere and Ocean Doctoral Training Program | | EAO DTP; NE/L002469/1 | | | | | |
| Nicole Coffey (G) | C | University of Delaware | School of Marine Science and Policy | NERC-funded GOAM project | | NE/P01304X/1 | | | | | |
| Christian Dewey (P) | C | Oregon State University | CEOAS | NERC Exploring the Frontiers Award | | NE/X010813/1 | | | | | |
| Ilana Farrell (G) | C | Oregon State University | College of Earth, Ocean, Atmospheric Sciences | | | | | | | | |
| Angela Knapp (S) | C | Florida State University | Earth, Ocean and Atmospheric Sciences | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Zeljka Popovic (G) | C | Florida State University | Ion Cyclotron Resonance | | | | | | | | |
| Clare Reimers (S) | C | Oregon State University | College Earth, Ocean and Atmospheric Sciences | | | | | | | | |
| Chad Weisbrod (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **Ryan Rodgers (S)** | **PI** | **National High Magnetic Field Laboratory** | **ICR** | Graduate School for Research XL-Chem | | ANR-18EURE-0020 | P19648 | Biofuels derived from Algae and Wood / Plastic Pyrolysis | Chemistry | 2 | 15.33 |
| Carlos Afonso (S) | C | Normandy University | Chemistry | University of Rouen Normandy | | ERDF, HN0001343 | | | | | |
| Brice Bouyssiere (S) | C | University of Pau and the Adour Region | IPREM | Labex SynOrg | | ANR-11- LABX- | | | | | |
| Martha Chacon (S) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance | Carnot Institute I2C | | | | | | | |
| David Dayton (T) | C | Research Triangle Institute International | Biofuels | European Union's Horizon 2020 Research Infrastructures Program | | 731077 | | | | | |
| Pierre Giusti (S) | C | TotalEnergies | OneTech DPP | iC2MC grant (IPA-5923) | Non US College and University | | | | | | |
| Julien Maillard (G) | C | Versailles Saint-Quentin-en-Yvelines University | LATMOS | | | | | | | | |
| Caroline Mangote (S) | C | TotalEnergies | Research & Technology | | | | | | | | |
| Charlotte Mase (G) | C | University of Rouen | Seine maritime | | | | | | | | |
| **Sung Kim (S)** | **PI *** | **Howard University** | **Chemistry** | NIH | NIAID - National Institute of Allergy and Infectious Diseases | AI139861 | P19670 | Differential carbohydrate utilization for lipid biosynthesis in the diapausing mosquito | Chemistry | 2 | 3.5 |
| Cheolho Sim (S) | C | Baylor University | Biology | | | | | | | | |
| Chad Weisbrod (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **Jens Blotevogel (S)** | **PI** | **Commonwealth Scientific and Industrial Research Organization** | **Environment** | DOD | ER - Environmental Research Program | ER21_3550 | P19867 | High-Field 21 Tesla FT-ICR Mass Spectrometry for Forensic Identification of PFASs | Engineering | 5 | 22 |
| Lydia Babcock-Adams (P) | C | National High Magnetic Field Laboratory | CIMAR, ICR | DOD | ER - Environmental Research Program | ER21-SO-3550 - CY21 | | | | | |
| William Bahureksa (P) | C | New Mexico State University, Main Campus | Chemistry | DOD | ER - Environmental Research Program | ER20-1265 | | | | | |
| Greg Blakney (S) | C | National High Magnetic Field Laboratory | ICR | DOD | ER - Environmental Research Program | ER-2718 | | | | | |
| Thomas Borch (S) | C | Colorado State University | Soil and Crop Science | | | | | | | | |
| Chris Hendrickson (S) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance Program | | | | | | | | |
| Christopher Higgins (S) | C | Colorado School of Mines | Civil and Environmental Enginnering | | | | | | | | |
| John Kornuc (S) | C | U.S. Naval Research Laboratory | Emerging contaminants, site characterization | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Nasim Pica (P) | C | Colorado State University | Environmental engineering | | | | | | | | |
| Holly Roth (G) | C | Colorado State University | Chemistry | | | | | | | | |
| Hamidreza Sharifan (P) | C | Colorado State University | Civil and Environmental Engineering | | | | | | | | |
| Robert Young (S) | C | Commonwealth Scientific and Industrial Research Organization | CSIRO Environment | | | | | | | | |
| **Alan Marshall (S)** | **PI** | **National High Magnetic Field Laboratory** | **ICR** | No other support | | | P20024 | Molecular Characterization of Dissolved Organic Material in Non-terrestrial Samples | Chemistry | 1 | 1 |
| Martha Chacon (S) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance | | | | | | | | |
| Joseph Frye-Jones (P) | C | Woods Hole Oceanographic Institution | Marine Chemistry and Geochemistry | | | | | | | | |
| Ryan Rodgers (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **Brice Bouyssiere (S)** | **PI** | **University of Pau and the Adour Region** | **IPREM** | International Humic Substances Society | Other | | P20108 | Tracing lead species in peat samples from the French Pyrenees as a function of depth using SEC-ICP-MS and FT ICR-MS | Biology, Biochemistry, Biophysics | 1 | 4.33 |
| Martha Chacon (S) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance | Université de Pay et des Pays de l'Adour | Other | | | | | | |
| Joseph Frye-Jones (P) | C | Woods Hole Oceanographic Institution | Marine Chemistry and Geochemistry | | | | | | | | |
| Deisy Giraldo Davila (G) | C | University of Pau and the Adour Region | Chemistry | | | | | | | | |
| Ryan Rodgers (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **Bradley Tolar (S)** | **PI** | **University of North Carolina, Wilmington** | **Biology and Marine Biology** | University of North Carolina Wilmington | US College and University | | P20200 | Molecular Level Characterization of Organically Bound Copper During the Seasonal Bloom of Thaumarchaeota off the Coast of North Carolina | Chemistry | 1 | 2 |
| Lydia Babcock-Adams (P) | C | National High Magnetic Field Laboratory | CIMAR, ICR | | | | | | | | |
| Parker Lawrence (G) | C | University of North Carolina, Wilmington | Biology and Marine Biology | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **Michael Senko (S)** | **PI** | **Thermo Fisher Scientific** | **R&D** | No other support | | | P20232 | Hardware Upgrade to 21T FT-ICR Mass Analyzer | Chemistry | 5 | 353.5 |
| Lissa Anderson (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Lydia Babcock-Adams (P) | C | National High Magnetic Field Laboratory | CIMAR, ICR | | | | | | | | |
| Greg Blakney (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Jesse Canterbury (T) | C | Thermo Fisher Scientific | LSMS R&D | | | | | | | | |
| Nathan Kaiser (S) | C | University of Washington | Genome Sciences | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Marek Polák (P) | C | National High Magnetic Field Laboratory | ICR group | | | | | | | | |
| John Quinn (T) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance Program | | | | | | | | |
| Chad Weisbrod (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **David Griffith (S)** | **PI** | **Willamette University** | **Chemistry** | No other support | | | P20234 | Identification and resolution of isobaric interferences of estrogens in wastewater | Chemistry | 1 | 1.33 |
| Lydia Babcock-Adams (P) | C | National High Magnetic Field Laboratory | CIMAR, ICR | | | | | | | | |
| Huan Chen (S) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rachel Mackelprang (S)** | **PI** | **California State University, Northridge** | **Department of Biology** | NSF | DEB - Division of Environmental Biology | DEB2029585 | P20235 | Investigating linkages between DOM turnover and microbial community structureduring permafrost thaw | Chemistry | 1 | 1.5 |
| Anne Kellerman (S) | C | Florida State University | Earth, Ocean and Atmospheric Science | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Robert Spencer (S) | C | Florida State University | Earth, Ocean & Atmospheric Science | | | | | | | | |
| Sommer Starr (P) | C | Trent University | Environmental Science | | | | | | | | |
| **Martha Chacon (S)** | **PI** | **National High Magnetic Field Laboratory** | **Ion Cyclotron Resonance** | No other support | | | P20331 | REU Project – Summer 2023Molecular-Level Characterization of Leached Chemicals from Food Packaging | Chemistry | 1 | 4.5 |
| Rachel White (U) | C | National High Magnetic Field Laboratory | Chemistry | | | | | | | | |
| **Robert Spencer (S)** | **PI** | **Florida State University** | **Earth, Ocean & Atmospheric Science** | NASA | | | P20434 | Chemical Signatures of Change in the Arctic: A Study of Terrigenous Dissolved Organic Matter in the Yukon River Delta | Chemistry | 1 | 5 |
| Alyssa Burns (G) | C | University of California, Davis | Land, Air and Water Resources | | | | | | | | |
| Anne Kellerman (S) | C | Florida State University | Earth, Ocean and Atmospheric Science | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Alexis Slentz (G) | C | Florida State University | Earth, Ocean, & Atmospheric Sciences | | | | | | | | |
| Maria Tzortziou (S) | C | City College of New York | Earth and Atmospheric Sciences | | | | | | | | |
| Oriane Yvin (G) | C | Florida State University | Earth,Ocean,and Atmospheric Science | | | | | | | | |
| **Robert Spencer (S)** | **PI** | **Florida State University** | **Earth, Ocean & Atmospheric Science** | NSF | OCE - Ocean Sciences | OCE2333961 | P20441 | El Niño Event Impacts on Organic Matter Export and Composition in the Amazon and Tapajós River | Chemistry | 1 | 4 |
| Martin Kurek (P) | C | Florida State University | Earth, Ocean, and Atmospheric Science | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **Giselle Knudsen (S)** | **PI** | **Alaunus Biosciences, Inc.** | **Research** | NIH | NCI - National Cancer Institute | CA254649 | P20453 | Identification and Quantification of Multispecific Antibody Domain-Containing Proteins in Biological Samples | Biology, Biochemistry, Biophysics | 2 | 13.5 |
| Lissa Anderson (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **Dave Valentine (S)** | **PI** | **University of California, Santa Barbara** | **Department of Geological Sciences** | State of California | Other | State of California Sea Grant of Southern California | P20463 | Molecular characterization of oil residues in San Pedro Bason (California) | Chemistry | 1 | 0.5 |
| Joseph Frye-Jones (P) | C | Woods Hole Oceanographic Institution | Marine Chemistry and Geochemistry | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Robert Nelson (S) | C | Woods Hole Oceanographic Institution | Dept Marine Chemistry and Geochemistry | | | | | | | | |
| Chris Reddy (S) | C | Woods Hole Oceanographic Institution | Geochemistry | | | | | | | | |
| Ryan Rodgers (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Jacob Schmidt (G) | C | University of California, Santa Barbara | Interdepartmental Graduate Program in Marine Science (IGPMS) | | | | | | | | |
| **Brice Bouyssiere (S)** | **PI** | **University of Pau and the Adour Region** | **IPREM** | No other support | | | P20493 | Molecular characterization of lignocellulosic pyrolysis bio-oils and their solubility-separated fractions. | Chemistry | 1 | 9 |
| Martha Chacon (S) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance | | | | | | | | |
| David Dayton (T) | C | Research Triangle Institute International | Biofuels | | | | | | | | |
| German Gascon (T) | C | University of Pau and the Adour Region | IPREM | | | | | | | | |
| Pierre Giusti (S) | C | TotalEnergies | OneTech DPP | | | | | | | | |
| Caroline Mangote (S) | C | TotalEnergies | Research & Technology | | | | | | | | |
| Ryan Rodgers (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Wladimir Ruiz (G) | C | Institute of Analytical Sciences and Physical Chemistry for the Environment and Materials | IPREM | | | | | | | | |
| **Alexander Zherebker (P)** | **PI *** | **University of Cambridge** | **Chemistry** | No other support | | | P20511 | Molecular imprints of aerosol deposits in sea ice and ice cores from Antarctica as revealed by 21T FTICR MS | Chemistry | 1 | 0.33 |
| Lydia Babcock-Adams (P) | C | National High Magnetic Field Laboratory | CIMAR, ICR | | | | | | | | |
| Chiara Giorio (S) | C | University of Cambridge | Department of Chemistry | | | | | | | | |
| Siobhán Johnson (G) | C | University of Cambridge | Chemistry | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Elizabeth Thomas (S) | C | British Antarctic Survey | Ice Dynamics and Palaeoclimate | | | | | | | | |
| **Amy McKenna (S)** | **PI** | **National High Magnetic Field Laboratory** | **ICR** | No other support | | | P20580 | Research Experience for FSU L.A.S. Students on Dissolved Organic Matter Characterization by 21 tesla FT-ICR MS | Chemistry | 1 | 0.5 |
| Kaitlyn Armour (U) | C | Florida State University | Undergraduate Student | | | | | | | | |
| Emily Hughes (U) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance | | | | | | | | |
| Sylvia Long (U) | C | Florida State University | NHMFL FSU | | | | | | | | |
| Shane Meyer (U) | C | Florida State University | Mathematics | | | | | | | | |
| Jonathen Taye (U) | C | Florida State University | Arts and Sciences | | | | | | | | |
| Jillian Torres (U) | C | Florida State University | Ion Cyclotron Resonance | | | | | | | | |
| **María Diéguez (S)** | **PI *** | **National University of Comahue** | **Instituto de Investigaciones en Biodiversidad y Medioambiente** | National Council for Scientific Research of Argentina | Other | | P20585 | From landscape to molecules: climate and hydrology drive dissolved organic matter chemodiversity in Andean Patagonian lakes | Chemistry | 1 | 1 |
| Patricia García (S) | C | National University of Comahue | – Instituto de Investigaciones en Biodiversidad y Medioambiente | | | | | | | | |
| Amy Holt (G) | C | Florida State University | EAOS | | | | | | | | |
| Anne Kellerman (S) | C | Florida State University | Earth, Ocean and Atmospheric Science | | | | | | | | |
| Carolina Mansilla Ferro (G) | C | National University of Comahue | Instituto de Investigaciones en Biodiversidad y Medioambiente- | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Robert Spencer (S) | C | Florida State University | Earth, Ocean & Atmospheric Science | | | | | | | | |
| **Alexandre Shvartsburg (S)** | **PI *** | **Wichita State University** | **Chemistry and Biochemistry** | NSF | CHE - Chemistry | CHE2105182 | P20589 | Evaluation of High-Definition FAIMS on the 21 Tesla FTICR Platform | Chemistry | 1 | 2.5 |
| Hayden Thurman (G) | C | Wichita State University | Chemistry and Biochemistry | | | | | | | | |
| Chad Weisbrod (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Jared Kafader (S)** | **PI *** | **Northwestern University** | **Chemistry** | NIH | NIGMS - National Institute of General Medical Sciences | GM108569 | **P20594** | High Resolution and Charge Detection Studies Utilizing the FT-ICR Platform | Chemistry | 1 | 1.5 |
| Ryan Fellers (S) | C | Northwestern University | Departments of Chemistry and Molecular Biosciences and the Proteomics Center of Excellence | | | | | | | | |
| Nickolas Fisher (G) | C | Northwestern University | Chemistry | | | | | | | | |
| Michael Hollas (T) | C | Northwestern University | Proteomics Center of Excellence | | | | | | | | |
| Neil Kelleher (S) | C | Northwestern University | Department of Biochemistry, Molecular Biology, and Cell Biology | | | | | | | | |
| Chad Weisbrod (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **THomas Manning (S)** | **PI** | **Valdosta State University** | **Chemistry** | National Institute of Allergy and Infectious Disease | Other | 75N93019D00016 | **P20609** | High Mass/Charge Accuracy Study for new Cancer Drugs, Antibiotics, and Neurological Drugs | Biology, Biochemistry, Biophysics | 1 | 0.5 |
| Joseph Frye-Jones (P) | C | Woods Hole Oceanographic Institution | Marine Chemistry and Geochemistry | National Institute of Allergy and Infectious Disease | Other | 75N93023F00001 | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | In kind services (NIH tested dozens of our compounds). On going for over a decade (ex. 24 compounds tested at NCI). | Other | | | | | | |
| **Thomas Borch (S)** | **PI** | **Colorado State University** | **Soil and Crop Science** | NOAA | Other US Federal Agency | NOAA (National Oceanic and Atmospheric Administration), CRDA # 11.431, Funding # NOAAOAR-CPO-2022-2006799, Competition # 2943820 | **P20649** | Non-target analysis of structural fires for identification of organohalogens, PFAS, and PAHs using FT-ICR-MS | Chemistry | 1 | 1 |
| Lydia Babcock-Adams (P) | C | National High Magnetic Field Laboratory | CIMAR, ICR | | | | | | | | |
| Srinidhi Lokesh (P) | C | Colorado State University | Soil and Crop Sciences | | | | | | | | |
| Christian L'Orange (S) | C | Colorado State University | Mechanical Engineering | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Adam Norris (G) | C | Colorado State University | Soil and Crop Sciences | | | | | | | | |
| Jacob VanderRoest (G) | C | Colorado State University | Chemistry | | | | | | | | |
| Yael Zvulunov (P) | C | Colorado State University | Soil and Crop Sciences | | | | | | | | |
| **Maxime Bridoux (S)** | **PI *** | **French Alternative Energies and Atomic Energy Commission** | **Environmental sciences** | French National Research agency - FIRETRAC | Other Non US Federal Agency | ANR-20-CE01-0012-01 | **P20675** | Characterization of Phospholipids in Bio-Aerosol Samples Collected on the Mediterranean Coast and Related to the Sahara's Dust Plum | Biology, Biochemistry, Biophysics | 1 | 3.5 |
| Martha Chacon (S) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance | | | | | | | | |
| Christos Panagiotopoulos (S) | C | Aix-Marseille University | MIO Mediterranean Institute of Oceanography | | | | | | | | |
| Kalliopi Violaki (S) | C | Ecole Polytechnique Federale de Lausanne | ENAC | | | | | | | | |
| Chad Weisbrod (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **Christopher Rueger (S)** | **PI** | **University of Rostock** | **Interdisciplinary Faculty, Department Life, Light & Matter** | German Research Foundation (DFG) | Non US Foundation | ZI 764/28-1 | **P20697** | Compositional and Structural Analysis of Primary and Photo-Aged Scrubber Water Discharges from Ships Using Direct Infusion MS/MS and Online Liquid Chromatography and 21T Fourier Transform Ion Cyclotron Resonance Mass Spectrometry | Chemistry | 1 | 2.67 |
| Martha Chacon (S) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance | | | | | | | | |
| Helly Hansen (G) | C | University of Rostock | Interdisciplinary Faculty, Department Life, Light & Matter | | | | | | | | |
| Ryan Rodgers (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Ralf Zimmermann (S) | C | University of Rostock | Division of Analytical and Technical Chemistry | | | | | | | | |
| **Kristina Hakansson (S)** | **PI** | **National High Magnetic Field Laboratory** | **Ion Cyclotron Resonance** | NSF | CHE - Chemistry | CHE2404064 | **P20754** | Remaining Unknowns in Ion-Electron Reactions for Tandem Mass Spectrometry | Chemistry | 2 | 20.5 |
| Lissa Anderson (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Nate Kaiser (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Neven Mikawy (P) | C | National High Magnetic Field Laboratory | Chemistry and Biochemistry | | | | | | | | |
| **Andrew Yen (S)** | **PI** | **Baker Hughes Oilfield Operations, Inc.** | **Flow Assurance** | No other support | | | **P20755** | Analysis of Asphaltene Extrography Fractions from Rare Downhole Crude Oil Deposits Using FT-ICR MS | Chemistry | 1 | 13 |
| Martha Chacon (S) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance | | | | | | | | |
| Ryan Rodgers (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| **Jens Blotevogel (S)** | **PI** | **Commonwealth Scientific and Industrial Research Organization** | **Environment** | DOD | ER - Environmental Research Program | ER21-3550 | **P20788** | High-Field 21 Tesla FT-ICR Mass Spectrometry for Forensic Identification of PFAS | Chemistry | 2 | 5.67 |
| Lydia Babcock-Adams (P) | C | National High Magnetic Field Laboratory | CIMAR, ICR | DOD | ER - Environmental Research Program | ER20-1265 | | | | | |
| William Bahureksa (P) | C | New Mexico State University, Main Campus | Chemistry | DOD | ER - Environmental Research Program | ER-2718 | | | | | |
| Emily Hughes (U) | C | National High Magnetic Field Laboratory | Ion Cyclotron Resonance | | | | | | | | |
| John Kornuc (S) | C | U.S. Naval Research Laboratory | Emerging contaminants, site characterization | | | | | | | | |
| Wenchao Lu (S) | C | Commonwealth Scientific and Industrial Research Organization | Environment | | | | | | | | |
| Amy McKenna (S) | C | National High Magnetic Field Laboratory | ICR | | | | | | | | |
| Robert Young (S) | C | Commonwealth Scientific and Industrial Research Organization | CSIRO Environment | | | | | | | | |
| | | | | | | | | **Total Proposals:** **28** | | **Experiments:** **41** | **Days:** **495** |

| Participants (Name, Role, Org., Dept.) | | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Matthew Merritt (S)** | **PI** | * | **University of Florida** | **Biochemistry and Molecular Biology** | NIH | Other | R01DK105346 | P16133 | Merritt Projects | Biology, Biochemistry, Biophysics | 1 | 33 |
| Gaurav Sharma (P) | C | | University of Florida | BMB | | | | | | | | |
| **Samuel Grant (S)** | **PI** | | **National High Magnetic Field Laboratory** | **Chemical & Biomedical Engineering** | No other support | | | P17423 | 900 Maintenance Related to MRI | Biology, Biochemistry, Biophysics | 13 | 80 |
| Ashley Blue (T) | C | | National High Magnetic Field Laboratory | NHMFL | NSF | DMR - Division of Materials Research | DMR2128556 | | | | | |
| Hannah Bryant (G) | C | | Florida State University | Chemical and Biomedical Engineering at the College of Engineering | NIH | NIGMS - National Institute of General Medical Sciences | GM148766 | | | | | |
| Shinho Cho (O) | C | | National High Magnetic Field Laboratory | NMR-MRI | | | | | | | | |
| Thierry Dubroca (S) | C | | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| Malathy Elumalai (O) | C | | National High Magnetic Field Laboratory | NMR-MRI | | | | | | | | |
| Riqiang Fu (S) | C | | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Petr Gor'kov (S) | C | | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Shubha Gunaga (P) | C | | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| James Kimball (G) | C | | Florida State University | Chemistry | | | | | | | | |
| Jason Kitchen (O) | C | | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Frederic Mentink (S) | C | | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Ayyalusamy Ramamoorthy (S) | C | | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| Faith Scott (P) | C | | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Sungsool Wi (S) | C | | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| **Samuel Grant (S)** | **PI** | | **National High Magnetic Field Laboratory** | **Chemical & Biomedical Engineering** | No other support | | | P17559 | 500 MRI Maintenance | Engineering | 1 | 2 |
| **Cesario Borlongan (S)** | **PI** | | **University of South Florida** | **College of Medicine, Neurosurgery** | NIH | NINDS - National Institute of Neurological Disorders and Stroke | NS102395 | P19565 | In vivo assessment of cell-derived therapies for treatment of stroke: 23Na MRI and 1H MRS | Biology, Biochemistry, Biophysics | 8 | 12 |
| Jacob Athey (U) | C | | Florida State University | Chemical & Biomedical Engineering | NIH | NINDS - National Institute of Neurological Disorders and Stroke | NS115490 | | | | | |
| Jamini Bhagu (G) | C | | Florida State University | Chemical ENG | | | | | | | | |
| Hannah Bryant (G) | C | | Florida State University | Chemical and Biomedical Engineering at the College of Engineering | | | | | | | | |
| Bruce Bunnell (S) | C | | Tulane University | Pharmacology | | | | | | | | |
| Shannon Helsper (G) | C | | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| David Hike (G) | C | | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| Hedi Mattoussi (S) | C | | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Alfredo Scigliani (G) | C | | Florida State University | Chemical & Biomedical Engineering | | | | | | | | |
| Xuegang Yuan (G) | C | | Florida State University | Chemical & Biomedical Engineering | | | | | | | | |
| **Michael Famiano (S)** | **PI** | | **Western Michigan University** | **Physics** | Moore Foundation | Other | 7799 | P19582 | Applications of NMR to Astrobiology: Measurement of Shielding Tensor Components of Chiral Molecules | Biology, Biochemistry, Biophysics | 1 | 5 |
| Shiva Agarwal (G) | C | | Western Michigan University | Physics | | | | | | | | |
| Zbigniew Chajecki (S) | C | | Western Michigan University | Physics | | | | | | | | |
| Sonjong Hwang (S) | C | | California Institute of Technology | Chemistry and Chemical Engineering | | | | | | | | |
| Gellert Mezei (S) | C | | Western Michigan University | Chemistry | | | | | | | | |
| John Miller (S) | C | | Western Michigan University | Chemistry Dept | | | | | | | | |
| Sungsool Wi (S) | C | | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| **Kwang Hun Lim (S)** | **PI** | | **East Carolina University** | **Chemistry** | NIH | NINDS - National Institute of Neurological Disorders and Stroke | NS097490 | P19589 | Characterization of Structural Features of Cytotoxic Transthyretin Oligomers and their Interaction with Membranes | Biology, Biochemistry, Biophysics | 2 | 7 |
| Anvesh Kumar Reddy Dasari (G) | C | | East Carolina University | Chemistry | | | | | | | | |
| Zhehong Gan (S) | C | | National High Magnetic Field Laboratory | NHMFL | | | | | | | | |
| Ivan Hung (S) | C | | National High Magnetic Field Laboratory | CIMAR/NMR | | | | | | | | |
| Sungsool Wi (S) | C | | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| **Tim Murphy (S)** | **PI** | | **National High Magnetic Field Laboratory** | **DC Field Facility** | No other support | | | P19611 | Testing of DCFF magnets, power supplies and associated equipment | Condensed Matter Physics | 1 | 3 |
| Alimamy Bangura (S) | C | | National High Magnetic Field Laboratory | CMS | | | | | | | | |
| Andy Powell (S) | C | | National High Magnetic Field Laboratory | Operations | | | | | | | | |
| Julia Smith (S) | C | | National High Magnetic Field Laboratory | DC Field | | | | | | | | |
| Eric Stiers (O) | C | | National High Magnetic Field Laboratory | DC Field | | | | | | | | |
| **Ercan Cakmak (S)** | **PI** | | **Oak Ridge National Laboratory** | **Materials Science and Technology** | DOE | Other | N/A | P19640 | Solid State C13 NMR Measurements of Industrially Relevant Coals to Aid in the Development of Advanced Coal Molecular Models with Predictive Capabilities | Chemistry | 2 | 5 |
| Stephan Irle (S) | C | | Oak Ridge National Laboratory | Computational Sciences and Engineering Division | | | | | | | | |
| Gang Seob Jung (S) | C | | Oak Ridge National Laboratory | Computational Science and Engineering Division | | | | | | | | |
| Edgar Lara-Curzio (S) | C | | Oak Ridge National Laboratory | Materials Science & Technology Division | | | | | | | | |
| Jonathan Mathews (S) | C | | Pennsylvania State University | Energy and Mineral Engineering | | | | | | | | |
| **Hadi Mohammadigoushki (S)** | **PI** | | **Florida State University** | **Chemical and Biomedical Engineering** | NIH | NIAID - National Institute of Allergy and Infectious Diseases | AI163988 | P19663 | Probing adsorption of monoclonal antibodies at the oil-water interface | Engineering | 1 | 3 |
| Jamini Bhagu (G) | C | | Florida State University | Chemical ENG | | | | | | | | |
| Samuel Grant (S) | C | | National High Magnetic Field Laboratory | Chemical & Biomedical Engineering | | | | | | | | |
| **Robbie Iuliucci (S)** | **PI** | | **Washington and Jefferson College** | **Chemistry** | No other support | | | P19772 | NMR Crystallography of Pharmaceuticals and Biologically Relevant Nanocrystals Augmented by Multinuclear High Field Solid-State NMR | Chemistry | 4 | 9 |
| Ivy Bane (U) | C | | Washington and Jefferson College | Chemistry | | | | | | | | |
| Camereon Boley (U) | C | | Washington and Jefferson College | Chemistry | | | | | | | | |
| Angelika Dewicki (U) | C | | Washington and Jefferson College | Chemistry | | | | | | | | |
| Zachary Gardner (U) | C | | Washington and Jefferson College | Chemistry | | | | | | | | |
| Sean Holmes (P) | C | | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Brandon Johnson (U) | C | | Washington and Jefferson College | Chemistry | | | | | | | | |
| Sierra Kuzak (U) | C | | Washington and Jefferson College | Chemistry | | | | | | | | |
| Alex Markunas (U) | C | | Washington and Jefferson College | Chemistry | | | | | | | | |
| Nhung Nguyen (U) | C | | Washington and Jefferson College | Chemistry | | | | | | | | |
| Jack Potasiewicz (U) | C | | Washington and Jefferson College | Chemistry | | | | | | | | |
| Rosalynn Quiñones (S) | C | | Marshall University | Chemistry | | | | | | | | |
| Robert Schurko (S) | C | | Florida State University | Chemistry | | | | | | | | |
| Ren Wiscons (U) | C | | Amherst College | Chemistry | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Myriam Cotten (S)** | **PI** | **Oregon State University** | **Biochemistry and Biophysics** | NSF | MCB - Molecular and Cellular Biosciences | MCB1716608 | P19777 | Leveraging Solid-State NMR to Investigate Host Defense Mechanisms at Biological Membranes | Biology, Biochemistry, Biophysics | 17 | 70 |
| Riqiang Fu (S) | C | National High Magnetic Field Laboratory | NMR | NIH | NIGMS - National Institute of General Medical Sciences | GM126527 | | | | | |
| Evan Goodell (G) | C | College of William and Mary | Applied Science | | | | | | | | |
| Rongfu Zhang (P) | C | Florida State University | Chemistry and Biochemistry Department | | | | | | | | |
| Andrea Zourou (G) | C | College of William and Mary | Applied Science | | | | | | | | |
| **Marcus Foston (S)** | **PI** | **Washington University in St. Louis** | **Energy, Environmental & Chemical Engineering** | NSF | DMR - Division of Materials Research | DMR2105150 | P19800 | Determining secondary structure in protein-based block copolymer fibers by carbon-carbon correlation solid-state NMR spectroscopy | Material Science | 1 | 5 |
| Jingyao Li (G) | C | Washington University in St. Louis | Department of Energy, Environmental & Chemical Engineering | | | | | | | | |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Fuzhong Zhang (S) | C | Washington University in St. Louis | Energy, Environmental & Chemical Engineering | | | | | | | | |
| **Zhehong Gan (S)** | **PI** | **National High Magnetic Field Laboratory** | **NHMFL** | No other support | | | P19856 | Development and implementation of solid-state NMR methods at high magnetic fields | Chemistry | 12 | 59 |
| Ivan Hung (S) | C | National High Magnetic Field Laboratory | CIMAR/NMR | | | | | | | | |
| **Hadi Mohammadigoushki (S)** | **PI** | **Florida State University** | **Chemical and Biomedical Engineering** | NIH | NIAID - National Institute of Allergy and Infectious Diseases | AI163988 | P19875 | Protein spectroscopy in emulsions | Engineering | 33 | 192 |
| Jamini Bhagu (G) | C | Florida State University | Chemical ENG | NSF | CAREER - Faculty Early Career Development Program | 1942150 | | | | | |
| Reza Foudazi (S) | C | University of Oklahoma | School of Chemical, Biological and Materials Engineering | NIH | NIAID - National Institute of Allergy and Infectious Diseases | AI194215 | | | | | |
| Samuel Grant (S) | C | National High Magnetic Field Laboratory | Chemical & Biomedical Engineering | | | | | | | | |
| Ogaga Okedi (G) | C | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| Chloe Patterson (U) | C | Florida State University | Chemical and Biomedical Engineering Department | | | | | | | | |
| Alfredo Scigliani (G) | C | Florida State University | Chemical & Biomedical Engineering | | | | | | | | |
| **Sabyasachi Sen (S)** | **PI** | **University of California, Davis** | **Chemical Engineering and Materials Science** | NSF | DMR - Division of Materials Research | DMR1855176 | P19876 | High-Field NMR Investigation of the Structural Evolution during Nucleation in Glass-Ceramics: Towards an Atomistic Understanding | Engineering | 13 | 104 |
| Zhehong Gan (S) | C | National High Magnetic Field Laboratory | NHMFL | NSF | DMR - Division of Materials Research | DMR2409281 | | | | | |
| Ivan Hung (S) | C | National High Magnetic Field Laboratory | CIMAR/NMR | | | | | | | | |
| Randi Swanson (G) | C | University of California, Davis | Materials Science & Engineering | | | | | | | | |
| Amrit Venkatesh (S) | C | University of Virginia | Department of Chemistry | | | | | | | | |
| Bing Yuan (G) | C | University of California, Davis | Engineering | | | | | | | | |
| **Robert Schurko (S)** | **PI** | **Florida State University** | **Chemistry** | NSF | CHE - Chemistry | CHE2003854 | P19885 | Multinuclear Solid-State NMR of Quadrupolar Nuclei in Active Pharmaceutical Ingredients: New Pathways for the Characterization of Polymorphs, Hydrates, Cocrystals, and Dosage Forms | Chemistry | 103 | 270 |
| Adam Altenhof (P) | C | Los Alamos National Laboratory | MPA-Q | Florida State University | US College and University | Startup | | | | | |
| Camereon Boley (U) | C | Washington and Jefferson College | Chemistry | Florida State University | US College and University | Start up funds | | | | | |
| James Britten (S) | C | McMaster University | Chemistry | National High Magnetic Field Laboratory | US Government Lab | Start-up funds from DMR-1644779 | | | | | |
| Angelika Dewicki (U) | C | Washington and Jefferson College | Chemistry | | | | | | | | |
| Zach Dowdell (G) | C | Florida State University | Chemistry | | | | | | | | |
| Carl Fleischer (G) | C | Florida State University | Chemistry | | | | | | | | |
| Zhehong Gan (S) | C | National High Magnetic Field Laboratory | NHMFL | | | | | | | | |
| Zachary Gardner (U) | C | Washington and Jefferson College | Chemistry | | | | | | | | |
| Sean Holmes (P) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Ivan Hung (S) | C | National High Magnetic Field Laboratory | CIMAR/NMR | | | | | | | | |
| Michael Jaroszewicz (G) | C | University of Windsor | Chemistry | | | | | | | | |
| James Kimball (G) | C | Florida State University | Chemistry | | | | | | | | |
| Kirill Levin (T) | C | McGill University | Chemistry | | | | | | | | |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Peyton Osborn (G) | C | Florida State University | Chemistry | | | | | | | | |
| Austin Peach (P) | C | French National Center for Scientific Research | D1 - Materials Chemistry | | | | | | | | |
| Allan Rey (S) | C | Apotex Pharmachem Inc. | Research & Technology | | | | | | | | |
| Jazmine Sanchez (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Robert Smith (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Fabio Souza (S) | C | Apotex Pharmachem Inc. | Research & Technology | | | | | | | | |
| Alexander Stirk (S) | C | Apotex Pharmachem Inc. | Research & Technology | | | | | | | | |
| Sara Termos (G) | C | Florida State University | Department of Chemistry and Biochemistry | | | | | | | | |
| Cameron Vojvodin (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| **Terry Gullion (S)** | **PI** | **West Virginia University** | **Chemistry** | No other support | | | P19889 | DNP-MAS of Honey Bee Wings | Biology, Biochemistry, Biophysics | 2 | 9 |
| Samuel Eddy (G) | C | West Virginia University | Chemistry | | | | | | | | |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Sungsool Wi (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| **Tuo Wang (S)** | **PI** | **Michigan State University** | **Chemistry** | NSF | MCB - Molecular and Cellular Biosciences | MCB1942665 | P19901 | Solid-State NMR and DNP Investigations of Moss Carbohydrates and Biomaterials | Biology, Biochemistry, Biophysics | 3 | 14 |
| Malitha Chathuranga Dickwella Widanage (P) | C | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory | | | | | | | | |
| Mustapha El Hariri El Nokab (P) | C | Michigan State University | Chemistry Department | | | | | | | | |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Kalpana Singh (G) | C | Michigan State University | Chemistry | | | | | | | | |
| **Dylan Murray (S)** | **PI** | **University of Connecticut** | **Molecular and Cell Biology** | NIH | NIGMS - National Institute of General Medical Sciences | GM142892 | P19910 | Molecular Determinants for the Assembly of Low Complexity Protein Domains | Biology, Biochemistry, Biophysics | 7 | 43 |
| Upasana Sridharan (P) | C | University of California, Davis | Chemistry | | | | | | | | |
| Sungsool Wi (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Yuuki Wittmer (G) | C | University of California, Davis | Chemistry | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Yuanzheng Yue (S)** | **PI** | **Aalborg University** | **Department of Chemistry and Bioscience** | The Independent Research Fund Denmark | Other | 1026-00318B | P19967 | Probing the local structure of metal-organic frameworks via high field NMR | Development of Magnet Technology | 2 | 15 |
| Zhehong Gan (S) | C | National High Magnetic Field Laboratory | NHMFL | | | | | | | | |
| Ivan Hung (S) | C | National High Magnetic Field Laboratory | CIMAR/NMR | | | | | | | | |
| Zhencai Li (P) | C | Aalborg University | Department of Chemistry and Bioscience | | | | | | | | |
| **David Bryce (S)** | **PI** | **University of Ottawa** | **Department of Chemistry and Biomolecular Sciences** | Natural Sciences and Engineering Research Council Canada | Non US Council | | P19976 | Rhenium-185-187 Solid-State NMR Investigation of Non-Covalent Matere Bonds | Chemistry | 2 | 5 |
| Zhehong Gan (S) | C | National High Magnetic Field Laboratory | NHMFL | | | | | | | | |
| Ivan Hung (S) | C | National High Magnetic Field Laboratory | CIMAR/NMR | | | | | | | | |
| Alireza Nari (G) | C | University of Ottawa | Chemistry and Biomolecular Sciences | | | | | | | | |
| **Gang Wu (S)** | **PI** | **Queen's University at Kingston** | **Chemistry** | NSERC of Canada | Non US Council | | P20014 | Probing the hydrogen atom location in short OHN and OHO hydrogen bonds by 17O solid-state NMR | Chemistry | 9 | 34 |
| Zhehong Gan (S) | C | National High Magnetic Field Laboratory | NHMFL | | | | | | | | |
| Ivan Hung (S) | C | National High Magnetic Field Laboratory | CIMAR/NMR | | | | | | | | |
| Amrit Venkatesh (S) | C | University of Virginia | Department of Chemistry | | | | | | | | |
| **Michael Harrington (S)** | **PI** | **Huntington Medical Research Institutes** | **Molecular Neurology** | NIH | NINDS - National Institute of Neurological Disorders and Stroke | NS072497 | P20016 | CSF Dynamics, 23Na Fluxes and Ventricular Anatomy Interplay Between Migraine and Choroid Plexus | Biology, Biochemistry, Biophysics | 36 | 42 |
| Samuel Grant (S) | C | National High Magnetic Field Laboratory | Chemical & Biomedical Engineering | | | | | | | | |
| Samuel Holder (G) | C | Florida State University | Chemical & Biomedical Engineering | | | | | | | | |
| Abe Kolko (G) | C | University of California, Santa Barbara | Mechanical Engineering | | | | | | | | |
| Linda Petzold (S) | C | University of California, Santa Barbara | Computer Science | | | | | | | | |
| Dayna Richter (G) | C | Florida State University | Chemical & Biomedical Engineering | | | | | | | | |
| **Braulio Rodriguez-Molina (S)** | **PI** | **National Autonomous University of Mexico** | **Institute of Chemistry** | CONACYT | Non US Council | | P20064 | Dynamics in Fluorescent Crystalline Rotors using Solid-State Nuclear Magnetic Resonance | Chemistry | 1 | 2 |
| Jose Luis Belmonte (P) | C | National Autonomous University of Mexico | Institute of Chemistry | | | | | | | | |
| Carl Fleischer (G) | C | Florida State University | Chemistry | | | | | | | | |
| Ernesto Hernandez-Morales (G) | C | National Autonomous University of Mexico | Institute of Chemistry | | | | | | | | |
| Erick Hernandez-Santiago (G) | C | National Autonomous University of Mexico | Institute of Chemistry | | | | | | | | |
| Jose Mejia-Aleman (G) | C | National Autonomous University of Mexico | Institute of Chemistry | | | | | | | | |
| Armando Navarro-Huerta (G) | C | National Autonomous University of Mexico | Institute of Chemistry | | | | | | | | |
| Lizbeth Rodriguez-Cortes (G) | C | National Autonomous University of Mexico | Institute of Chemistry | | | | | | | | |
| Robert Schurko (S) | C | Florida State University | Chemistry | | | | | | | | |
| Cameron Vojvodin (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| **Wei Qiang (S)** | **PI** | **State University of New York, Binghamton** | **Chemistry** | NIH | NIGMS - National Institute of General Medical Sciences | GM125853 | P20075 | DNP-ssNMR Studies of Early-Stage Molecular Interactions Between Beta-Amyloid Aggregates and Biological Membranes | Biology, Biochemistry, Biophysics | 3 | 19 |
| Shubha Gunaga (P) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| June Kenyaga (G) | C | State University of New York, Binghamton | Chemistry | | | | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Tuo Wang (S) | C | Michigan State University | Chemistry | | | | | | | | |
| Wancheng Zhao (G) | C | Michigan State University | Chemistry | | | | | | | | |
| **Joseph Zadrozny (S)** | **PI** | **Ohio State University** | **Chemistry and Biochemistry** | NSF | CHE - Chemistry | CHE2047325 | P20082 | Solid-state NMR characterization of 59Co NMR thermometers | Chemistry | 20 | 42 |
| Zhehong Gan (S) | C | National High Magnetic Field Laboratory | NHMFL | | | | | | | | |
| Josef Grundy (G) | C | Colorado State University | Chemistry | | | | | | | | |
| Sean Holmes (P) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Ivan Hung (S) | C | National High Magnetic Field Laboratory | CIMAR/NMR | | | | | | | | |
| James Kimball (G) | C | Florida State University | Chemistry | | | | | | | | |
| Roxanna Martinez (G) | C | Colorado State University | Chemistry | | | | | | | | |
| Tyler Ozvat (G) | C | Colorado State University | Chemistry | | | | | | | | |
| Stephanie Sanchez (U) | C | Colorado State University | Chemistry | | | | | | | | |
| Robert Schurko (S) | C | Florida State University | Chemistry | | | | | | | | |
| Sara Termos (G) | C | Florida State University | Department of Chemistry and Biochemistry | | | | | | | | |
| Okten Ungor (P) | C | Colorado State University | Chemistry | | | | | | | | |
| **Hui Xiong (S)** | **PI** | **Boise State University** | **Materials Science and Engineering** | DOE | ASCR - Advanced Scientific Computing Research | DE-SC0019121 | P20087 | 7Li and 23Na Solid-State NMR Investigation of High-Performance Cathodes for Na-Ion Batteries | Chemistry | 12 | 98.5 |
| Michael Deck (G) | C | Florida State University | Chemistry | | | | | | | | |
| Yan-Yan Hu (S) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Yongkang Jin (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Bright Ogbolu (G) | C | Florida State University | Chemistry | | | | | | | | |
| Erica Truong (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| **Aaron Wilber (S)** | **PI** | **Florida State University** | **Psychology** | NIH | NIA - National Institute on Aging | AG010700 | P20099 | DTI and rs-fMRI of TgF344-AD Female Rats as a Model of Alzheimer's Disease | Biology, Biochemistry, Biophysics | 14 | 17 |
| Samuel Grant (S) | C | National High Magnetic Field Laboratory | Chemical & Biomedical Engineering | | | | | | | | |
| Choogon Lee (S) | C | Florida State University | Biomedical Sciences | | | | | | | | |
| William McCall (S) | C | Augusta University | Psychiatry and Health Behavior | | | | | | | | |
| Jordan Ogg (T) | C | Florida State University | Psychology | | | | | | | | |
| Jenna Radovich (G) | C | Florida State University | Chemical & Biomedical Engineering | | | | | | | | |
| **Vivek Polshettiwar (S)** | **PI** | **Tata Institute of Fundamental Research** | **Department of Chemical Sciences** | Tata Institute of Fundamental Research (TIFR), Mumbai INDIA | Other | | P20104 | Solid State NMR of Acidic Aluminosilicates (AAS) to Study the Frustrated Lewis Pairs and Their Interactions with CO2 and H2 | Chemistry | 3 | 9 |
| Charvi Singhvi (G) | C | Tata Institute of Fundamental Research | Department of Chemical Sciences | | | | | | | | |
| Amrit Venkatesh (S) | C | University of Virginia | Department of Chemistry | | | | | | | | |
| Rishi Verma (G) | C | Tata Institute of Fundamental Research | Department of Chemical Sciences | | | | | | | | |
| **Jeannine Brady (S)** | **PI** | **University of Florida** | **Oral Biology** | NIH | NIDCR - National Institute of Dental and Craniofacial Research | DE021789 | P20106 | Structural studies of adhesin protein P1 of S. mutans, its quaternary structure, and formation of functional amyloid. | Biology, Biochemistry, Biophysics | 3 | 20 |
| Maria Luiza Caldas Nogueira (S) | C | University of Florida | AMRIS | | | | | | | | |
| Joanna Long (S) | C | University of Florida | Biochemistry & Molecular Biology | | | | | | | | |
| Qingqing (Emily) Peng (G) | C | University of Florida | Department of Biochemistry and Molecular Biology | | | | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lynmarie Thompson (S)** | **PI** | **University of Massachusetts** | **Chemistry** | NIH | NIGMS - National Institute of General Medical Sciences | GM120195 | P20129 | Solid-state NMR and DNP of protein interactions in functional bacterial chemoreceptor signaling complexes | Biology, Biochemistry, Biophysics | 1 | 2 |
| Riqiang Fu (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Katherine Wahlbeck (G) | C | University of Massachusetts | Chemistry | | | | | | | | |
| **Dominik Zehender (G)** | **PI *** | **Heidelberg University** | **Computer Assisted Clinical Medicine** | German Research Foundation | Non US Foundation | 71000643 | P20176 | Chemotherapeutic Response Assessment in Cancer Cells Using a Microcavity Array- Based Bioreactor System and Sodium Triple-Quantum MR Signal | Biology, Biochemistry, Biophysics | 2 | 5 |
| Eric Gottwald (S) | C | Karlsruhe Institute of Technology | Institute for Biological Interfaces (IBG 5) | | | | | | | | |
| Samuel Grant (S) | C | National High Magnetic Field Laboratory | Chemical & Biomedical Engineering | | | | | | | | |
| Cathy Levenson (S) | C | Florida State University | Biomedical Sciences | | | | | | | | |
| Simon Reichert (G) | C | Heidelberg University | Medical Faculty Mannheim | | | | | | | | |
| Lothar Schad (S) | C | Heidelberg University | Computer Assisted Clinical Medicine | | | | | | | | |
| Victor Schepkin (S) | C | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| **Mandip Sachdeva (S)** | **PI** | **Florida Agricultural and Mechanical University** | **College of Pharmacy and Pharmaceutical Sciences** | No other support | | | P20184 | Effect of different excipients on the adhesives properties in trasdermal patches | Material Science | 15 | 46 |
| Arvin Bagde (P) | C | Florida Agricultural and Mechanical University | Pharmaceutical Sciences | No other support | | This project is to support an proposal to the FDA | | | | | |
| Robert Schurko (S) | C | Florida State University | Chemistry | | | | | | | | |
| Sungsool Wi (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| **Jochen Autschbach (S)** | **PI** | **University of Buffalo** | **Chemistry** | DOE | BES – Basic Energy Sciences | DE-SC0022310 | P20231 | Unraveling the Mysteries of the Platinum Group Elements with Solid-State NMR Spectroscopy and Quantum Chemical Calculations | Chemistry | 40 | 110 |
| Sean Holmes (P) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| James Kimball (G) | C | Florida State University | Chemistry | | | | | | | | |
| Adam Phillips (P) | C | University of Buffalo | Chemistry | | | | | | | | |
| Jasmin Schoenzart (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Robert Schurko (S) | C | Florida State University | Chemistry | | | | | | | | |
| Robert Smith (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Sara Termos (G) | C | Florida State University | Department of Chemistry and Biochemistry | | | | | | | | |
| Amrit Venkatesh (S) | C | University of Virginia | Department of Chemistry | | | | | | | | |
| **Xingkang Huang (S)** | **PI** | **University of Chicago** | **Pritzker School of Molecular Engineering** | NSF | CMMI - Civil, Mechanical & Manufacturing Innovation | CMMI2037026 | P20281 | Characterization of cathode materials with aqueous binders by Solid-state NMR | Material Science | 1 | 3 |
| Riqiang Fu (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| **Liliya Vugmeyster (S)** | **PI** | **University of Colorado, Denver** | **Chemistry** | NIH | NIGMS - National Institute of General Medical Sciences | GM111681 | P20303 | Characterization of water dynamics in the hydration layers of protein systems and soils using quadrupolar nuclei solid-state NMR methods | Biology, Biochemistry, Biophysics | 8 | 14 |
| Dmitry Ostrovsky (S) | C | University of Colorado, Denver | Mathematics | | | | | | | | |
| **Zhihua Jiang (S)** | **PI** | **Auburn University** | **Chemical Engineering** | USDA - Department of Agriculture | | G00013538 | P20306 | Investigating interactions between biomolecules in cellulose-based materials using 13C - 1H solid-state NMR | Biology, Biochemistry, Biophysics | 71 | 296 |
| Jiaxing Fan (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Yan-Yan Hu (S) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Erica Truong (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Rongfu Zhang (P) | C | Florida State University | Chemistry and Biochemistry Department | | | | | | | | |
| **Ryan O'Hayre (S)** | **PI** | **Colorado School of Mines** | **Metallurgical and Materials Engineering** | DOE | EFRC - Energy Frontier Research Centers | DE-SC0023450 | P20313 | Understanding hydrogen local structure, dynamics, and diffusion in BCFZY and analogues using solid-state NMR. | Chemistry | 43 | 231 |
| Sossina Haile (S) | C | Northwestern University | Materials Science and Engineering, and Chemistry | | | | | | | | |
| Yan-Yan Hu (S) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Bright Ogbolu (G) | C | Florida State University | Chemistry | | | | | | | | |
| Yewon Shin (P) | C | Colorado School of Mines | Metallurgical and Materials Engineering | | | | | | | | |
| Erica Truong (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| **Geoffrey Strouse (S)** | **PI** | **National High Magnetic Field Laboratory** | **Chemistry** | NSF | DMR - Division of Materials Research | DMR1905757 | P20318 | Multinuclear solid-state NMR investigation of plasmonic andphotoluminsecent nanocrystals | Chemistry | 13 | 25 |
| Aaron Bayles (P) | C | Rice University | Electrical and Computer Engineering | | | | | | | | |
| Catherine Fabiano (G) | C | Florida State University | Chemistry | | | | | | | | |
| Naomi Halas (S) | C | Rice University | Electrical and Computer Engineering | | | | | | | | |
| Jason Kuszynski (G) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Stephen McGill (S) | C | National High Magnetic Field Laboratory | Condensed Matter Science | | | | | | | | |
| Raul Ortega (G) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Ali Pazoki (G) | C | Florida State University | Chemistry | | | | | | | | |
| Robert Schurko (S) | C | Florida State University | Chemistry | | | | | | | | |
| Robert Smith (G) | C | National High Magnetic Field Laboratory | | | | | | | | | |
| Robert Smith (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| **Amrit Venkatesh (S)** | **PI** | **University of Virginia** | **Department of Chemistry** | No other support | | | P20323 | Sensitivity-Enhanced Solid-State NMR at High Magnetic Fields using Fast Magic Angle Spinning and Dynamic Nuclear Polarization | Chemistry | 11 | 44 |
| Sharon Ashbrook (S) | C | University of St. Andrews | School of Chemistry | Danish Research Foundation (DFF Grøn Omstilling) | Non US Foundation | Grant: 95-305-23601-01130 | | | | | |
| Emma Borthwick (G) | C | University of St. Andrews | Chemistry | European Union's Horizon 2020 research and innovation programme | Other | Marie Sklodowska-Curie grant agreement No 956454 | | | | | |
| Kamilla Buenning (G) | C | University of Southern Denmark | Physics, Chemistry and Pharmacy | | | | | | | | |
| Ankit Dhakal (G) | C | University of Virginia | Chemical Engineering | | | | | | | | |
| Ivanska Gierbolini Colon (U) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Gaurav Giri (S) | C | University of Virginia | Chemical Engineering | | | | | | | | |
| Lucas José (G) | C | University of Southern Denmark | Physics, Chemistry and Pharmacy | | | | | | | | |
| Ulla Gro Nielsen (S) | C | University of Southern Denmark | Physics, Chemistry and Pharmacy | | | | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Christine Yu (U) | C | Florida State University | Chemistry | | | | | | | | |
| **Assaf Gal (S)** | **PI *** | **Weizmann Institute of Science** | **Plant and Environmental Sciences** | European Research Council | Non US Council | | P20355 | Investigating DNP mechanisms in Mn(II) doped Li4Ti5O12 at 14.1 T DNP | Material Science | 1 | 7 |
| Pierre Florian (S) | C | French National Center for Scientific Research | CEMTHI | | | | | | | | |
| Michal Leskes (S) | C | Weizmann Institute of Science | Materials and Interfaces | | | | | | | | |
| Nitzan Livni (G) | C | Weizmann Institute of Science | molecular chemistry and materials science | | | | | | | | |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sheetal Jain (S)** | **PI** | **Indian Institute of Science, Bengaluru** | **Solid-state and Structural Chemistry Unit** | Indian Institute of Science Bangalore | Non US College and University | | P20357 | Effect of carbonation on soil-based alkali-activated materials | Material Science | 3 | 18 |
| Nikita Rao (G) | C | Indian Institute of Science, Bengaluru | Solid State and Structural Chemistry Unit | | | | | | | | |
| Amrit Venkatesh (S) | C | University of Virginia | Department of Chemistry | | | | | | | | |
| **Samuel Grant (S)** | **PI** | **National High Magnetic Field Laboratory** | **Chemical & Biomedical Engineering** | NIH | NINDS - National Institute of Neurological Disorders and Stroke | NS102395 | P20452 | 23Na MRI of Ischemic Stroke Under Stem Cell Therapy | Biology, Biochemistry, Biophysics | 20 | 27 |
| Arshia Arbabian (G) | C | Florida State University | Chemical & Biomedical Engineering | | | | | | | | |
| Jamini Bhagu (G) | C | Florida State University | Chemical ENG | | | | | | | | |
| Hannah Bryant (G) | C | Florida State University | Chemical and Biomedical Engineering at the College of Engineering | | | | | | | | |
| Richard Jeske (G) | C | Florida State University | Chemical & Biomedical Engineering | | | | | | | | |
| Dayna Richter (G) | C | Florida State University | Chemical & Biomedical Engineering | | | | | | | | |
| **Tracy Centanni (S)** | **PI *** | **University of Florida** | **Speech, Language, and Hearing Sciences** | NIH | NICHD - Eunice Kennedy Shriver National Institute of Child Health and Human Development | HD103479 | P20455 | Effect of genetic knockout on neural plasticity in a rat model | Biology, Biochemistry, Biophysics | 1 | 3 |
| Brenton Cooper (S) | C | Texas Christian University | Psychology | | | | | | | | |
| **Ayyalusamy Ramamoorthy (S)** | **PI** | **Florida State University** | **Chemical and Biomedical Engineering** | NIH | NIDDK - National Institute of Diabetes and Digestive and Kidney Diseases | DK132214 | P20468 | Structural Investigation of Polymorphic Aß Fibrils | Biology, Biochemistry, Biophysics | 2 | 10 |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | NIH | NIDDK - National Institute of Diabetes and Digestive and Kidney Diseases | DK011322 | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| **Feng Lin (S)** | **PI** | **Virginia Polytechnic Institute and State University** | **Chemistry** | NSF | DMR - Division of Materials Research | DMR2045570 | P20482 | Probing thermally induced evolution of atomic distribution in Li-excess disordered rocksalt cathode materials | Material Science | 5 | 15 |
| Changgyu Seok (G) | C | Virginia Polytechnic Institute and State University | Chemistry | | | | | | | | |
| Sungsool Wi (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| **Mi Hee Lim (S)** | **PI** | **Korea Advanced Institute of Science & Technology** | **Chemistry** | University of Michigan | US College and University | 70823050 | P20497 | Protonation state determination of two poorly soluble drugs in HPMCAS and PVPA-EDA for applications in oral drug delivery | Chemistry | 2 | 8 |
| Malitha Chathuranga Dickwella Widanage (P) | C | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory | | | | | | | | |
| Kristen Kelsall (G) | C | University of Michigan | Chemistry | | | | | | | | |
| Ayyalusamy Ramamoorthy (S) | C | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| **Snorri Sigurdsson (S)** | **PI** | **University of Iceland** | **Chemistry** | No other support | | | P20530 | Improving biradicals for MAS-DNP at high field:a combined approach of Spin-Dynamics theory, DFT and high-field EPR | Biology, Biochemistry, Biophysics | 5 | 25 |
| Satyaki Chatterjee (G) | C | University of Iceland | Department of Chemistry | NIH | NIGMS - National Institute of General Medical Sciences | GM148766 | | | | | |
| Thierry Dubroca (S) | C | National High Magnetic Field Laboratory | EMR | EU H2020-INFRAIA | Other | 101008500 | | | | | |
| Shubha Gunaga (P) | C | National High Magnetic Field Laboratory | NMR | Icelandic Research Fund | Other Non US Federal Agency | 239662 | | | | | |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | European Union's Horizon 2020 research and innovation programme | Other Non US Federal Agency | 101008500 | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Ancy Wilson (G) | C | University of Iceland | Chemistry | | | | | | | | |
| **Fang Tian (S)** | **PI** | **Pennsylvania State University** | **Biochemistry and Molecular Biology, Penn State Medical School** | NIH | NIGMS - National Institute of General Medical Sciences | GM127730 | P20549 | Membrane Interactions of LC3 for LC3-Phosphatidylethanolamine (PE) Conjugation and Phagophore Expansion during Autophagy | Biology, Biochemistry, Biophysics | 5 | 30 |
| Riqiang Fu (S) | C | National High Magnetic Field Laboratory | NMR | Four Diamonds Fund Research Program | Other | 4D21_2024_1001 | | | | | |
| **Yining Huang (S)** | **PI** | **University of Western Ontario** | **Chemistry** | Western University | Non US College and University | | P20550 | Solid-state NMR Characterization of Local Environments of Framework Halides in MOFs at Ultrahigh Magnetic Field | Chemistry | 7 | 56 |
| Tahereh Azizivahed (G) | C | University of Western Ontario | Chemistry | NSERC of Canada | Other | | | | | | |
| Zhehong Gan (S) | C | National High Magnetic Field Laboratory | NHMFL | | | | | | | | |
| Ivan Hung (S) | C | National High Magnetic Field Laboratory | CIMAR/NMR | | | | | | | | |
| Shuting Li (G) | C | University of Western Ontario | Chemistry | | | | | | | | |
| Amrit Venkatesh (S) | C | University of Virginia | Department of Chemistry | | | | | | | | |
| Jiabin Xu (G) | C | University of Western Ontario | Chemistry | | | | | | | | |
| Wanli Zhang (G) | C | University of Western Ontario | Chemistry | | | | | | | | |
| **Sungsool Wi (S)** | **PI** | **National High Magnetic Field Laboratory** | **NMR** | No other support | | | P20552 | Development of Novel NMR Techniques for Studies at High Magnetic Fields and under Fast Magic-Angle Spinning: Utilization of 1H-detection and Natural 13C Abundance | Biology, Biochemistry, Biophysics | 19 | 66 |
| Navneet Dwivedi (G) | C | Integral University | Physics | NSF | CHE - Chemistry | CHE2203405 | | | | | |
| Lucio Frydman (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Riqiang Fu (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Bijaylaxmi Patra (G) | C | Center of Biomedical Research | Department of Advanced Spectroscopy and Imaging | | | | | | | | |
| Ayyalusamy Ramamoorthy (S) | C | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| Neeraj Sinha (S) | C | Unknown | Advanced Spectroscopy and Imaging | | | | | | | | |
| **Samuel Grant (S)** | **PI** | **National High Magnetic Field Laboratory** | **Chemical & Biomedical Engineering** | NIH | NINDS - National Institute of Neurological Disorders and Stroke | NS102395 | P20556 | Efficacy of Stem Cell-Derived Therapy for Stroke Evaluated by Ultra-High Field MRI/S | Biology, Biochemistry, Biophysics | 40 | 51 |
| Arshia Arbabian (G) | C | Florida State University | Chemical & Biomedical Engineering | NIH | NINDS - National Institute of Neurological Disorders and Stroke | NS115490 | | | | | |
| Jamini Bhagu (G) | C | Florida State University | Chemical ENG | | | | | | | | |
| Bruce Bunnell (S) | C | Tulane University | Pharmacology | | | | | | | | |
| Hedi Mattoussi (S) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Jeff Procida (G) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| **Ayyalusamy Ramamoorthy (S)** | **PI** | **Florida State University** | **Chemical and Biomedical Engineering** | NIH | NIDDK - National Institute of Diabetes and Digestive and Kidney Diseases | DK113221 | P20557 | Structural Investigation of Polymorphic Aß Fibrils | Biology, Biochemistry, Biophysics | 9 | 42 |
| Malitha Chathuranga Dickwella Widanage (P) | C | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory | NIH | NIDDK - National Institute of Diabetes and Digestive and Kidney Diseases | DK011322 | | | | | |
| Sam McCalpin (P) | C | Florida State University | Biomedical Engineering | | | | | | | | |
| **Muniyandi Sankaralingam (S)** | **PI *** | **National Institute of Technology Calicut** | **Chemistry** | DST-Inspire Faculty research grant | Other | | P20558 | Solid State Structural Characterization of Nickel(II) Complexes | Chemistry | 2 | 8 |
| Malitha Chathuranga Dickwella Widanage (P) | C | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory | University Funding | Other | | | | | | |
| Ayyalusamy Ramamoorthy (S) | C | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **James Shogren-Harris (S)** | **PI** | * | **University of Alabama, Tuscaloosa** | **Chemical and Biological Engineering** | NSF | CBET - Chemical, Bioengineering, Environmental, and Transport Systems | CBET2050507 | P20573 | SSNMR for Zeolite-Based Heterogeneous Catalysts | Engineering | 7 | 17 |
| Shivangi Nandkumar Borate (G) | C | | University of Alabama, Tuscaloosa | Chemical and Biological Engineering | DOE | BETO - Bioenergy Technologies Office | DE-EE0010304 | | | | | |
| Younggul Hur (P) | C | | University of Alabama, Tuscaloosa | chemical and biological engineering | | | | | | | | |
| Ethan Iaia (G) | C | | University of Alabama, Tuscaloosa | Chemical and Biological Engineering | | | | | | | | |
| Amrit Venkatesh (S) | C | | University of Virginia | Department of Chemistry | | | | | | | | |
| **Ayyalusamy Ramamoorthy (S)** | **PI** | | **Florida State University** | **Chemical and Biomedical Engineering** | NIH | NIDDK - National Institute of Diabetes and Digestive and Kidney Diseases | DK132214 | P20575 | Structural Characterization of Polymorphic IAPP Aggregates Bound to Ganglioside Lipids | Biology, Biochemistry, Biophysics | 1 | 3 |
| Malitha Chathuranga Dickwella Widanage (P) | C | | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory | | | | | | | | |
| **Valentin Rodionov (S)** | **PI** | * | **Case Western Reserve University** | **Macromolecular Science and Engineering** | DOE | BES – Basic Energy Sciences | DE-SC0025658 | P20576 | NMR Studies of ?-Graphyne: Thermal and Photochemical Transformations and Guest Intercalation | Chemistry | 6 | 17.33 |
| Victor Desyatkin (P) | C | | Case Western Reserve University | Macromolecular Science and Engineering | Case Western Reserve University | US College and University | | | | | | |
| Frederic Mentink (S) | C | | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Faith Scott (P) | C | | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Amrit Venkatesh (S) | C | | University of Virginia | Department of Chemistry | | | | | | | | |
| **Magdalena Ivanova (S)** | **PI** | * | **University of Michigan** | **Biophysics** | Japan Society for the Promotion of Science (JSPS) | Non US Foundation | 19K22193 | P20577 | Lipid-protein interactions between bovine heart cytochrome c oxidase and in POPC nanodisc and bicelle lipid bilayer mimetics | Biology, Biochemistry, Biophysics | 2 | 7 |
| Bon Leif Amalla (G) | C | | Hokkaido University | Chemistry | Hokkaido University | Other | | | | | | |
| Malitha Chathuranga Dickwella Widanage (P) | C | | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory | | | | | | | | |
| Ayyalusamy Ramamoorthy (S) | C | | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| **Muniyandi Sankaralingam (S)** | **PI** | * | **National Institute of Technology Calicut** | **Chemistry** | National Institute of Technology, Calicut, for the Faculty Research Grant | Other | | P20579 | Solid State Structural Characterization of Nickel(II) Complexes | Chemistry | 1 | 3 |
| Malitha Chathuranga Dickwella Widanage (P) | C | | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory | | | | | | | | |
| Riqiang Fu (S) | C | | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Ayyalusamy Ramamoorthy (S) | C | | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| **Fan Lam (S)** | **PI** | * | **University of Illinois at Urbana-Champaign** | **Bioengineering** | NIH | NIGMS - National Institute of General Medical Sciences | GM142969 | P20584 | Noninvasive Imaging of DNA Methylation in Rodent Brains using Epigenetic MRI | Engineering | 17 | 28 |
| Arshia Arbabian (G) | C | | Florida State University | Chemical & Biomedical Engineering | Chan Zuckerberg Biohub Chicago leadership grant | Other | | | | | | |
| Samuel Grant (S) | C | | National High Magnetic Field Laboratory | Chemical & Biomedical Engineering | | | | | | | | |
| Anamika Roy (G) | C | | Florida State University | Chemical & Biomedical Engineering | | | | | | | | |
| **Juergen Senker (S)** | **PI** | * | **University of Bayreuth** | **Inorganic Chemistry III** | Elitenetzwerk Bayern | Other | Elite Study Program Macromolecular Science | P20590 | Formation and Degradation of Microplastic under Simulated Environmental Conditions | Chemistry | 2 | 15 |
| Anika Mauel (G) | C | | University of Bayreuth | Inorganic Chemistry III | | | | | | | | |
| Frederic Mentink (S) | C | | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Faith Scott (P) | C | | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| **Aaron Rossini (S)** | **PI** | | **Iowa State University** | **Chemistry** | Genentech, Inc. | | No number | P20593 | Structure Determination of Inorganic Materials by High-Resolution Solid-State NMR Spectroscopy of Quadrupolar Nuclei | Biology, Biochemistry, Biophysics | 10 | 37 |
| Zhehong Gan (S) | C | | National High Magnetic Field Laboratory | NHMFL | DOE | BES – Basic Energy Sciences | No number | | | | | |
| Ivan Hung (S) | C | | National High Magnetic Field Laboratory | CIMAR/NMR | | | | | | | | |
| Lamahewage Sujeewa Lamahewage (G) | C | | Iowa State University | Chemistry | | | | | | | | |
| Jiashan Mi (G) | C | | Iowa State University | Chemistry | | | | | | | | |
| Amrit Venkatesh (S) | C | | University of Virginia | Department of Chemistry | | | | | | | | |
| Lukman Yunusa (G) | C | | Iowa State University | Chemistry | | | | | | | | |
| **Kendra Frederick (S)** | **PI** | | **University of Texas, Southwestern** | **Biophysics** | NIH | NINDS - National Institute of Neurological Disorders and Stroke | NS134921 | P20596 | Measurement of 31P-13C distances for a membrane-associated protein under DNP conditions | Biology, Biochemistry, Biophysics | 3 | 14.67 |
| Shoyab Ansari (P) | C | | University of Texas, Southwestern | Biophysics | | | | | | | | |
| Rania Dumarieh (T) | C | | University of Texas Southwestern Medical Center | Biophysics | | | | | | | | |
| Dominique Lagasca (G) | C | | University of Texas, Southwestern | Biophysics | | | | | | | | |
| Frederic Mentink (S) | C | | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Faith Scott (P) | C | | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| **Muniyandi Sankaralingam (S)** | **PI** | * | **National Institute of Technology Calicut** | **Chemistry** | National Institute of Technology Calicut | Other | | P20597 | Solid State Structural Characterization of ZnI(II) Complexes | Chemistry | 2 | 7 |
| Malitha Chathuranga Dickwella Widanage (P) | C | | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory | University funding | Other | | | | | | |
| Ayyalusamy Ramamoorthy (S) | C | | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| **Ehud Gazit (S)** | **PI** | * | **Tel Aviv University** | **Life Sciences Faculty** | Templeton foundation | Other | | P20598 | Characterizing of Metabolite Amyloids Using ssNMR | Biology, Biochemistry, Biophysics | 1 | 4 |
| Malitha Chathuranga Dickwella Widanage (P) | C | | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory | | | | | | | | |
| Ayyalusamy Ramamoorthy (S) | C | | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| **Hadi Mohammadigoushki (S)** | **PI** | | **Florida State University** | **Chemical and Biomedical Engineering** | Rare Earth Initiative | Other | | P20600 | Dynamics and characterization of cluster formation via inhomogeneous NMR spectroscopy | Engineering | 4 | 14 |
| Jamel Ali (S) | C | | Florida Agricultural and Mechanical University | Chemical and Biomedical Engineering | Rare Earth Initiative/gypstack project | Other | | | | | | |
| Samuel Grant (S) | C | | National High Magnetic Field Laboratory | Chemical & Biomedical Engineering | | | | | | | | |
| Munir Humayun (S) | C | | National High Magnetic Field Laboratory | Geological Sciences | | | | | | | | |
| Aidan Lowery (G) | C | | National High Magnetic Field Laboratory | Chemical and Biomedical Engineering | | | | | | | | |
| Hadi Mohammadigoushki (S) | C | | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| Peter Rassolov (P) | C | | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| Theo Siegrist (S) | C | | National High Magnetic Field Laboratory | Chemical and Biomedical Engineering | | | | | | | | |
| Johan van Tol (S) | C | | National High Magnetic Field Laboratory | EMR | | | | | | | | |
| **Ayyalusamy Ramamoorthy (S)** | **PI** | | **Florida State University** | **Chemical and Biomedical Engineering** | No other support | | | P20602 | 19F based Solid-state NMR investigation of the self-assembly process and amyloid formation by human islet amyloid polypeptide | Biology, Biochemistry, Biophysics | 2 | 10 |
| Steve Bourgault (S) | C | | University of Quebec at Montreal | DEPARTMENT OF CHEMISTRY | | | | | | | | |
| **Shinho Cho (O)** | **PI** | * | **National High Magnetic Field Laboratory** | **NMR-MRI** | No other support | | | P20646 | Developing functional magnetic resonance imaging: Enhancing Spatial and Temporal Resolution in Ultra-High Field fMRI with 21.1 Tesla (900 MHz) | Biology, Biochemistry, Biophysics | 8 | 29 |
| Lucio Frydman (S) | C | | National High Magnetic Field Laboratory | NMR | No other support | | Shinho Cho start-up (9107) | | | | | |
| Samuel Grant (S) | C | | National High Magnetic Field Laboratory | Chemical & Biomedical Engineering | No other support | | Shinho Cho Start-up | | | | | |
| **Ehud Gazit (S)** | **PI** | * | **Tel Aviv University** | **Life Sciences Faculty** | University funding | Other | | P20651 | Atomic-Resolution Characterization of Nano-assemblies of small molecules Using Magic Angle Spinning Solid-State NMR Spectroscopy | Biology, Biochemistry, Biophysics | 1 | 4 |
| Malitha Chathuranga Dickwella Widanage (P) | C | | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory | | | | | | | | |
| Ayyalusamy Ramamoorthy (S) | C | | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ayyalusamy Ramamoorthy (S)** | **PI** | **Florida State University** | **Chemical and Biomedical Engineering** | No other support | | | P20653 | Structural Elucidation of Biological Macromolecules Using Novel Nanodiscs and Solid-State NMR Spectroscopy | Biology, Biochemistry, Biophysics | 9 | 75 |
| Kiran Kumar (P) | C | FAMU-FSU College of Engineering | NMR | NIH | NIDDK - National Institute of Diabetes and Digestive and Kidney Diseases | DK132214 | | | | | |
| Sam McCalpin (P) | C | Florida State University | Biomedical Engineering | | | | | | | | |
| Jhinuk Saha (P) | C | National High Magnetic Field Laboratory | NMR- College of Engineering | | | | | | | | |
| **Lyndon Emsley (S)** | **PI *** | **Ecole Polytechnique Federale de Lausanne** | **Chemistry** | Swiss National Science Foundation | Other Non US Federal Agency | | P20655 | Development of Polarizing Agents for Dynamic Nuclear Polarization NMR | Chemistry | 2 | 27 |
| Gilles Casano (T) | C | Aix-Marseille University | Institute of Radical Chemistry | | | | | | | | |
| Gael De Paepe (S) | C | French Alternative Energies and Atomic Energy Commission | Institute for Nanoscience and Cryogenics | | | | | | | | |
| Shubha Gunaga (P) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Olivier Ouari (S) | C | Aix-Marseille University | Institute of Free Radical Chemistry | | | | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Snorri Sigurdsson (S) | C | University of Iceland | Chemistry | | | | | | | | |
| Amrit Venkatesh (S) | C | University of Virginia | Department of Chemistry | | | | | | | | |
| **Ayyalusamy Ramamoorthy (S)** | **PI** | **Florida State University** | **Chemical and Biomedical Engineering** | NIH | NIDDK - National Institute of Diabetes and Digestive and Kidney Diseases | DK011322 | P20657 | Understand slow and intermediate motions of Lysozyme fibrils using MAS ssNMR | Biology, Biochemistry, Biophysics | 2 | 6 |
| **Danielle Laurencin (S)** | **PI** | **University of Montpellier** | **Institut Charles Gerhardt de Montpellier** | European Research Council | Non US Council | 772204 | P20664 | Advanced 17O ssNMR studies of (bio)materials:understanding structure and dynamics at interfaces | Chemistry | 2 | 17 |
| Christel Gervais (S) | C | Sorbonne University | Laboratoire de Chimie de la Matière Condensée | | | | | | | | |
| Ieva Goldberga (P) | C | French National Center for Scientific Research | Institut Charles Gerhardt de Montpellier | | | | | | | | |
| César Leroy (P) | C | French National Center for Scientific Research | ICGM - UMR 5253 | | | | | | | | |
| Frederic Mentink (S) | C | National High Magnetic Field Laboratory | CIMAR | | | | | | | | |
| Thomas-Xavier Métro (S) | C | Institut des Biomolécules Max Mousseron | Equipe Chimie Verte et Technologies Innovantes | | | | | | | | |
| Austin Peach (P) | C | French National Center for Scientific Research | D1 - Materials Chemistry | | | | | | | | |
| Vincent Sarou-Kanian (T) | C | French National Center for Scientific Research | Chemistry | | | | | | | | |
| Faith Scott (P) | C | National High Magnetic Field Laboratory | Biochemistry & Molecular Biology | | | | | | | | |
| Jessica Spackova (P) | C | University of Montpellier | Chemistry | | | | | | | | |
| **Marcella Lusardi (S)** | **PI *** | **Princeton University** | **Chemical and Biological Engineering, Materials Institute** | Princeton University | US College and University | Faculty Start-up Funds | P20672 | A new class of heterogenized precious metal catalysts based on functionalized hydrogen-bonded supramolecular assemblies | Engineering | 1 | 2 |
| Kushaan Bahl (G) | C | Princeton University | Chemical Engineering | | | | | | | | |
| Amrit Venkatesh (S) | C | University of Virginia | Department of Chemistry | | | | | | | | |
| **Myungwoon Lee (S)** | **PI *** | **Drexel University** | **Chemistry** | NIH | NINDS - National Institute of Neurological Disorders and Stroke | NS139178 | P20673 | Exploring the molecular mechanisms behind membrane-mediated neurodegenerative protein aggregation | Biology, Biochemistry, Biophysics | 5 | 30 |
| Yoongyeong Baek (G) | C | Drexel University | Chemistry | Drexel University | US College and University | | | | | | |
| **Kwang Hun Lim (S)** | **PI** | **East Carolina University** | **Chemistry** | NIH | NINDS - National Institute of Neurological Disorders and Stroke | NS097490 | P20678 | Solid-state NMR studies of toxic misfolded oligomers | Biology, Biochemistry, Biophysics | 4 | 19 |
| Zhehong Gan (S) | C | National High Magnetic Field Laboratory | NHMFL | | | | | | | | |
| Robert Irving (G) | C | East Carolina University | Chemistry | | | | | | | | |
| Sungsool Wi (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| **Xin Li (S)** | **PI *** | **Harvard University** | **SEAS** | DOE | Other | xxxxx | P20679 | MRI of novel solid state Li batteries | Material Science | 2 | 4.5 |
| William Brey (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| Leah Casabianca (S) | C | Clemson University | Department of Chemistry | | | | | | | | |
| Srinivasan Chandrashekar (S) | C | Harvard University | SEAS | | | | | | | | |
| Eduard Chekmenev (S) | C | Wayne State University | Chemistry | | | | | | | | |
| Daniel Hallinan (S) | C | Florida State University | Chemical and Biomedical Engineering | | | | | | | | |
| Maham Hasib (G) | C | Harvard University | SEAS | | | | | | | | |
| **Daniel Rettenwander (S)** | **PI *** | **Norwegian University of Science and Technology** | **Department of Materials Science and Engineering** | Norwegian University of Science and Technology | Other | internal funding | P20694 | Understanding the local structure, transport, and diffusion of Li ions and Na ions in Li2-xNaxZrCl6 with x = 0, 0.5, 1, 1.5, and 2.0 | Material Science | 5 | 18 |
| Yan-Yan Hu (S) | C | Florida State University | Chemistry & Biochemistry | | | | | | | | |
| Feng Jin (G) | C | Norwegian University of Science and Technology | materials science and engineering | | | | | | | | |
| Pawan Ojha (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Erica Truong (G) | C | Florida State University | Chemistry and Biochemistry | | | | | | | | |
| Ivana Zlatic (G) | C | Norwegian University of Science and Technology | IMA | | | | | | | | |
| **Julius Chung (P)** | **PI *** | **Emory University** | **Emory National Primate Research Center** | No other support | | | P20731 | In vivo CEST parameter quantification at 21.1T | Biology, Biochemistry, Biophysics | 3 | 3 |
| Shinho Cho (O) | C | National High Magnetic Field Laboratory | NMR-MRI | | | | | | | | |
| Samuel Grant (S) | C | National High Magnetic Field Laboratory | Chemical & Biomedical Engineering | | | | | | | | |
| Hahnsung Kim (S) | C | Emory University | Primate Imaging Center | | | | | | | | |
| Phillip Sun (S) | C | Emory University | Emory National Primate Research Center | | | | | | | | |
| **Seungwoo Kang (S)** | **PI *** | **Augusta University** | **Department of Pharmacology and Toxicology** | NIH | NIMH - National Institute of Mental Health | MH137204 | P20750 | Brain-wide signatures of alcohol use disorder and its comorbid psychiatric disorders in cell-type-, circuit-, and age-dependent manners | Biology, Biochemistry, Biophysics | 1 | 3 |
| Shinho Cho (O) | C | National High Magnetic Field Laboratory | NMR-MRI | | | | | | | | |
| **Ilya Litvak (S)** | **PI** | **National High Magnetic Field Laboratory** | **CIMAR/NMR** | NIH | NIGMS - National Institute of General Medical Sciences | GM148766 | P20836 | Improvements and upgrades to 600 Solution NMR instrument | Engineering | 1 | 8 |
| William Brey (S) | C | National High Magnetic Field Laboratory | NMR | | | | | | | | |
| | | | | | | | | **Total Proposals:** **81** | | **Experiments:** **760** | **Days:** **2,793.00** |

| Participants (Name, Role, Org., Dept.) | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Jeffrey Long (S)** | **PI** | **University of California, Berkeley** | **Chemistry** | NSF | CHE - Chemistry | CHE2102603 | P19520 | Hard Permanent Magnetism from Mixed-Valence Dilanthanide Complexes with Metal-Metal Bonding | Chemistry | 1 | 5 |
| Neil Harrison (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Hyunchul Kwon (G) | C | University of California, Berkeley | Chemistry | | | | | | | | |
| **Lu Li (S)** | **PI** | **University of Michigan** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0020184 | P19528 | Search for novel electronic and magnetic state in ultraintensive magnetic fields | Condensed Matter Physics | 1 | 5 |
| Alimamy Bangura (S) | C | National High Magnetic Field Laboratory | CMS | NSF | DMR - Division of Materials Research | DMR2317618 | | | | | |
| Aaron Chan (G) | C | University of Michigan | Department of Physics | | | | | | | | |
| Kuan-Wen Chen (P) | C | University of Michigan | Physics | | | | | | | | |
| Kaila Jenkins (G) | C | University of Michigan | Department of Physics | | | | | | | | |
| David Mandrus (S) | C | University of Tennessee, Knoxville | Materials Science and Engineering | | | | | | | | |
| Yuji Matsuda (S) | C | Kyoto University | Physics | | | | | | | | |
| Ziji Xiang (P) | C | University of Michigan | Physics | | | | | | | | |
| Dechen Zhang (G) | C | University of Michigan | Department of Physics | | | | | | | | |
| Guoxin Zheng (G) | C | University of Michigan | Department of Physics | | | | | | | | |
| Yuan Zhu (G) | C | University of Michigan | Department of Physics | | | | | | | | |
| **Cui-Zu Chang (S)** | **PI** | **Pennsylvania State University** | **Physics** | NSF | DMR - Division of Materials Research | DMR1847811 | P19621 | Interfacial Superconductivity in Bi2Te3/FeTe Heterostructures under High Magnetic Fields | Condensed Matter Physics | 1 | 5 |
| Hemian Yi (P) | C | Pennsylvania State University | Department of physics | | | | | | | | |
| Yi-Fan Zhao (G) | C | Pennsylvania State University | Physics | | | | | | | | |
| **Nicholas Butch (S)** | **PI** | **National Institute of Standards and Technology MD** | **NIST Center for Neutron Research** | National Institute of Standards and Technology | US Government Lab | | P19704 | Studies of high-field states of UTe2 | Condensed Matter Physics | 2 | 20 |
| Peter Czajka (P) | C | National Institute of Standards and Technology MD | NCNR | | | | | | | | |
| Corey Frank (P) | C | National Institute of Standards and Technology MD | NCNR | | | | | | | | |
| Thomas Halloran (G) | C | National Institute of Standards and Technology MD | NIST Center for Neutron Research | | | | | | | | |
| Sylvia Lewin (P) | C | University of Maryland, College Park | physics | | | | | | | | |
| Gicela Saucedo Salas (G) | C | University of Maryland, College Park | Physics | | | | | | | | |
| Laurel Winter (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Rubi Km (S)** | **PI** | **Los Alamos National Laboratory** | **MPA-MAGLAB** | DOE | BES – Basic Energy Sciences | F101 | P19730 | High-field magnetotransport in two-dimensional electron systems at the complex oxide interfaces | Condensed Matter Physics | 1 | 10 |
| Anand Bhattacharya (S) | C | Argonne National Laboratory | Materials Science Division & Center for Nanoscale Materials | | | | | | | | |
| Neil Harrison (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Martin Nikolo (S)** | **PI** | **Saint Louis University** | **Physics** | Saint Louis University | US College and University | | P19829 | Investigation of high magnetic field properties of Kondo insulators via tunnel-diode oscillator technique (TDO) and the magnetic torque in pulsed fields | Condensed Matter Physics | 1 | 5 |
| Shannon Gould (G) | C | Washington University in St. Louis | Physics | | | | | | | | |
| Sheng Ran (S) | C | Washington University in St. Louis | Physics | | | | | | | | |
| **Debdeep Jena (S)** | **PI** | **Cornell University** | **ECE** | NSF | MRSEC - Materials Research Science and Engineering Centers | DMR-1719875 | P19838 | GaN-based 2D Electron Systems in the Quantum Regime | Condensed Matter Physics | 2 | 20 |
| Chuan Chang (G) | C | Cornell University | Physics | | | | | | | | |
| Yu-Hsin Chen (G) | C | Cornell University | Material Science and Engineering | | | | | | | | |
| Scott Crooker (S) | C | National High Magnetic Field Laboratory | Nat High Magnetic Field Lab | | | | | | | | |
| Jimy Encomendero (P) | C | Cornell University | Electrical and Computer Engineering | | | | | | | | |
| Ross McDonald (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Huili Xing (S) | C | Cornell University | ECE | | | | | | | | |
| **Michael Pettes (S)** | **PI** | **Los Alamos National Laboratory** | **Center for Integrated Nanotechnologies** | DOE | LDRD - Laboratory Directed R&D | DE-AA00-00AA00000 | P19839 | Anomalous High Field Transport in Dirac Semimetals | Material Science | 2 | 18 |
| Marshall Campbell (G) | C | Los Alamos National Laboratory | Center for Integrated Nanotechnologies | | | | | | | | |
| Luis Jauregui (S) | C | University of California, Irvine | Department of Physics and Astronomy | | | | | | | | |
| Caue Kaufmann Ribeiro (G) | C | Los Alamos National Laboratory | MAGLAB | | | | | | | | |
| Jinyu Liu (P) | C | University of California, Irvine | Physics | | | | | | | | |
| Johanna Palmstrom (P) | C | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Jun Park (P) | C | Los Alamos National Laboratory | MPA-CINT | | | | | | | | |
| Laurel Winter (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Rubi Km (S)** | **PI** | **Los Alamos National Laboratory** | **MPA-MAGLAB** | DOE | BES – Basic Energy Sciences | F10100 | P19841 | High-field magneto-transport on graphene/SrTiO3 devices | Condensed Matter Physics | 2 | 15 |
| Ariando Ariando (S) | C | National University of Singapore | Department of Physics | | | | | | | | |
| Neil Harrison (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Junxiong Hu (P) | C | National University of Singapore | Physics | | | | | | | | |
| **Minseong Lee (S)** | **PI** | **National High Magnetic Field Laboratory** | **MPA-MAG** | DOE | LDRD - Laboratory Directed R&D | DE-AA00-00AA00000 | P19848 | Kitaev spin liquid phase in a 3d transition metal oxides | Development of Magnet Technology | 4 | 25 |
| Craig Bridges (S) | C | Oak Ridge National Laboratory | Chemical Sciences | DOE | BES – Basic Energy Sciences | 0 | | | | | |
| Aiping Chen (P) | C | Los Alamos National Laboratory | Center for Integrated Nanotechnologies (MPA-CINT) | DOE | BES – Basic Energy Sciences | 0 | | | | | |
| Laura Greene (S) | C | National High Magnetic Field Laboratory | Management and Administration | | | | | | | | |
| Marcelo Jaime (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Sangyun Lee (S) | C | National High Magnetic Field Laboratory | Department of Physics | | | | | | | | |
| William Peria (P) | C | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| Lucas Pressley (G) | C | Johns Hopkins University | Chemistry | | | | | | | | |
| Vivien Zapf (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Shengzhi Zhang (S) | C | National High Magnetic Field Laboratory | MPA-MAGLAB: MPA-MAG LAB NHMFL GROUP | | | | | | | | |
| **Kimberly Modic (S)** | **PI** | **Institute of Science and Technology Austria** | **Physics** | No other support | | | P19945 | Thermodynamic measurements of topological superconductors | Condensed Matter Physics | 1 | 15 |
| Nicholas Butch (S) | C | National Institute of Standards and Technology MD | NIST Center for Neutron Research | | | | | | | | |
| Ross McDonald (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Amit Nathwani (U) | C | Institute of Science and Technology Austria | Physics | | | | | | | | |
| Muhammad Nauman (P) | C | Institute of Science and Technology Austria | Division of Mathematical and Physical Sciences | | | | | | | | |
| Brad Ramshaw (S) | C | Cornell University | Laboratory of Atomic and Solid State Physics | | | | | | | | |
| Arkady Shehter (S) | C | National High Magnetic Field Laboratory | LANL MPA-MAGLAB | | | | | | | | |
| Valeska Zambra (G) | C | Institute of Science and Technology Austria | Physics | | | | | | | | |
| **Junjie Yang (S)** | **PI** | **New Jersey Institute of Technology** | **Physics** | DOE | BES – Basic Energy Sciences | : DE- SC0021188 | P20048 | Investigate the large Anomalous Hall Effect over 20 T in a chiral magnet Co1/3TaS2 | Condensed Matter Physics | 1 | 5 |
| Sang Wook Cheong (S) | C | Rutgers University | Physics and Astronomy | | | | | | | | |
| Yunpeng Gao (G) | C | New Jersey Institute of Technology | Physics | | | | | | | | |
| Vivien Zapf (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Shengzhi Zhang (S) | C | National High Magnetic Field Laboratory | MPA-MAGLAB: MPA-MAG LAB NHMFL GROUP | | | | | | | | |
| **Ariando Ariando (S)** | **PI** | **National University of Singapore** | **Department of Physics** | DOE | BES – Basic Energy Sciences | F10100 | P20051 | Investigation of correlated states in the double-aligned graphene supermoire ´ lattice | Condensed Matter Physics | 1 | 10 |
| Neil Harrison (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Rubi Km (S) | C | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| **Susannah Speller (S)** | **PI** | **University of Oxford** | **Materials** | UK Engineering and Physical Sciences Research Council (EPSRC) | Non US Council | EP/W011743/1 | P20133 | Effect of irradiation damage on superconducting properties of commercial coated conductors at ultra high field | Material Science | 2 | 15 |
| Kirk Adams (G) | C | University of Oxford | Materials | UK Engineering and Physical Sciences Research Council | Non US Council | EP/W011743/1 | | | | | |
| Chris Grovenor (S) | C | University of Oxford | Materials | | | | | | | | |
| William Iliffe (S) | C | CCFE STEP | Confinement Systems | | | | | | | | |
| Boris Maiorov (S) | C | National High Magnetic Field Laboratory | MPA-MAGLAB | | | | | | | | |
| James Tufnail (G) | C | University of Oxford | Materials | | | | | | | | |
| **Sheng Ran (S)** | **PI** | **Washington University in St. Louis** | **Physics** | NSF | DMR - Division of Materials Research | DMR2236528 | P20150 | Study of high magnetic field induced superconductivity of UTe2 | Condensed Matter Physics | 1 | 5 |
| Christopher Broyles (G) | C | Washington University in St. Louis | Physics | | | | | | | | |
| Shannon Gould (G) | C | Washington University in St. Louis | Physics | | | | | | | | |
| Martin Nikolo (S) | C | Saint Louis University | Physics | | | | | | | | |
| John Singleton (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Sangyun Lee (S)** | **PI** | **National High Magnetic Field Laboratory** | **Department of Physics** | DOE | BES – Basic Energy Sciences | 0 | P20151 | High field studies of a new Shastry-Sutherland lattice compound. | Condensed Matter Physics | 1 | 4 |
| Huibo Cao (S) | C | Oak Ridge National Laboratory | Neutron scattering | | | | | | | | |
| Marcelo Jaime (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Tai Kong (S) | C | University of Arizona | Department of Physics | | | | | | | | |
| Minseong Lee (S) | C | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Vivien Zapf (S) | C | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Sang Wook Cheong (S)** | **PI** | **Rutgers University** | **Physics and Astronomy** | Max Planck institute in Postech | Non US College and University | 2022M3H4A1A04074153 | P20158 | High field studies of magnetoelectricity of a zigzag 1D antiferromagnetic chain. | Condensed Matter Physics | 2 | 10 |
| Minseong Lee (S) | C | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Sangyun Lee (S) | C | National High Magnetic Field Laboratory | Department of Physics | | | | | | | | |
| Choongjae Won (P) | C | Pohang University of Science and Technology | Physics | | | | | | | | |
| **Mijkhail Eremets (S)** | **PI** | **Max Planck Institute for Chemistry, Mainz** | **Chemistry and Physics at High Pressures Group** | Max Plank Institute for Chemistry | Non US Government Lab | | P20272 | Hydrogen-Rich High Temperature Superconductors | Condensed Matter Physics | 2 | 15 |
| Fedor Balakirev (S) | C | National High Magnetic Field Laboratory | PFF | | | | | | | | |
| Luis Balicas (S) | C | National High Magnetic Field Laboratory | Condensed Matter Experiment | | | | | | | | |
| Vasily Minkov (S) | C | Max Planck Institute for Chemistry, Mainz | Chemistry and Physics at High Pressures Group | | | | | | | | |
| G. Alexander Smith (P) | C | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |

2024 PFF

| Participants (Name, Role, Org., Dept.) | | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Philip Moll (S)** | **PI** | | **Max Planck Institute for Structure and Dynamics of Matter, Hamburg** | **Max Planck Institute for Structure and Dynamics of Matter** | No other support | | | P20283 | True nature of exotic high field state in UTe2: a field-polarized metal or a field-boosted superconductor? | Condensed Matter Physics | 1 | 5 |
| Priscila Ferrari Silveira Rosa (P) | C | | Los Alamos National Laboratory | MPA-CMMS | | | | | | | | |
| Chunyu Guo (S) | C | | Max Planck Institute for Structure and Dynamics of Matter, Hamburg | MQM | | | | | | | | |
| Carsten Putzke (U) | C | | University of Bristol | Physics | | | | | | | | |
| Ling Zhang (G) | C | | Max Planck Institute for Structure and Dynamics of Matter, Hamburg | MQM | | | | | | | | |
| **Makariy Tanatar (S)** | **PI** | * | **Ames Laboratory** | **Division of material science and engineering** | DOE | BES – Basic Energy Sciences | DEAC02- 07CH11358 | P20338 | Fermiology of miassite mineral superconductor Rh17S15 and related materials | Material Science | 2 | 10 |
| Fedor Balakirev (S) | C | | National High Magnetic Field Laboratory | PFF | DOE | BES – Basic Energy Sciences | DE-AC02-07CH11358 | | | | | |
| Sergey Bud'ko (S) | C | | Ames Laboratory | Physics and Astronomy | | | | | | | | |
| Paul Canfield (S) | C | | Ames Laboratory | Physics & Astronomy | | | | | | | | |
| Elizabeth Krenkel (G) | C | | Ames Laboratory | Department of Physics and Astronomy | | | | | | | | |
| Ruslan Prozorov (S) | C | | Ames Laboratory | Physics | | | | | | | | |
| John Singleton (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Janice Musfeldt (S)** | **PI** | | **University of Tennessee, Knoxville** | **Department of Chemistry** | NSF | DMR - Division of Materials Research | DMR12345__ | P20344 | High field spectroscopy of materials with broken symmetries and strong spin-orbit coupling | Chemistry | 1 | 5 |
| Scott Crooker (S) | C | | National High Magnetic Field Laboratory | Nat High Magnetic Field Lab | | | | | | | | |
| Yanhong Gu (P) | C | | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| Kevin Smith (P) | C | | University of Tennessee, Knoxville | Chemistry | | | | | | | | |
| **Robert McQueeney (S)** | **PI** | | **Ames Laboratory** | **physics & astronomy** | DOE | BES – Basic Energy Sciences | DE-AC02-07CH11358 | P20362 | Pulsed magnetic field studies of topological magnetic Kagome compounds | Condensed Matter Physics | 7 | 40 |
| Joanna Blawat (P) | C | | National High Magnetic Field Laboratory | NHMFL | DOE | BES – Basic Energy Sciences | DE-AC02-07CH11358 | | | | | |
| Paul Canfield (S) | C | | Ames Laboratory | Physics & Astronomy | | | | | | | | |
| Tianxiong Han (G) | C | | Iowa State University | Department of Physics | | | | | | | | |
| Ross McDonald (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| John Singleton (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Tyler Slade (S) | C | | Ames Laboratory | Physics | | | | | | | | |
| Benjamin Ueland (S) | C | | Ames Laboratory | Division of Materials Sciences and Engineering | | | | | | | | |
| **Gennady Logvenov (S)** | **PI** | * | **Max Planck Institute for Solid State Research, Stuttgart** | **Thin Film Technology Facility** | Max Plank Institute for Solid State Research | Non US Government Lab | | P20378 | High Magnetic Field Magnetotransport in Artificial Cuprate Superlattices | Condensed Matter Physics | 1 | 5 |
| Fedor Balakirev (S) | C | | National High Magnetic Field Laboratory | PFF | | | | | | | | |
| Luis Balicas (S) | C | | National High Magnetic Field Laboratory | Condensed Matter Experiment | | | | | | | | |
| Antonio Bianconi (S) | C | | National Research Council CNR | Institute of Crystallography | | | | | | | | |
| G. Alexander Smith (P) | C | | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| **Charles Ahn (S)** | **PI** | * | **Yale University** | **Applied Physics** | DOE | BES – Basic Energy Sciences | DE-SC0019211 | P20381 | High field magneto-transport study of Nd1-xEuxNiO2 thin films | Condensed Matter Physics | 2 | 10 |
| Dung Vu (P) | C | | Yale University | Applied Physics | | | | | | | | |
| Frederick Walker (S) | C | | Yale University | Applied Physics | | | | | | | | |
| Wenzheng Wei (G) | C | | Yale University | Applied Physics | | | | | | | | |
| **Christopher Mizzi (S)** | **PI** | | **National High Magnetic Field Laboratory** | **MPA-MAGLAB: MPA-MAG LAB NHMFL GROUP** | NSF | DMR - Division of Materials Research | DMR2128556 | P20382 | Expanding Non-Linear Transport Capabilities in Pulsed Fields with Dynamic Range and in situ Voltage Compensation | Condensed Matter Physics | 1 | 5 |
| Fedor Balakirev (S) | C | | National High Magnetic Field Laboratory | PFF | | | | | | | | |
| Minseong Lee (S) | C | | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Boris Maiorov (S) | C | | National High Magnetic Field Laboratory | MPA-MAGLAB | | | | | | | | |
| **Christopher Mizzi (S)** | **PI** | | **National High Magnetic Field Laboratory** | **MPA-MAGLAB: MPA-MAG LAB NHMFL GROUP** | DOE | LDRD - Laboratory Directed R&D | DE-AA99-99AA99999 | P20401 | Symmetry-Sensitive Detection of a Novel Magnetic Phase | Condensed Matter Physics | 2 | 10 |
| Minseong Lee (S) | C | | National High Magnetic Field Laboratory | MPA-MAG | DOE | LDRD - Laboratory Directed R&D | DE-AA00-00AA00000 | | | | | |
| Boris Maiorov (S) | C | | National High Magnetic Field Laboratory | MPA-MAGLAB | | | | | | | | |
| Haidong Zhou (S) | C | | University of Tennessee, Knoxville | Physics and Astronomy | | | | | | | | |
| **James Analytis (S)** | **PI** | | **University of California, Berkeley** | **Physics** | DOD | US Air Force | #MC2276 | P20412 | High Magnetic field Investigations of the Eu122 candidate Axionic Insulators | Biology, Biochemistry, Biophysics | 2 | 15 |
| Yuanqi Lyu (G) | C | | University of California, Berkeley | Physics | DOE | MSE - Materials Science and Engineering | DE-SC0205112 | | | | | |
| Vikram Nagarajan (G) | C | | University of California, Berkeley | Physics | | | | | | | | |
| Luke Pritchard Cairns (P) | C | | University of California, Berkeley | Physics | | | | | | | | |
| Kohtaro Yamakawa (G) | C | | University of California, Berkeley | Physics | | | | | | | | |
| **Krzysztof Gofryk (S)** | **PI** | | **Idaho National Laboratory** | **Nuclear Materials** | DOE | BES – Basic Energy Sciences | core program | P20418 | Strong magneto-elastic coupling in strongly correlated uranium systems probed by high magnetic fields | Condensed Matter Physics | 2 | 12 |
| Volodymyr Buturlim (P) | C | | Idaho National Laboratory | Nuclear Materials | DOE | BES – Basic Energy Sciences | BES core program | | | | | |
| Neil Harrison (S) | C | | National High Magnetic Field Laboratory | Physics | DOE | LDRD - Laboratory Directed R&D | DE-AC07-05ID14517 | | | | | |
| Marcelo Jaime (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Minseong Lee (S) | C | | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Ross McDonald (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Sabin Regmi (P) | C | | Idaho National Laboratory | IRRADIATED FUELS AND MATERIALS | | | | | | | | |
| **Johanna Palmstrom (P)** | **PI** | | **National High Magnetic Field Laboratory** | **MPA-MAG** | DOE | BES – Basic Energy Sciences | DE-AC02-06CH11357 | P20419 | In-situ strain measurements of quantum materials in extreme magnetic fields | Condensed Matter Physics | 7 | 56 |
| Paul Canfield (S) | C | | Ames Laboratory | Physics & Astronomy | DOE | BES – Basic Energy Sciences | LANL F100 | | | | | |
| Mun Chan (S) | C | | National High Magnetic Field Laboratory | Pulsed field Facility | DOE | BES – Basic Energy Sciences | 3N070A XXUX 00000000 | | | | | |
| Aiping Chen (P) | C | | Los Alamos National Laboratory | Center for Integrated Nanotechnologies (MPA-CINT) | DOE | LDRD - Laboratory Directed R&D | DE-AA00-00AA00000 | | | | | |
| Jiun-Haw Chu (S) | C | | University of Washington | Physics | DOE | BES – Basic Energy Sciences | 3N070A-XXUX-00000000 | | | | | |
| Jason Dong (G) | C | | University of California, Santa Barbara | Materials | FAPESP | Other | 2022/15955-5 | | | | | |
| Yilmaz Gul (P) | C | | University of California, Santa Barbara | Electronic and Computer engineering | | | | | | | | |
| Caue Kaufmann Ribeiro (G) | C | | Los Alamos National Laboratory | MAGLAB | | | | | | | | |
| Brinda Kuthanazhi (G) | C | | Ames Laboratory | Division of Material Sciences and Engineering | | | | | | | | |
| Robert McQueeney (S) | C | | Ames Laboratory | physics & astronomy | | | | | | | | |
| Ajeesh Mukkattu Omanakuttan (P) | C | | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| Chris Palmstrom (S) | C | | University of California, Santa Barbara | ECE-Material Science | | | | | | | | |
| VIKAS SAINI (P) | C | | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| Tyler Slade (S) | C | | Ames Laboratory | Physics | | | | | | | | |
| Sean Thomas (S) | C | | Los Alamos National Laboratory | MPA-Q | | | | | | | | |
| Benjamin Ueland (S) | C | | Ames Laboratory | Division of Materials Sciences and Engineering | | | | | | | | |
| **Tyler Slade (S)** | **PI** | * | **Ames Laboratory** | **Physics** | DOE | BES – Basic Energy Sciences | DE-AC02-07CH11358 | P20516 | Pulsed magnetic field studies of XPt5P magnetic topological semimetals | Condensed Matter Physics | 2 | 14 |
| Joanna Blawat (P) | C | | National High Magnetic Field Laboratory | NHMFL | DOE | BES – Basic Energy Sciences | DE-AC02-07CH11358 | | | | | |
| Paul Canfield (S) | C | | Ames Laboratory | Physics & Astronomy | | | | | | | | |
| Ross McDonald (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Robert McQueeney (S) | C | | Ames Laboratory | physics & astronomy | | | | | | | | |
| John Singleton (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Linlin Wang (S) | C | | Ames Laboratory | Materials Science and Engineering | | | | | | | | |
| **Allen Scheie (S)** | **PI** | * | **Los Alamos National Laboratory** | **MPA-Q** | DOE | BES – Basic Energy Sciences | 0 | P20517 | Quantum spin liquid phase in rare-earth triangular lattice antiferromagnets | Condensed Matter Physics | 1 | 5 |
| Minseong Lee (S) | C | | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Shengzhi Zhang (S) | C | | National High Magnetic Field Laboratory | MPA-MAGLAB: MPA-MAG LAB NHMFL GROUP | | | | | | | | |
| **Anthony Bollinger (S)** | **PI** | * | **Brookhaven National Laboratory** | **Condensed Matter Physics and Materials Science Division** | DOE | BES – Basic Energy Sciences | FWP MA-509-MACA | P20524 | Magnetoresistance in the Strange Metal Phase of La(2-x)Sr(x)CuO(4) | Condensed Matter Physics | 1 | 5 |
| Ivan Bozovic (S) | C | | Brookhaven National Laboratory | Condensed Matter and Materials Science | | | | | | | | |
| Xi He (S) | C | | Brookhaven National Laboratory | Condensed Matter Physics and Materials Science Division | | | | | | | | |
| **Joseph Checkelsky (S)** | **PI** | | **Massachusetts Institute of Technology** | **Physics** | DOD | ARO - Army Research Office | | P20531 | High Field Studies of Superconducting Superlattices | Condensed Matter Physics | 2 | 15 |
| Alan Chen (G) | C | | Massachusetts Institute of Technology | EECS | | | | | | | | |
| Maximilien Debbas (G) | C | | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Paul Neves (G) | C | | Massachusetts Institute of Technology | Physics | | | | | | | | |
| Joshua Wakefield (G) | C | | Massachusetts Institute of Technology | Physics | | | | | | | | |
| **Haidong Zhou (S)** | **PI** | | **University of Tennessee, Knoxville** | **Physics and Astronomy** | NSF | DMR - Division of Materials Research | DMR0000000 | P20537 | High-Field Studies of High-Pressure Superconductivity in Bulk Nickelates | Condensed Matter Physics | 1 | 10 |
| Fedor Balakirev (S) | C | | National High Magnetic Field Laboratory | PFF | | | | | | | | |
| Minseong Lee (S) | C | | National High Magnetic Field Laboratory | MPA-MAG | | | | | | | | |
| Boris Maiorov (S) | C | | National High Magnetic Field Laboratory | MPA-MAGLAB | | | | | | | | |
| Christopher Mizzi (S) | C | | National High Magnetic Field Laboratory | MPA-MAGLAB: MPA-MAG LAB NHMFL GROUP | | | | | | | | |
| G. Alexander Smith (P) | C | | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| **Joanna Blawat (P)** | **PI** | * | **National High Magnetic Field Laboratory** | **NHMFL** | No other support | | | P20538 | High magnetic field studies of CePd-based heavy fermion compounds | Condensed Matter Physics | 5 | 32 |
| Grzegorz Chajewski (P) | C | | Institute of Low Temperature and Structure Research, Polish Academy of Sciences | Division of Magnetic Research | | | | | | | | |
| Dariusz Kaczorowski (S) | C | | Institute of Low Temperature and Structure Research, Polish Academy of Sciences | Magnetic Research Division | | | | | | | | |
| Ross McDonald (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Sunil Karna (S)** | **PI** | | **Prairie View A&M University** | **Physics Department** | NSF | DMR - Division of Materials Research | DMR2302420 | P20543 | Investigation of parallel critical field in Re and Re/Al bilayer thin films | Condensed Matter Physics | 1 | 5 |
| Philip Adams (S) | C | | Louisiana State University | Physics and Astronomy | | | | | | | | |
| David Graf (S) | C | | National High Magnetic Field Laboratory | DC Field / CMS | | | | | | | | |
| David Young (S) | C | | Louisiana State University | Physics and Astronomy | | | | | | | | |



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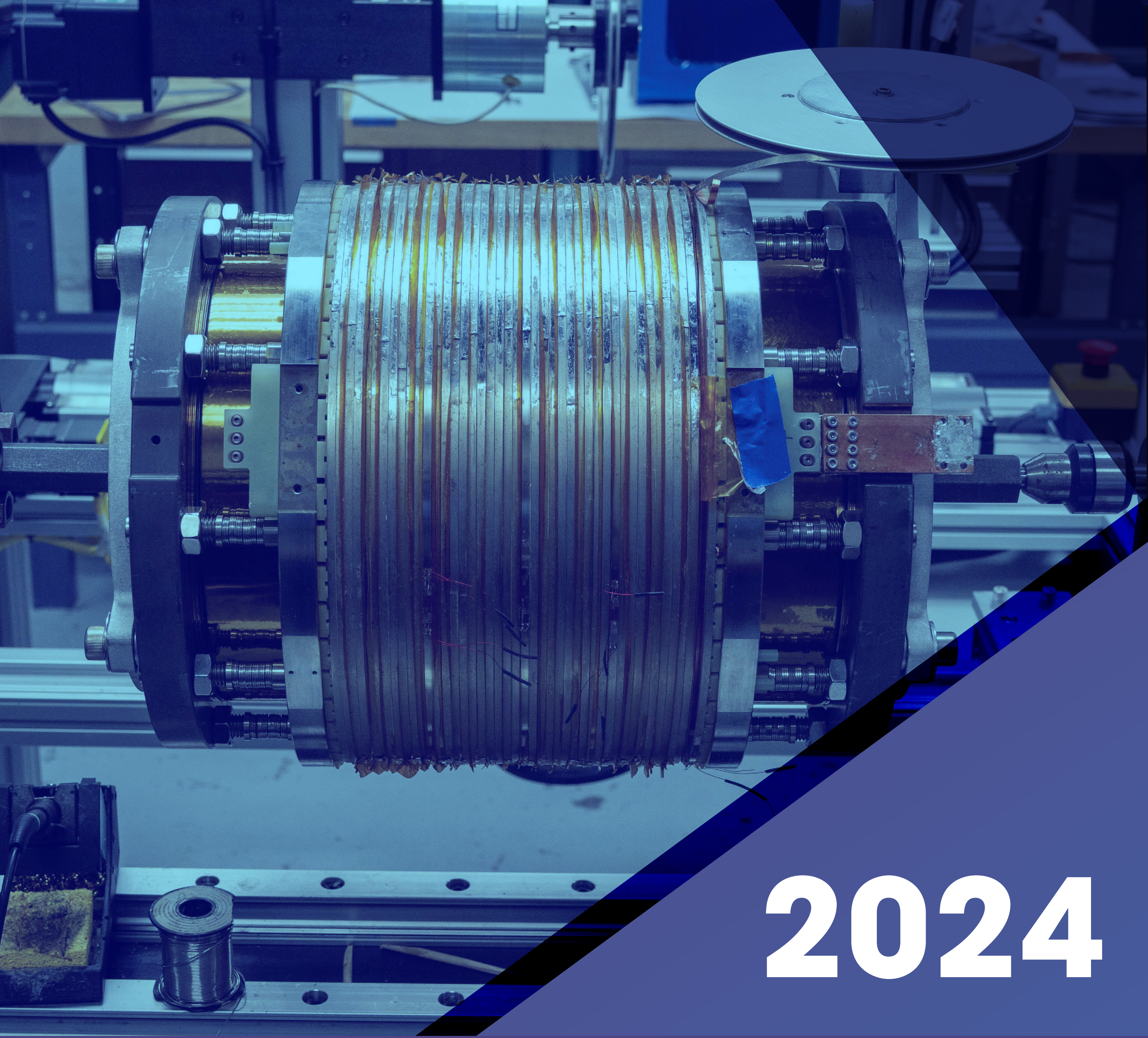
2024 PFF

| Participants (Name, Role, Org., Dept.) | | | | | Funding Sources (Funding Agency, Division, Award #) | | | Proposal # | Proposal Title | Discipline | Exp. # | Days Used |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Tomasz Klimczuk (S)** | **PI** | * | **Gdansk University of Technology** | **Department of Applied Physics** | No other support | | | P20544 | High magnetic field study of topological superconductors | Condensed Matter Physics | 1 | 8 |
| Hanna Swiatek (G) | C | | Gdansk University of Technology | Faculty of Applied Physics and Mathematics | | | | | | | | |
| Bartlomiej Wiendlocha (S) | C | | AGH University of Science and Technology | Faculty of Physics and Applied Computer Science, Department of Condensed Matter Physics | | | | | | | | |
| Michal Winiarski (S) | C | | Gdansk University of Technology | Faculty of Applied Physics and Mathematics | | | | | | | | |
| **Dariusz Kaczorowski (S)** | **PI** | * | **Institute of Low Temperature and Structure Research, Polish Academy of Sciences** | **Magnetic Research Division** | No other support | | | P20546 | Entangled Magnetic Phase in EuM2X2 Compounds in High Magnetic Fields | Condensed Matter Physics | 1 | 5 |
| Shovan Dan (P) | C | | Institute of Low Temperature and Structure Research, Polish Academy of Sciences | Department of Magnetic Research | | | | | | | | |
| Piotr Wisniewski (S) | C | | Institute of Low Temperature and Structure Research, Polish Academy of Sciences | Division of Magnetic Research | | | | | | | | |
| **Felix Trier (S)** | **PI** | * | **Technical University of Denmark** | **DTU Energy** | Villum foundation | Non US Foundation | 37338 | P20620 | Complex oxide-based two-dimensional electronic systems in high magnetic fields | Condensed Matter Physics | 1 | 5 |
| Amit Chanda (P) | C | | Technical University of Denmark | DTU Energy | | | | | | | | |
| Neil Harrison (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Thor Hvid-Olsen (G) | C | | Technical University of Denmark | DTU Energy | | | | | | | | |
| Rubi Km (S) | C | | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| **Emilia Morosan (S)** | **PI** | | **Rice University** | **Physics and Astronomy** | ICAM and the Gordon and Betty Moore Foundation | Other | GBMF9616 | P20623 | High Field Susceptibility, Magnetization and Resistivity Measurements in Gd5Pb3 | Condensed Matter Physics | 1 | 5 |
| Karthik Rao (G) | C | | Rice University | Physics and Astronomy | | | | | | | | |
| Vivien Zapf (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Brian Maple (S)** | **PI** | | **University of California, San Diego** | **Inst for Pure & Applied Physical Sciences** | DOE | NNSA - National Nuclear Security Administration | DE-NA0004086 | P20631 | Conducting surface state in FeSi at high magnetic field and high pressure | Condensed Matter Physics | 1 | 5 |
| Fedor Balakirev (S) | C | | National High Magnetic Field Laboratory | PFF | DOE | BES – Basic Energy Sciences | DE-FG02-04ER46105 | | | | | |
| Yuhang Deng (P) | C | | University of California, San Diego | Physics | | | | | | | | |
| Keke Feng (P) | C | | University of California, San Diego | Physics | | | | | | | | |
| Eric Lee-Wong (G) | C | | University of California, San Diego | Physics Department | | | | | | | | |
| John Singleton (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| **Lu Li (S)** | **PI** | | **University of Michigan** | **Physics** | DOE | BES – Basic Energy Sciences | DE-SC0020184 | P20635 | Search for novel electronic and magnetic state in ultraintensive magnetic fields | Condensed Matter Physics | 3 | 15 |
| Kaila Jenkins (G) | C | | University of Michigan | Department of Physics | NSF | DMR - Division of Materials Research | DMR2317618 | | | | | |
| Patrick Lee (S) | C | | Massachusetts Institute of Technology | Physics Department | | | | | | | | |
| David Mandrus (S) | C | | University of Tennessee, Knoxville | Materials Science and Engineering | | | | | | | | |
| Yuji Matsuda (S) | C | | Kyoto University | Physics | | | | | | | | |
| Dechen Zhang (G) | C | | University of Michigan | Department of Physics | | | | | | | | |
| Guoxin Zheng (G) | C | | University of Michigan | Department of Physics | | | | | | | | |
| Yuan Zhu (G) | C | | University of Michigan | Department of Physics | | | | | | | | |
| **Oliver Bierwagen (S)** | **PI** | * | **Paul Drude Institute for Solid State Electronics** | **Epitaxy** | Leibniz-Gemeinschaft | Other | K74/2017 | P20639 | Investigating High-Field Magnetotransport in Two-Dimensional Electron Gas at the LaInO3/BaSnO3 Interface | Condensed Matter Physics | 1 | 5 |
| Neil Harrison (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Georg Hoffmann (P) | C | | Paul Drude Institute for Solid State Electronics | Epitaxy | | | | | | | | |
| Rubi Km (S) | C | | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| **Bing Lv (S)** | **PI** | * | **University of Texas, Dallas** | **Physics** | DOD | US Air Force | FA9550-19-1-0037 | P20642 | High-field studies on a new high entropy Kagome system | Condensed Matter Physics | 1 | 5 |
| Wenhao Liu (P) | C | | university of texas at dallas | Physics | DOD | ONR - Office of Naval Research | N00014-23-1-2020 | | | | | |
| Christopher Mizzi (S) | C | | National High Magnetic Field Laboratory | MPA-MAGLAB: MPA-MAG LAB NHMFL GROUP | NSF | DMR - Division of Materials Research | DMR2324033 | | | | | |
| **Xiaojian Bai (S)** | **PI** | * | **Louisiana State University** | **Physics** | Louisiana State University | US College and University | | P20701 | Probing hybridized quasiparticles in quantum magnets using high magnetic field | Condensed Matter Physics | 1 | 5 |
| Qing Huang (G) | C | | University of Tennessee, Knoxville | Physics | | | | | | | | |
| **Ariando Ariando (S)** | **PI** | | **National University of Singapore** | **Department of Physics** | Ministry of Education, Singapore | Non US Ministry | MOET2EP50121-0018 | P20723 | Probing Fermi surface and upper critical fields of infinite-layer nickelate superconductors | Condensed Matter Physics | 1 | 5 |
| Lin Er Chow (P) | C | | National University of Singapore | Physics | Ministry of Education, Singapore | Non US Ministry | MOE-T2EP50123-0013 | | | | | |
| Neil Harrison (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| Rubi Km (S) | C | | Los Alamos National Laboratory | MPA-MAGLAB | | | | | | | | |
| King Yau Yip (P) | C | | National University of Singapore | Physics | | | | | | | | |
| Wei Zhang (P) | C | | National University of Singapore | Physics | | | | | | | | |
| **Doan Nguyen (S)** | **PI** | | **National High Magnetic Field Laboratory** | **Pulsed Field Facility** | NSF | DMR - Division of Materials Research | DMR1644779 | P20790 | Development of new magnetization probe to measure Jc(B,T) for HTS film sample | Material Science | 1 | 10 |
| Gary Noe (T) | C | | National High Magnetic Field Laboratory | National High Magnetic Field Laboratory - Pulsed Field Facility | | | | | | | | |
| John Singleton (S) | C | | National High Magnetic Field Laboratory | Physics | | | | | | | | |
| | | | | | | | | | **Total Proposals: 47** | | **Experiments: 82** | **Days: 539** |



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