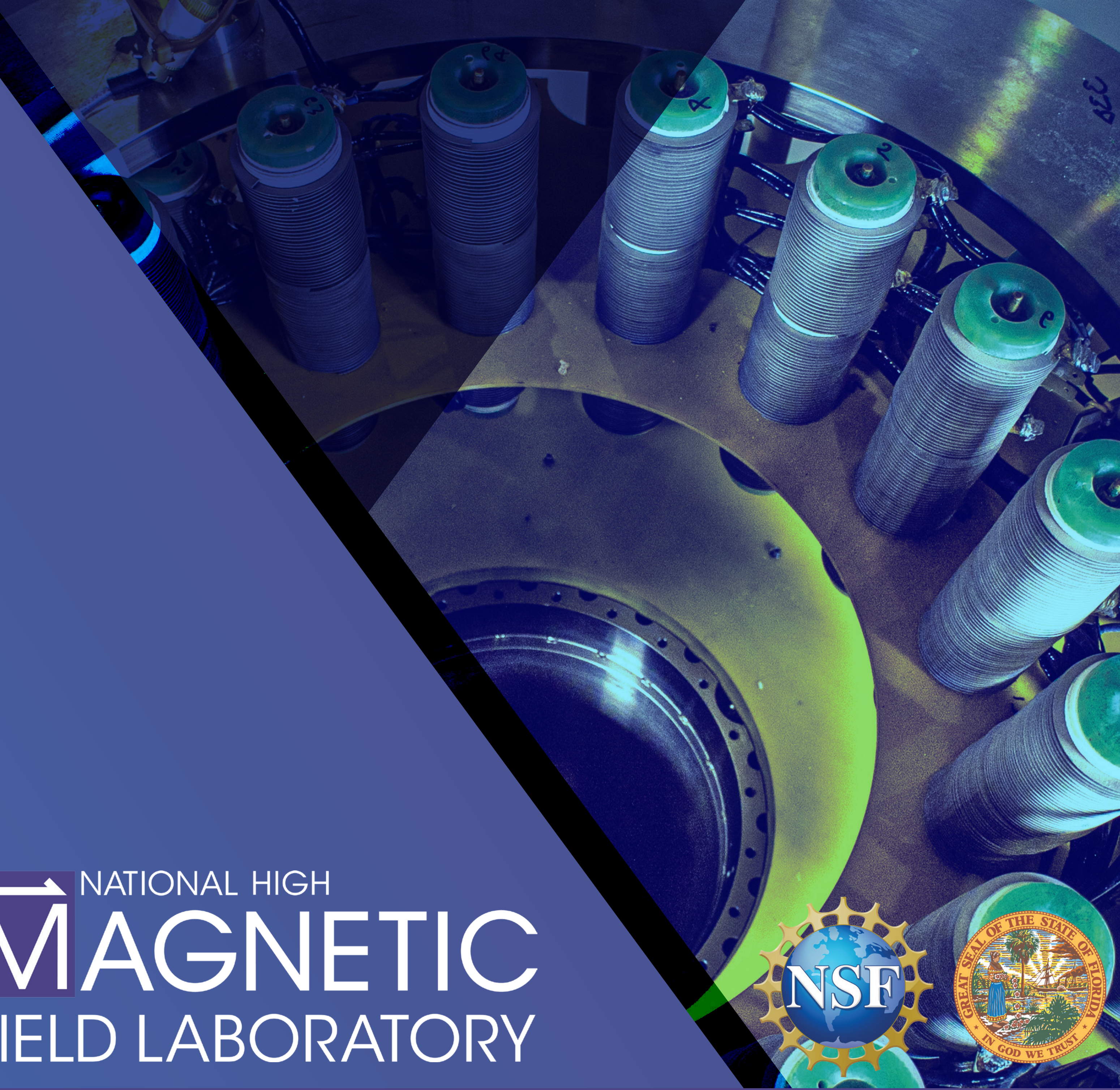


NATIONAL HIGH MAGNETIC FIELD LABORATORY

2024 ANNUAL REPORT

NationalMagLab.org

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

2024 Annual Report

Produced by

National High Magnetic Field Laboratory

DIRECTOR
Kathleen Amm

DEPUTY DIRECTOR
Eric Palm

DEPUTY DIRECTOR
Tim Murphy

CHIEF SCIENTIST
Laura Greene

USER PROGRAM CHIEF OF STAFF
Anke Toth

COPY EDITOR
Edan Schultz

NATIONAL HIGH MAGNETIC FIELD LABORATORY

This document is available in alternative formats upon request. Contact Anke Toth for assistance via atoth@magnet.fsu.edu

TABLE OF CONTENT

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

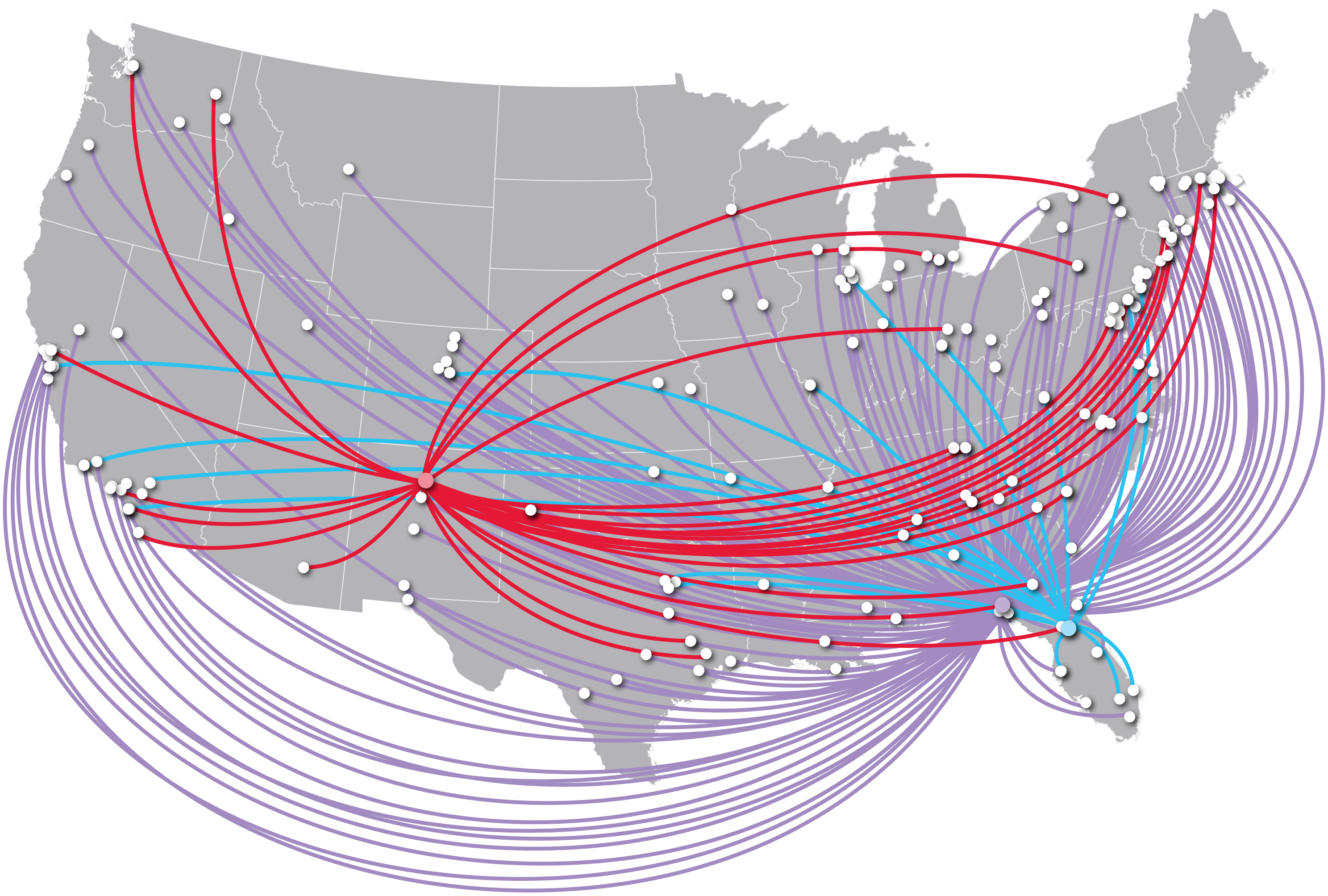
Supported by the National Science Foundation and the State of Florida

7

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 2024, our **1,559** users represented **265** universities, government labs and private companies worldwide.

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



8

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

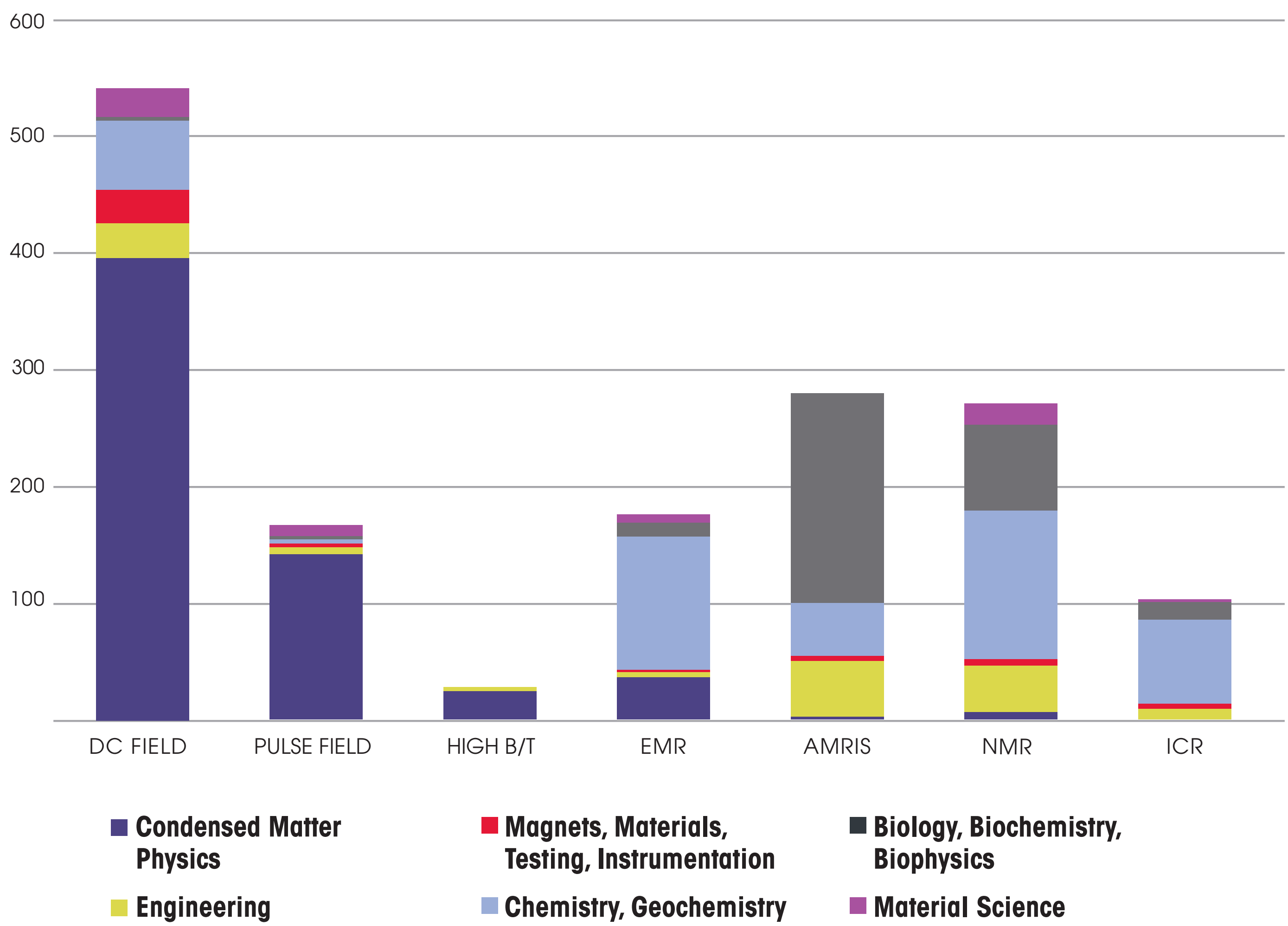
9

WHO OUR USERS ARE

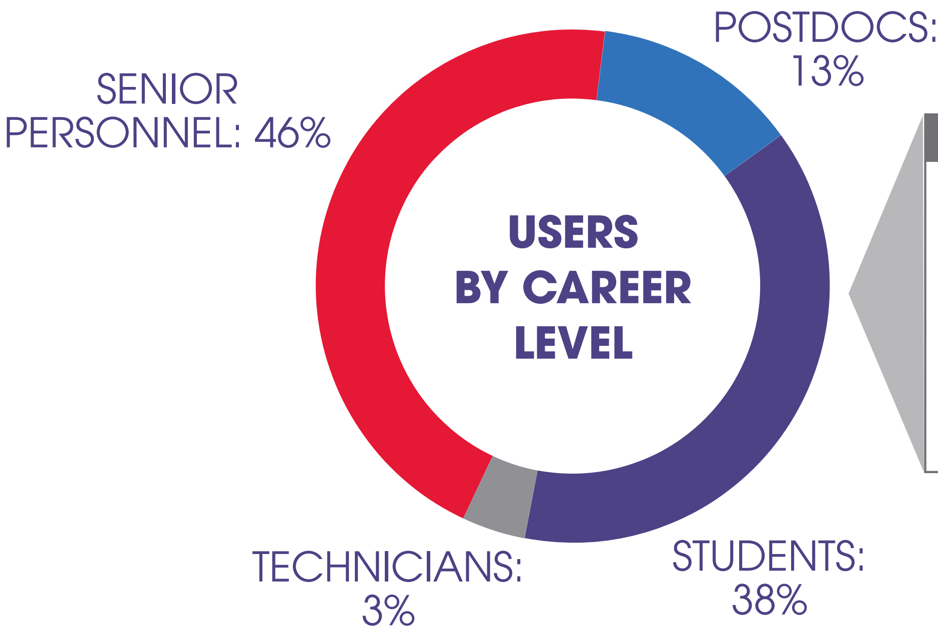
High magnetic fields are a powerful research tool across many disciplines leading to groundbreaking discoveries that impact your life. The lab comprises 7 distinct user facilities that offer our researchers a wide range of research capabilities:

- **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



10



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**

11

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.

12

CHAPTERS

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.**

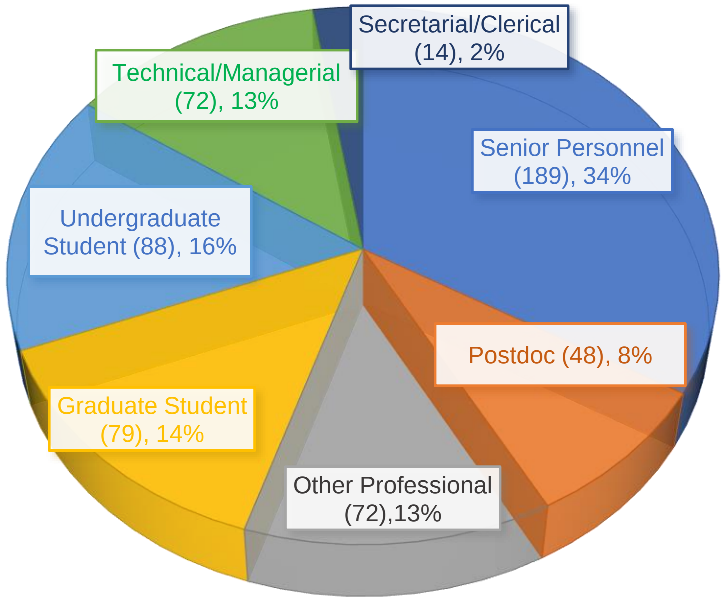


Figure 1.4.1. *MagLab Position Distribution (as of January 5, 2025).*

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.

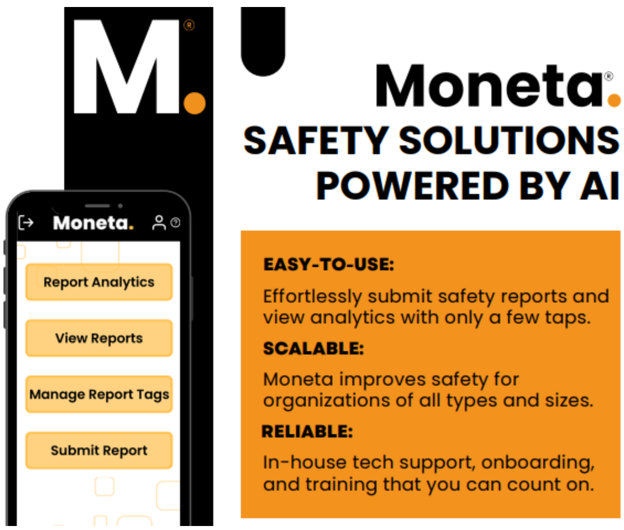
Safety Support and Coordination with Institutional Safety Teams
Safety at the MagLab is supported by a dedicated on-site team in collaboration with the Florida State University (FSU) Environmental, Health, and Safety Department, University of Florida (UF), Environmental, Health, and Safety and Los Alamos 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.

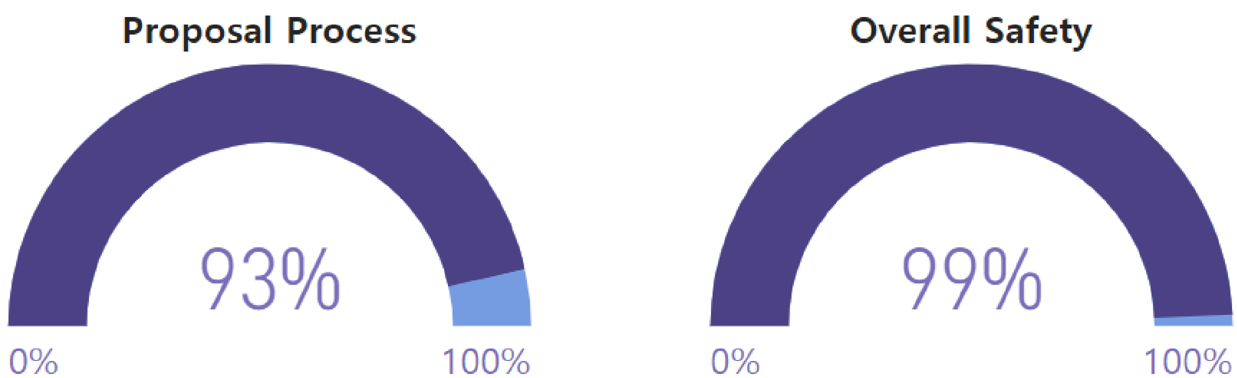


Figure 2.1.1. Links. *93% of external users were satisfied or very satisfied with the proposal process (e.g., submission, review).* ***Right.*** *99% of external users were satisfied or very satisfied with the overall safety at the MagLab.*

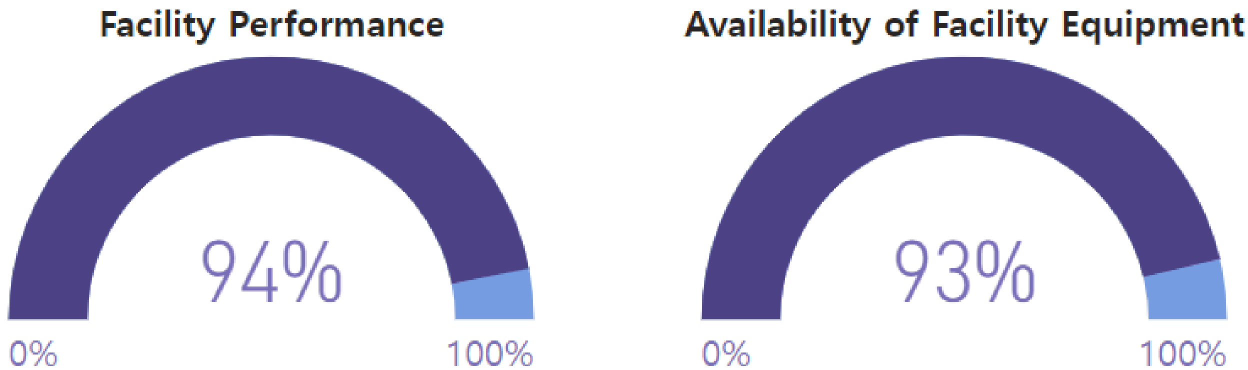


Figure 2.1.2. Left. *94% of external users were satisfied or very satisfied with the performance of the facilities and equipment.* ***Right****: 93% of external users were satisfied or very satisfied with the availability of the facilities and equipment.*

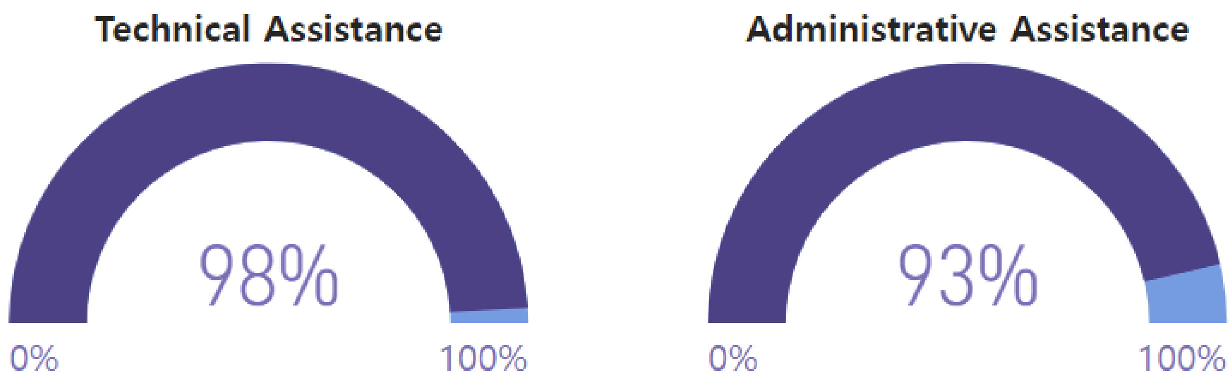


Figure 2.1.3. Left. *98% of external users were satisfied or very satisfied with the assistance provided by MagLab facilities technical staff.* ***Right.*** *93% of external users were satisfied or very satisfied with the assistance provided by MagLab facilities administrative staff.*

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.

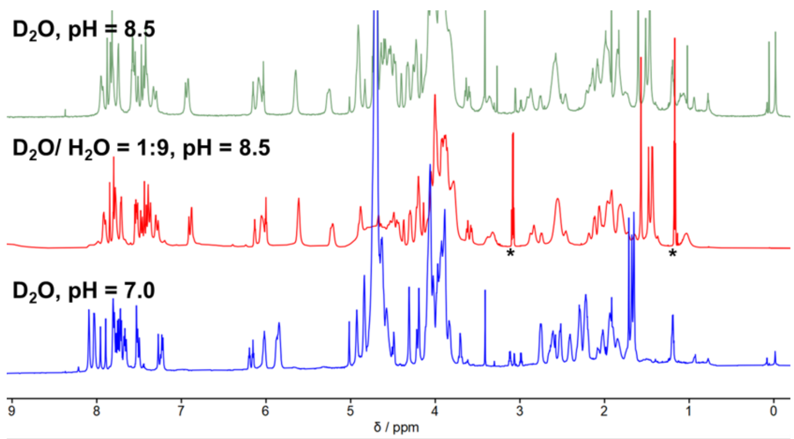
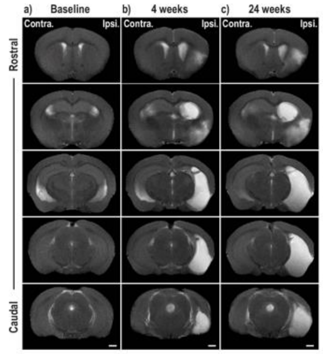


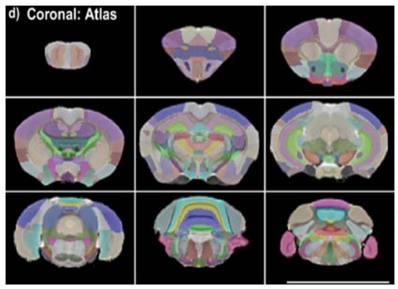
Figure 2.2.1: Characterization of the fZ-motif formed by DNA containing dZ using [1]H NMR spectroscopy. A 2 mM solution of the ZZZ oligonucleotide was examined by NMR at 18.8T using aqueous buffers with varying pH and [1]H / [2]H isotope ratios to characterize hydrogen exchange, a reporter on the stability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





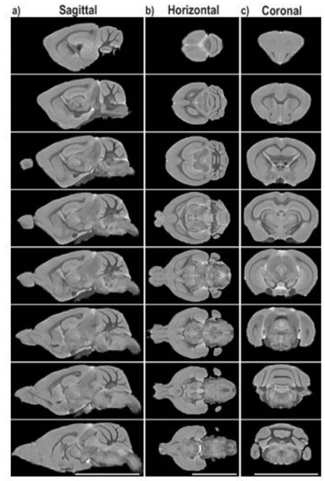


Figure: *Anatomical MRI of representative Acomys brains (**top left**) at baseline (**a**), 4 wpi (**b**), and 24 wpi (**c**). White areas indicate an absence of brain tissue. Like in humans and other rodents, the damaged area increases in size over time.*

*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)	30.4	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.
41.5T, 32mm, (25ppm/mm)	32	
36T, 40mm, (1ppm/mm)[2]	14	
35T, 32mm (x2)	19.2	
31T, 32mm to 50mm[1] (x2)	18.4	
25T, 32mm bore (with optical access ports)[3]	27	
SUPERCONDUCTING MAGNETS		
Field (T), Bore (mm)	**Sample Temperature**	**Supported Research**
32T, 34mm	14mK – 300K	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.
18/20T, 52mm	20mK – 1K	
18/20T, 52mm	0.3K – 300K	
17.5T, 47mm	4K – 300K	
16T, 47mm[4]	2.0K – 325K	
10T, 34mm[3]	0.3K – 300K	
9T, 25mm[4]	2.0K – 325K	
7T, 7mm[4]	2.0K – 325K	

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.

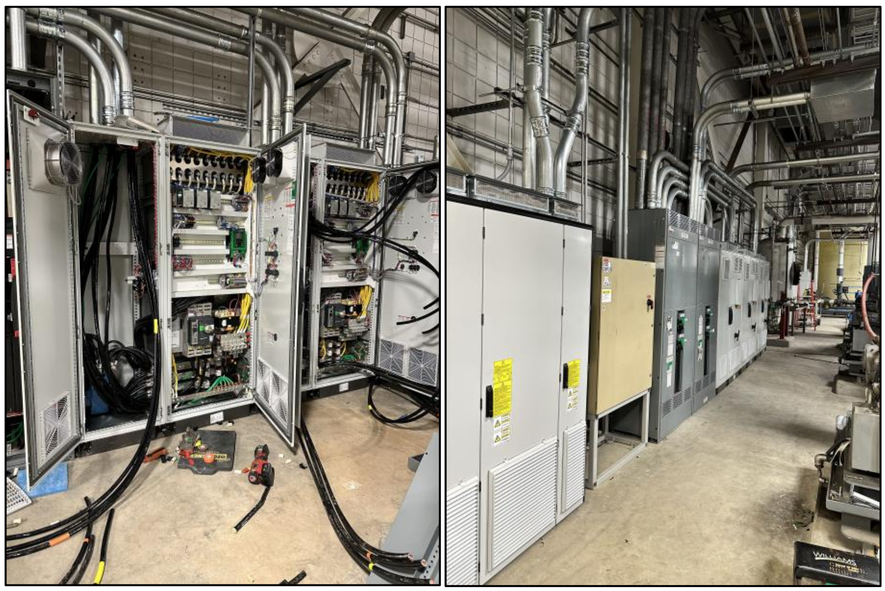


Figure 2.3.1. *New 370kW variable-speed drives during the installation process (left) and after commissioning (right)*

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.

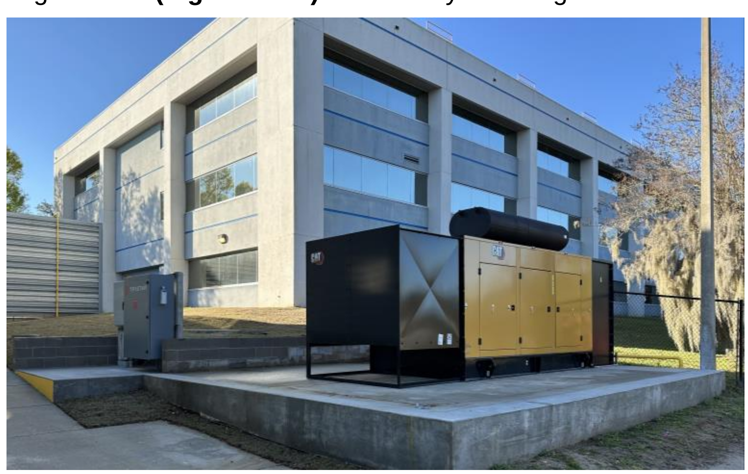


Figure 2.3.2. *New 500kW Emergency Generator*

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.

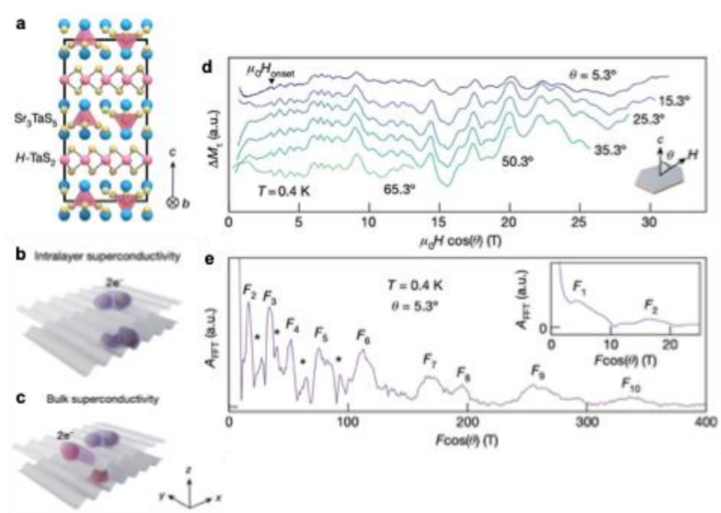


Figure 2.3.4 a) *Crystal structure of SrTa2S5,* ***b)*** *Illustration of intralayer electronic pairing,* ***c)*** *Illustration of interlayer electronic pairing,* ***d)*** *M vs. H traces to 31T showing quantum oscillations,* ***e)*** *Fast Fourier transform of the 5.3 deg. trace in d) showing component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

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.

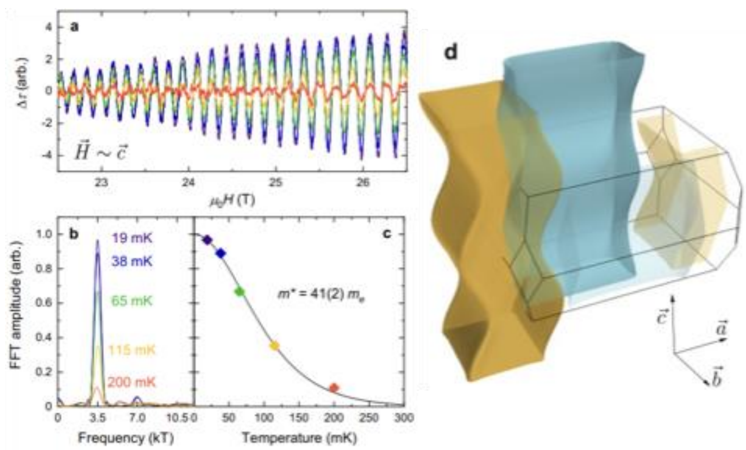


Figure 2.3.5 a) *Quantum oscillations in the magnetic torque of UTe2. Oscillation colors correspond to the temperature of the measurement, as labeled in panel* ***b)****. The amplitude of the quantum oscillations is plotted versus temperature in panel* ***c)****, showing a rapid decrease in oscillation 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.*

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.

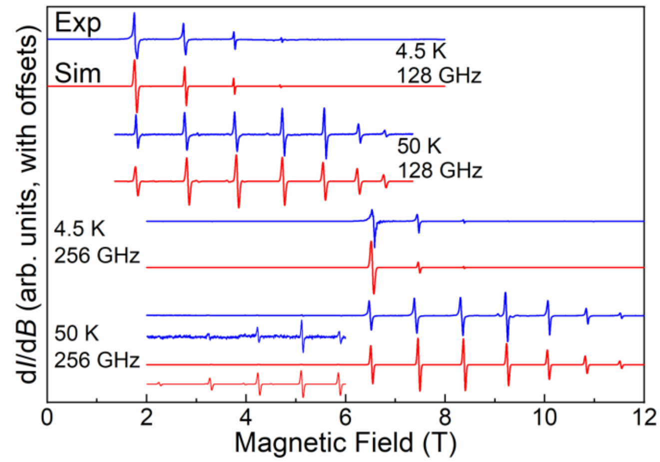


Figure 2.4.1. *(Blue) Powder EPR spectra recorded in derivative mode (dI/dB, I is the microwave intensity transmitted through the sample, B is the applied field) at the indicated frequencies and temperatures; simulations are shown in red, and spectra are offset for clarity. An expanded view of the 256GHz, 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

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.

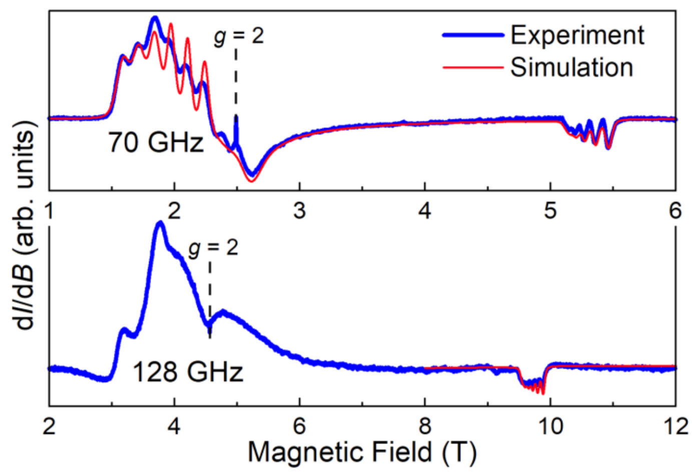


Figure 3.4.2. *Multi-frequency, high-field EPR spectra of the $[K(crypt)]^+[Cp'_3Pr^{II}]^-$ complex, which has an effective spin-½ ground state. Different components of the Landé g-tensor are well-resolved at the highest frequency. Spectral simulations then allow determination of the g- and A-tensor 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.

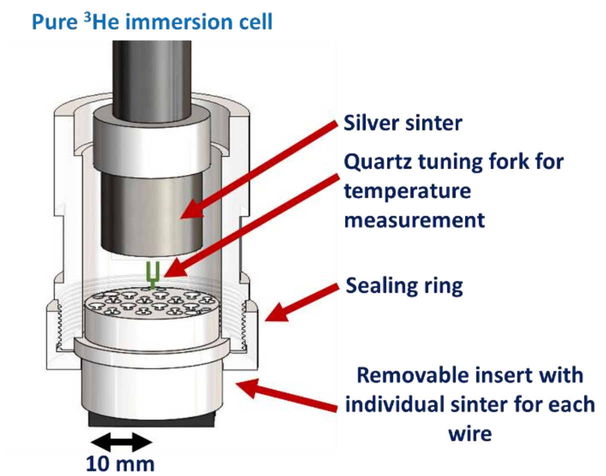


Figure 2.5.1. *Pure ^{3}He immersion cell for cooling the sample and the leads, which are also anchored with Ag sinter for thermalization of conduction electrons.*

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).

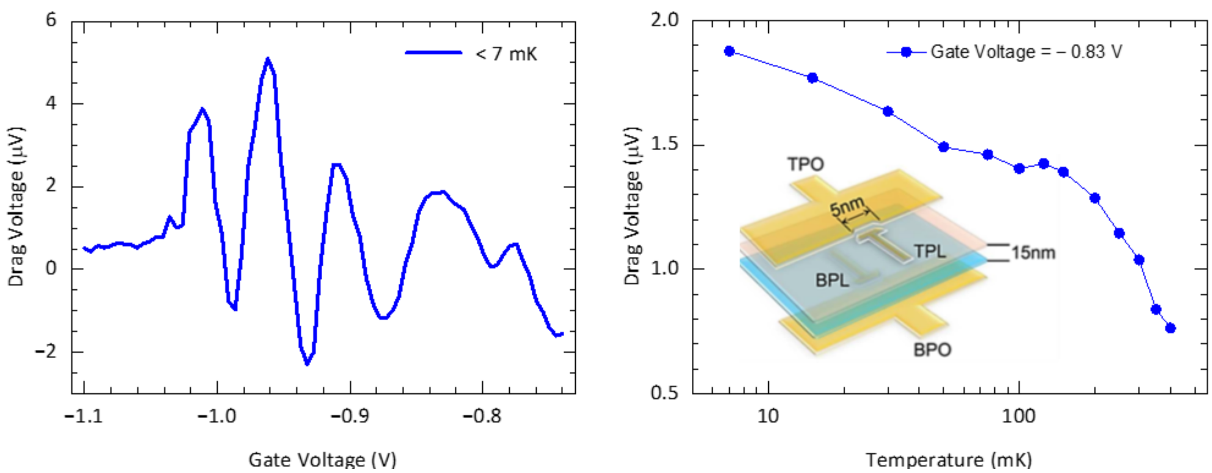


Figure 2.5.2. *Drag voltage vs Gate voltage at < 7mK and (right) Drag voltage vs Temperature for the GaAS/AlGaAs double quantum wire device schematically shown in the inset, M. Zheng et al., arXiv:2408.12737 (2024).*

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.

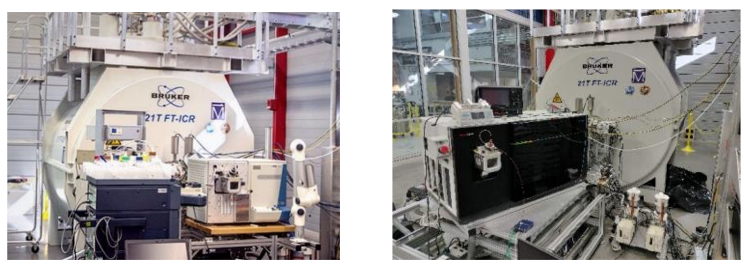


Figure 2.6.1. *The MagLab 21T FT-ICR mass spectrometer. Left: previous dual linear ion trap front end. Right: 2024 Eclipse tribrid front end upgrade.*

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.

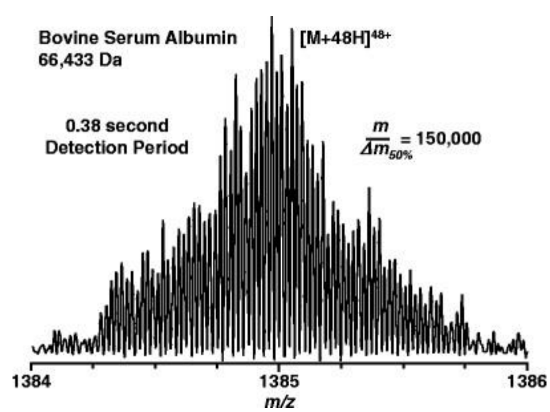


Figure 2.6.2. *Single-scan electrospray FT-ICR mass spectrum of the isolated 48+ charge state of bovine serum albumin following a 0.38 s detection period. Mass resolving power is ~150,000 and the signal-to-noise ratio of the most abundant peak is >150:1. The ion accumulation period was 250 ms and the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

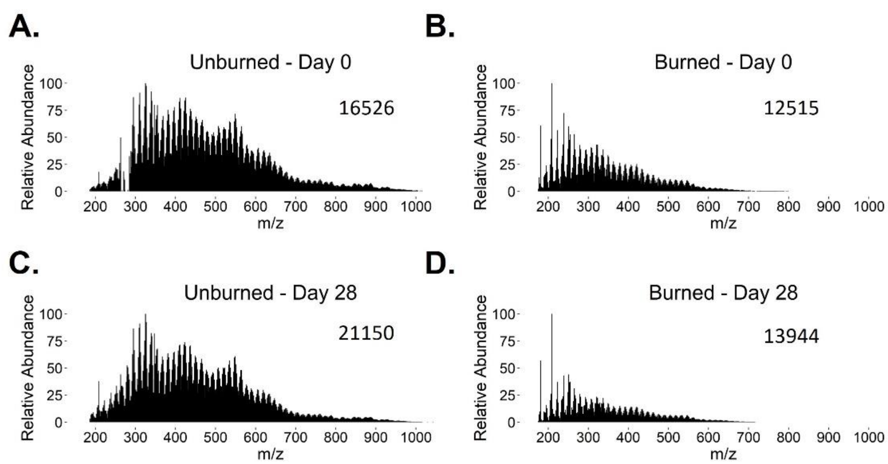


Figure 2.6.3. *FT ICR-MS mass spectra of unburned (A, C) and burned (B, D) soil from negative ion mode electrospray ionization. The number in insets of each spectrum is the total number of observed peaks that were assigned molecular formulas (including heavy isotopes).*

(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)**.

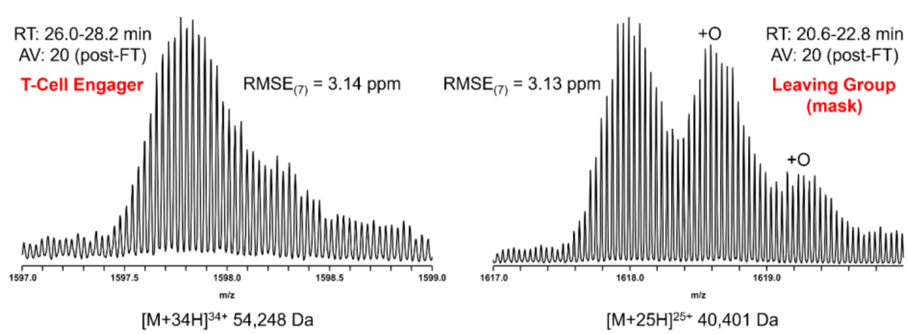


Figure 2.6.4. *21 T FT-ICR MS spectra of pro-form (intact, left) and cleaved (active, right) species of a designer protein. Intact mass measurements match expected values within approximately 3 parts per million, demonstrating that the protein is synthesized correctly.*

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.

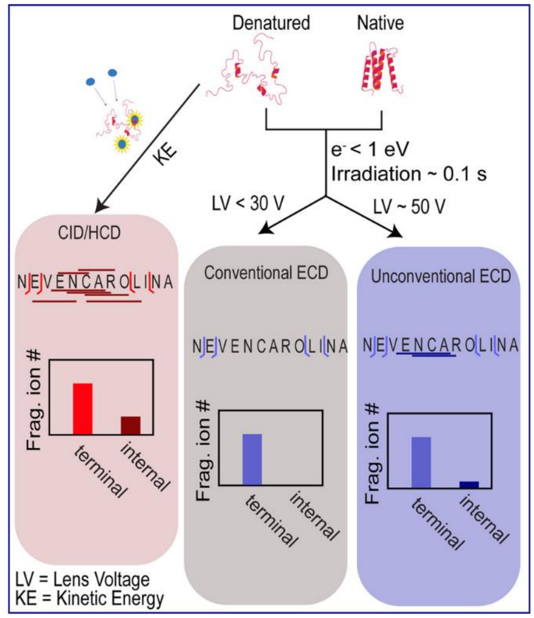


Figure 2.6.5. *While internal fragment ions from intact proteins are assignable following collisional activation (CID/HCD, Left), such ions do not appear following electron capture and transfer dissociation (ECD/ETD, Middle). However, they may be observed at low abundance from unconventional operating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

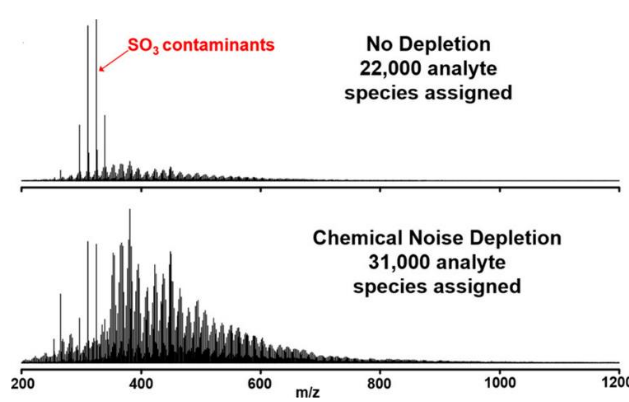


Figure 2.6.6. *Number of molecular compositions assigned in dissolved organic matter with (Bottom) and without (Top) gas-phase depletion of chemical conta-minants.*

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 34th 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 ↔ –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 $^{1}H/^{31}P/^{13}C$ and $^{1}H/^{13}C/^{17}O$ modes, along with several double-resonance (HX) modes, including X = $^{103}Rh \leftrightarrow {}^{73}Ge$, $^{61}Ni \leftrightarrow {}^{35}Cl$, ^{17}O, ^{6}Li, ^{2}H, ^{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]).

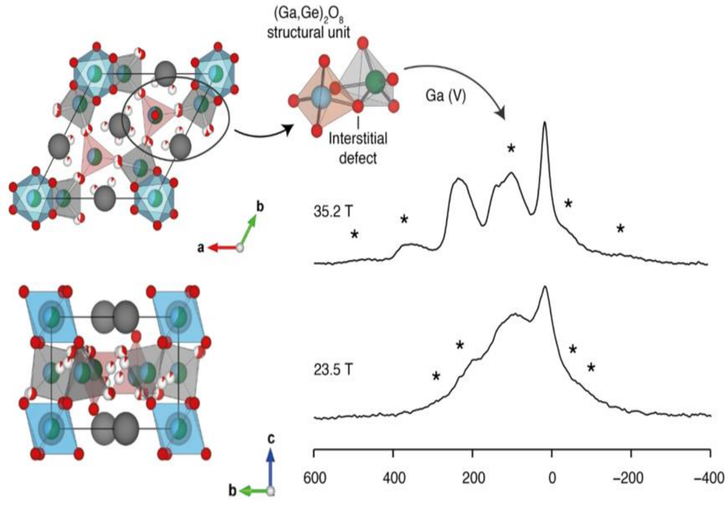


***Figure 2.7.1. Left**: Defect chemistry of a gallium containing electrolyte (oxygens in red). **Right**: Resolved (35.2T) vs. unresolved (23.5T) ^{71}Ga ssNMR spectra and a disorder model. (*) indicate artefacts (spinning sidebands).*

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].

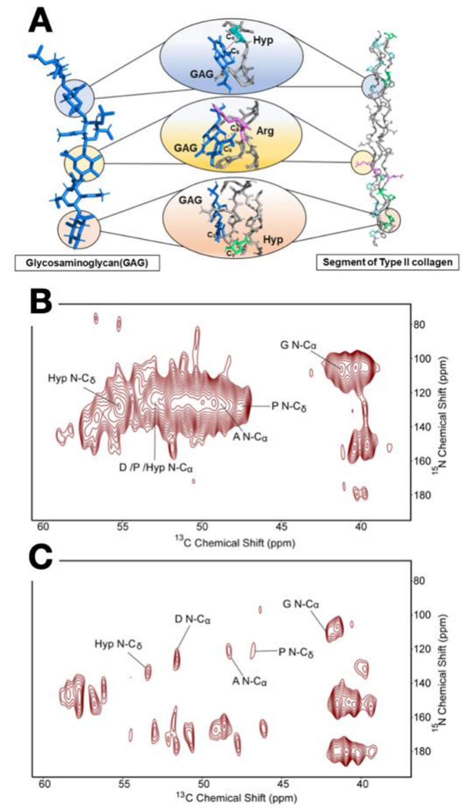


Figure 2.7.2. *(**A**) 3D model showing the interaction between GAG and type II collagen. DNP-enhanced 2D ^{15}N–^{13}C dipolar correlation NMR spectra of cartilage (**B**) and bone (**C**).*

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.

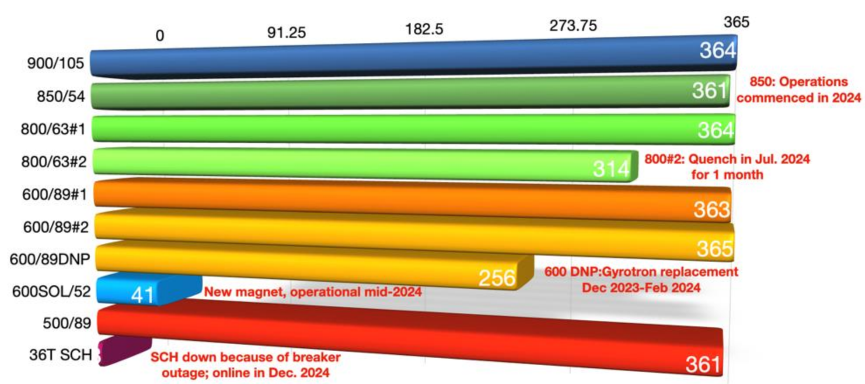


Figure 2.7.3. *User magnet time on major NMR/MRI platforms at the NHMFL in 2024.*

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 $^1H/^2H$ 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*

<table>
<tr><th colspan="5">Capacitor Driven Pulsed Magnets</th></tr>
<tr><th>Magnet System</th><th>Bore, ^{3}He Sample Space</th><th>Rise Time, Max dB/dt</th><th>Pulse Duration</th><th>Supported Research*</th></tr>
<tr><td>65T Short-pulse (x4)</td><td rowspan="3">⌀15mm, ⌀ 9mm</td><td>8ms, 8.1T/ms</td><td>80ms</td><td rowspan="3">Magneto-optics – IR through UV
Magnetization – Extraction, Torque
Magnetic Susceptibility
Magneto transport – DC through MHz; incl. Critical Current Measurements and RF
Pulse Echo Ultrasound Spectroscopy
Fiber Bragg Grating Dilatometry
Polarization
Magnetocaloric

Sample Temperatures: 400mK to 300K
For compatible techniques: Pressures up to 5GPa and in-situ sample rotation</td></tr>
<tr><td>75T Duplex</td><td>1.8ms, 25T/ms (30 - 75T)</td><td>80ms</td></tr>
<tr><td>60T Mid-pulse</td><td>32ms, 1.8T/ms</td><td>300ms</td></tr>
<tr><th colspan="5">Generator Driven Pulsed Magnets**</th></tr>
<tr><th>Magnet System</th><th>Bore, ^{3}He Sample Space</th><th>Rise Time, Max dB/dt</th><th>Pulse Duration</th><th>Supported Research*</th></tr>
<tr><td>100T Multi-shot</td><td>⌀ 10mm, ⌀ 5mm</td><td>8ms, 7.5T/msec (40 – 100T)</td><td>3s</td><td>All techniques listed above</td></tr>
<tr><td>60T Controlled Waveform ("Long-pulse")</td><td>⌀ 25mm, ⌀ 18mm</td><td>Adjustable</td><td>3s, Up to 100ms full field flat top</td><td>All techniques listed above, plus:
Magnetothermal studies
(Heat Capacity and Magnetocaloric)
Larger Sample Volumes</td></tr>
</table>

* *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.

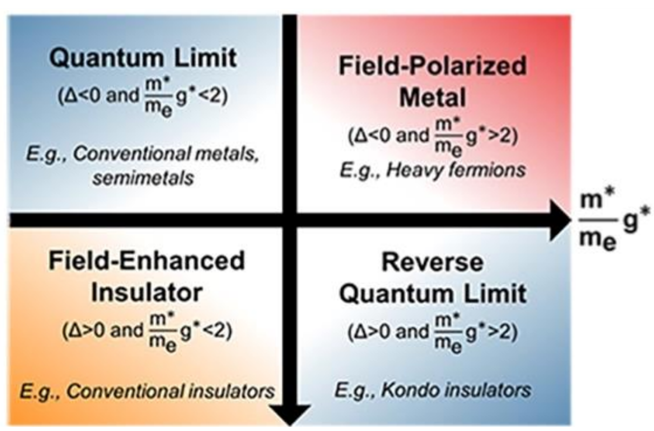


Figure 2.7.1. *Electronic phase diagram at high fields that depends on the strength of the correlations (horizontal axis) and whether the electronic structure is gapped (Δ > 0) or metallic (Δ > 0).*

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.**

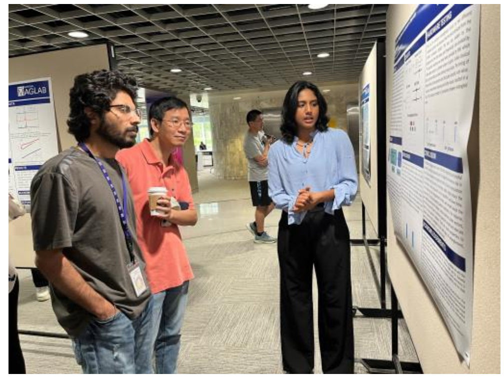


Figure 3.1.4. *A MagLab Extern explains her work during the High School Externship poster session.*

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**).

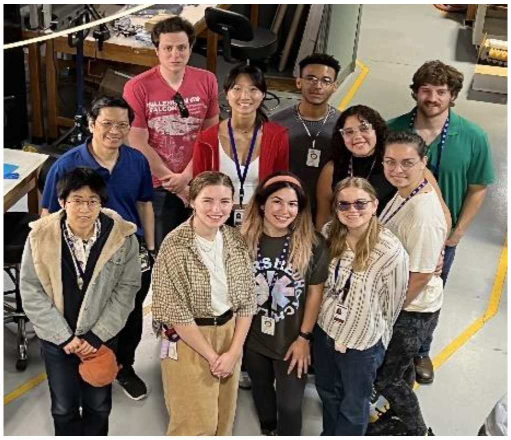


Figure 3.1.8. *Summer 2024 REU Participants*

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.

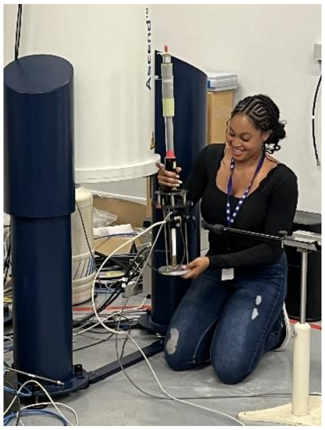


Figure 3.1.9. *REU Student in a Lab*

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: • Communicated frequently and answered questions thoroughly (n=2) • Made sure I understood (n=2) • 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: • Asking questions and engaging in discussion (n=9) • 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: • Morning meetings (n=1) • Sharing knowledge and advice (n=3)	Mentors were asked what **mentoring strategies** they used that they thought were **impactful**. They provided the following strategies: • Maintaining a consistent schedule (n=10) • 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).

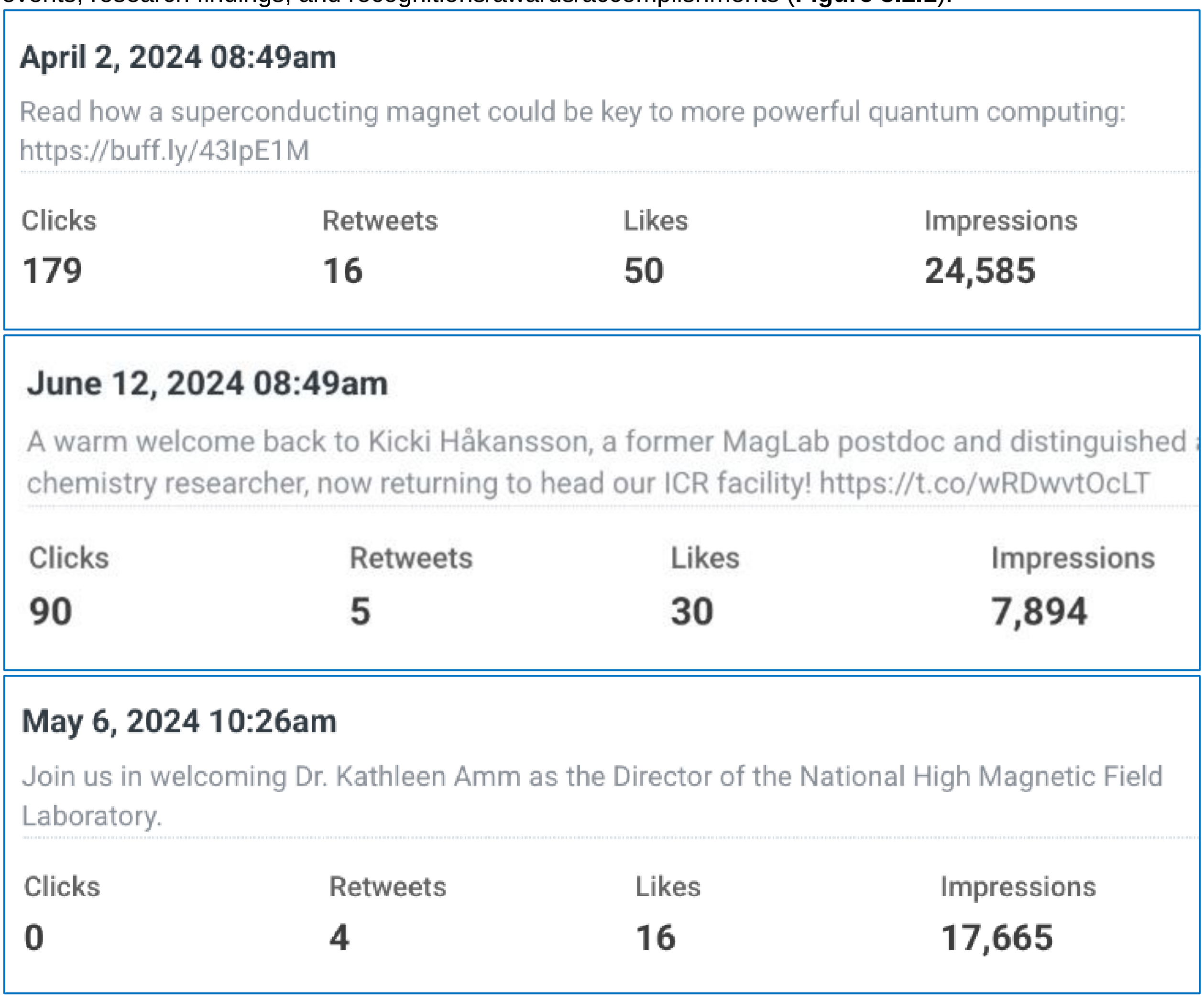
3.2 PUBLIC OUTREACH

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**).



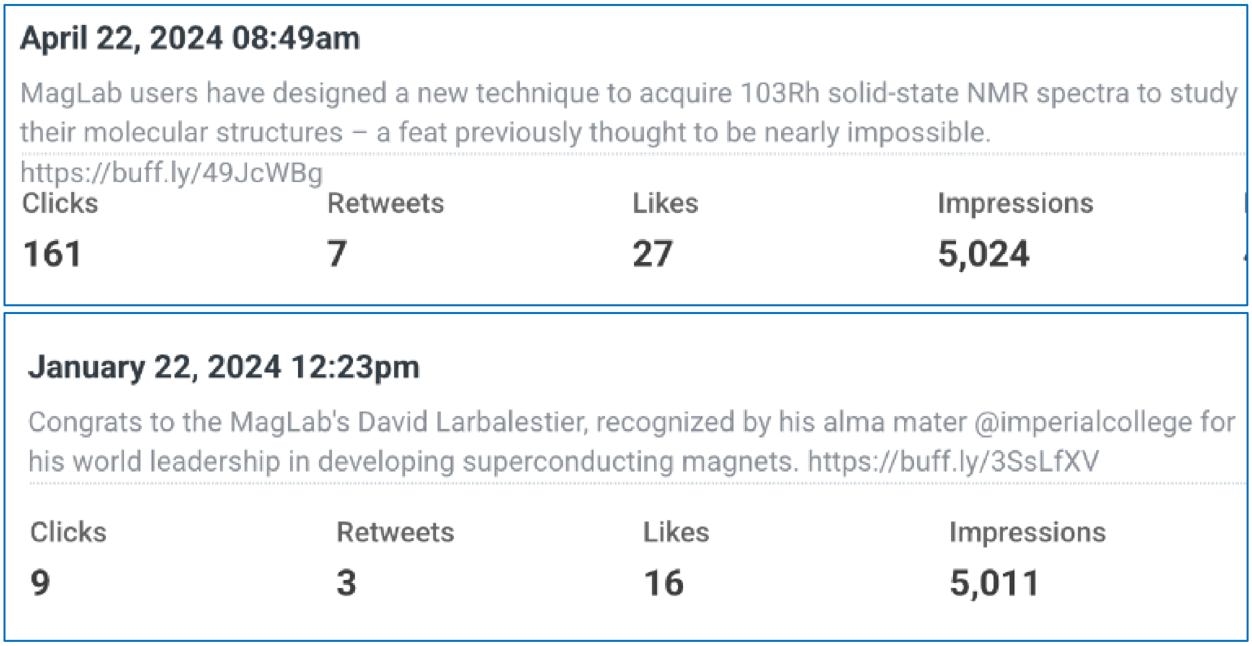


Figure 3.2.1. *Top Tweets of X Engagement*

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**).

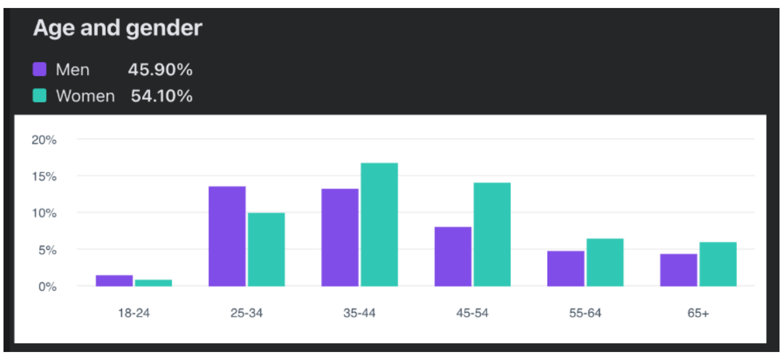


Figure 3.2.2. *MagLab Facebook Audience age and gender breakdown.*

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.
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.

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.


Figure 3.2.4. Photos from the 2024 Science Night season.

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*** 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 • Don jetpacks & walk the distance between plants in this Space Walk • Make your own Moon Phases with cookies and light	Main Library	90
2/15/24	***Lissa Anderson, ICR*** 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 • Build a Dog • 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*** 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 • Small World Stroll • Paper microscopes	Main Library	90
4/18/24	***Bianca Trociewitz, EMR*** 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 • Engineer your own catapult	Main Library	80
9/19/24	***Steve McGill, DC Field*** 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 • Light Box • Color Mixing	Northeast Branch Library	130
10/24/24	***Fred Mentink-Vigier, NMR*** 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 • Insect Investigation • Butterfly Life Cycle	Main	125
11/21/24	***Emily Hughes & Sylvia Long, ICR*** 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 • 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.

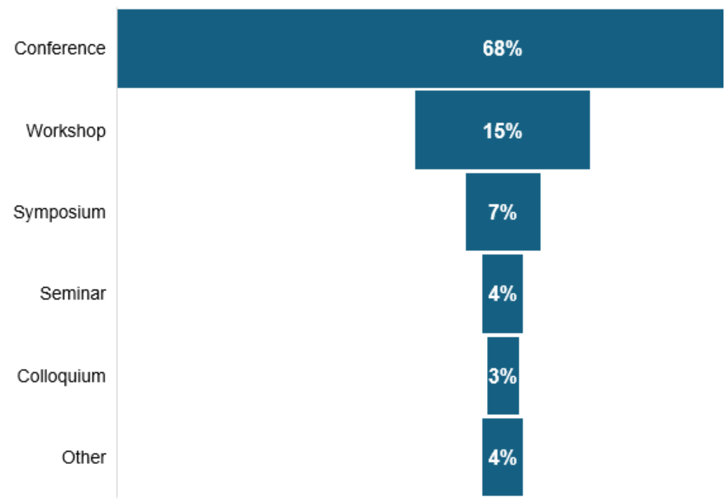


Figure 3.4.1. *2024 Presentation types.*

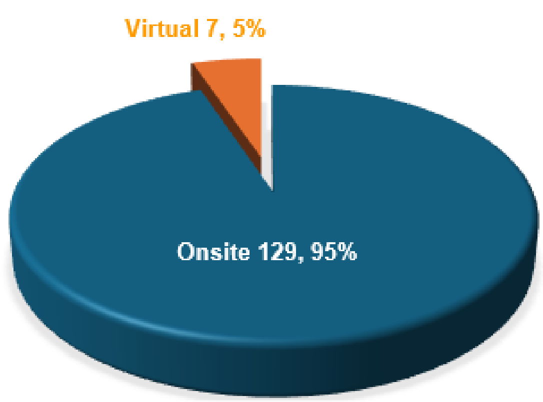


Figure 3.4.2. *Presentations given virtually in 2024.*

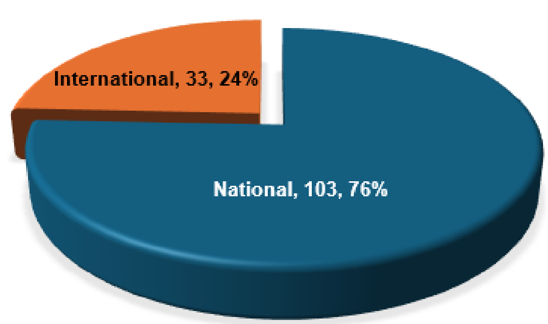


Figure 3.4.3. *Breakdown of 2024 presentations by geographic distribution.*

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.

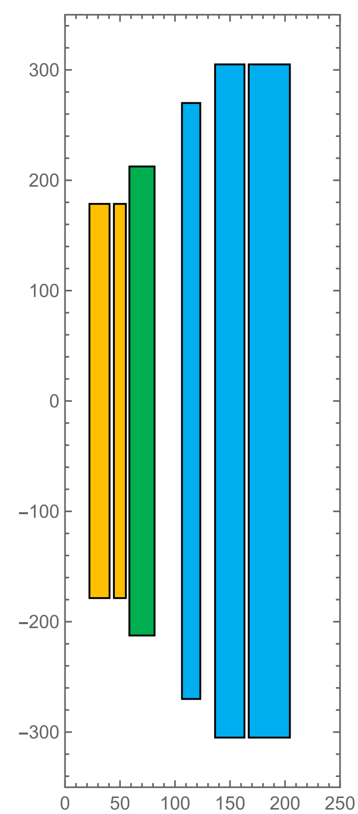


Figure 4.1.1. *Two Bi-2212 coils (yellow) and a Bi-2223 coil (green) inside our 212mm, 12T LTS magnet to generate a total of 28T. The Bi-2223 coil will have to be replaced with another Bi-2212 due to the vendor having recently ceased production and sales of Bi-2223 conductor.*

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.

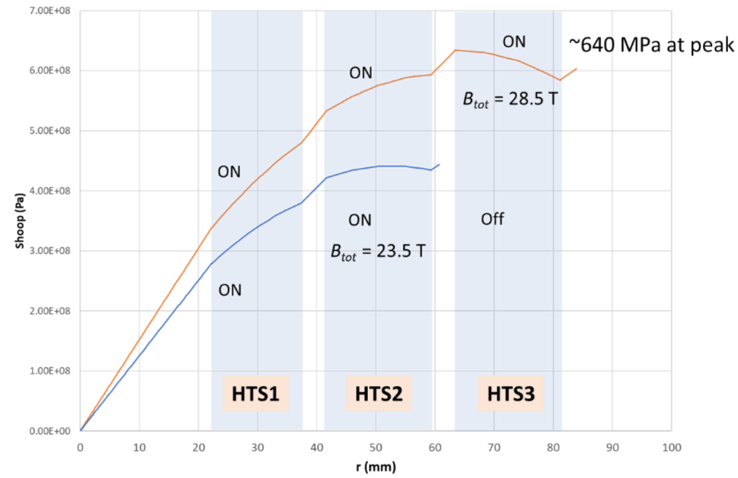


Figure 4.1.2.: *Radial dependence of the hoop stress across the HTS insert coils. With all three coils present stresses of up to 640 MPa can be expected, which is significant.*

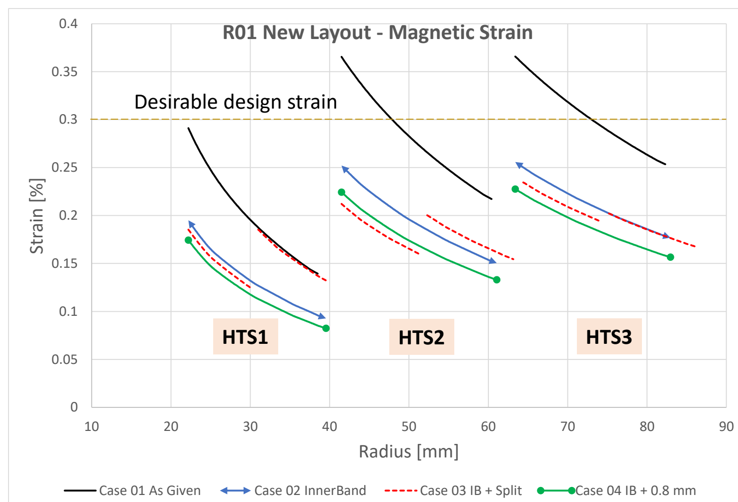


Figure 4.1.3*. Strain models show four different reinforcement cases. With a proper choice of reinforcement, it appears possible to limit the maximum occurring strain to 0.25%, which is well below the strain target of 0.3%. Splitting of the coils into six subsets decreases the strain even further.*

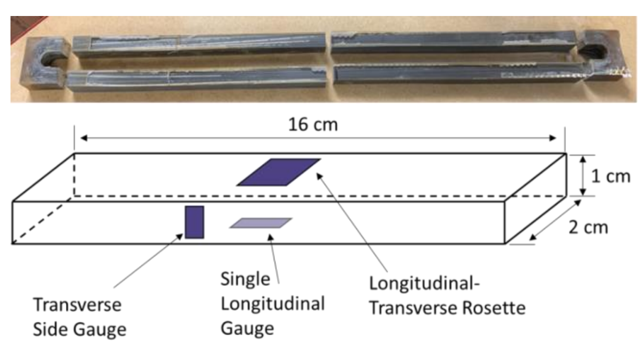


Figure 4.1.4. *(Top) Racetrack-type coil assembly sectioned into four samples in preparation for mechanical testing. The end pieces are not used. (Bottom) Characteristic dimensions of the samples and placement of the film strain gauges.*

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.

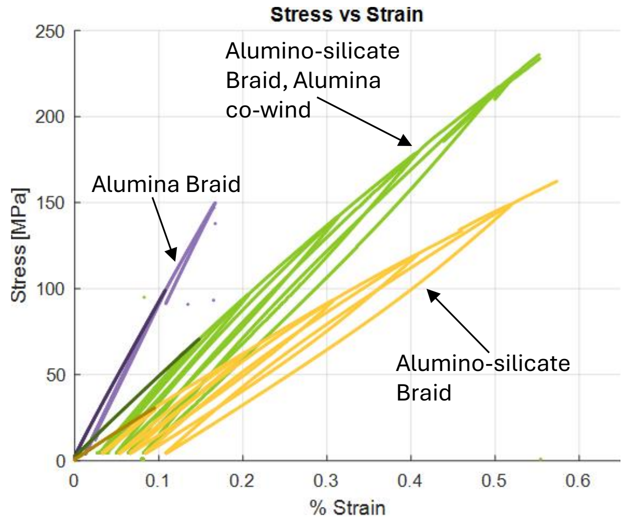


Figure 4.1.5. *Stress-strain curves from an alumino-silicate braided winding pack sample, an alumino-silicate braided winding pack sample xo-wound with alumina, and an alumina braided winding pack sample.*

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,

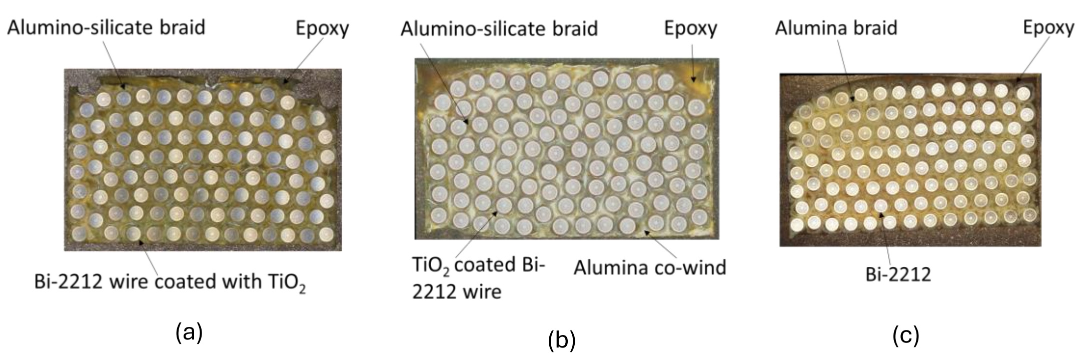


Figure 4.1.6. *Transverse cross-sections of (a) alumino-silicate braided winding pack sample, (b) alumino-silicate braided winding pack sample co-wound with pure alumina, (c) pure alumina braided winding pack sample.*

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.**

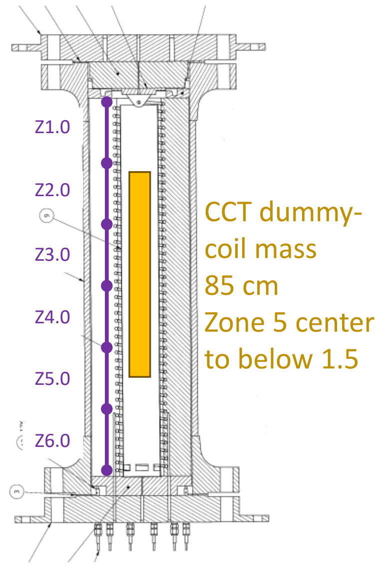


Figure 4.1.7. *Cross-sectional sketch of the large OPHT furnace with the new heater and placement of the dummy coil mass inside. The furnace zones are labeled on the left.*

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.

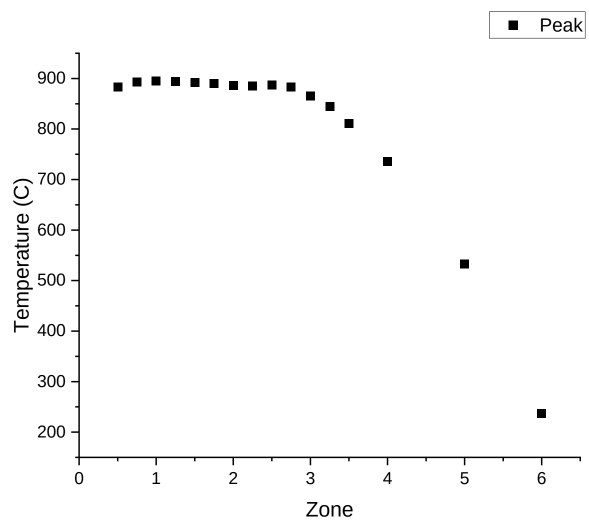


Figure 4.1.8. *At 50 bar pressure the homogenous volume in the furnace extends to a little less than 1.5 zones, which equals to about 35cm.*

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.

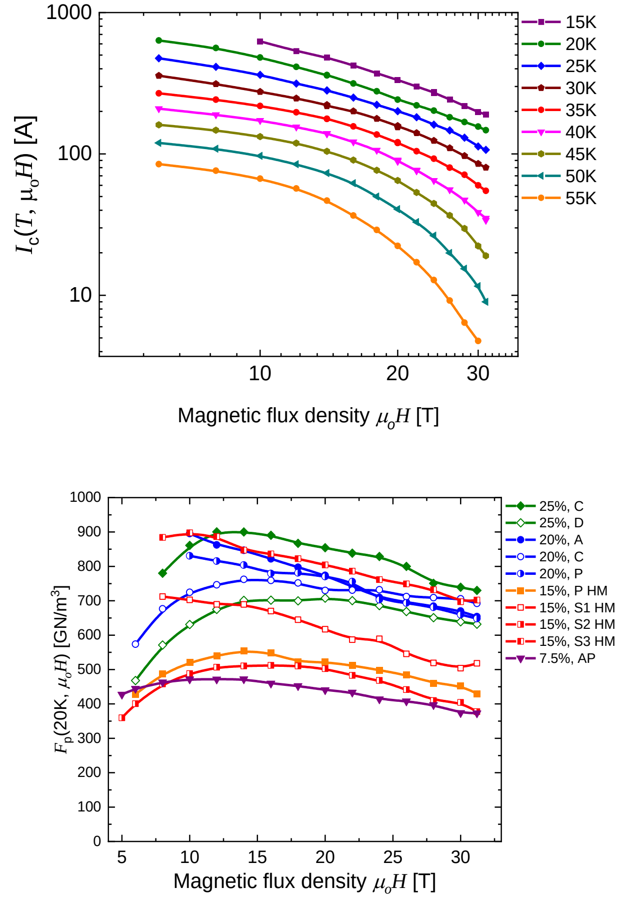


Figure 4.1.9. *Example critical current vs magnetic flux density for a R&D sample with 20% Zr doping measured up to 31T is shown in the top plot. The bottom plot shows how the overall pinning force continues to increase as Zr is added, from 7.5% (black curves) to 15% (red), 20% (blue) and 25% (green).*

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

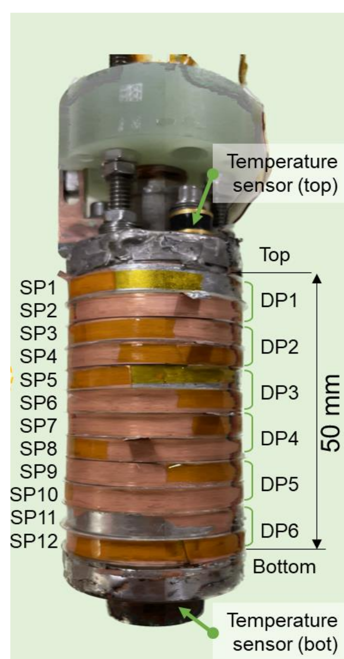


Figure 4.1.10. *LBC4 coil after in-field testing generating a total field of 44T.*

(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**.

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.

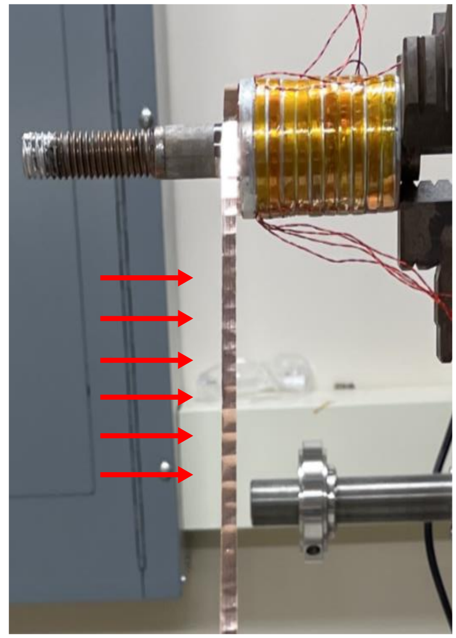


Figure 4.1.11. *The deconstruction of LBC5 (i.e. unwinding) revealed a wavy pattern of sharp kinks caused by the quench of the outsert magnet, which in turn exerted high forces on the conductor of the coil (arrows).*

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.

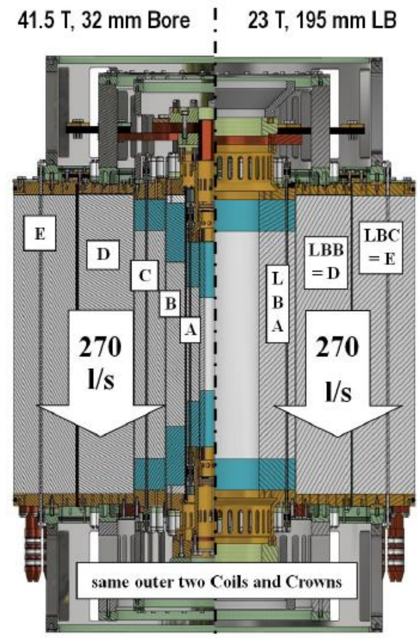


Figure 4.1.12. *The LBRM has three coils as shown in the right cross-section. The two outermost coils will copy the outermost coils of the 41.5T resistive magnet shown on the left side and the inner coil will be newly designed to achieve 22.5T in a 195mm clear bore.*

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 (ϵ) =0.76, and to 131±1 HV in

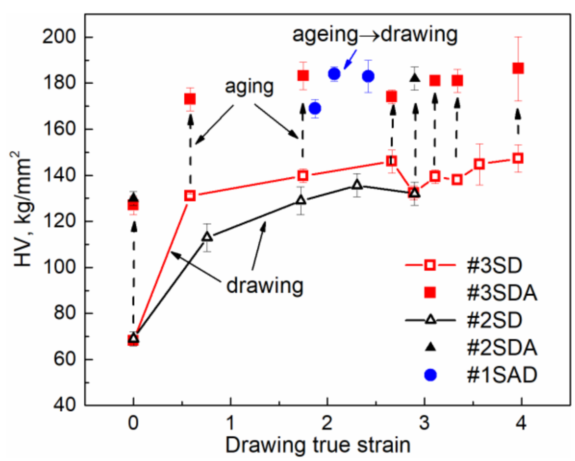


Figure 4.1.13. *The effect of drawing and ageing on hardness in samples with different geometries (named as samples #1, #2, and #3). S, A, and D stand for solution treatment, aging, and drawing, respectively. The order of them indicates the treatment sequence.*

#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

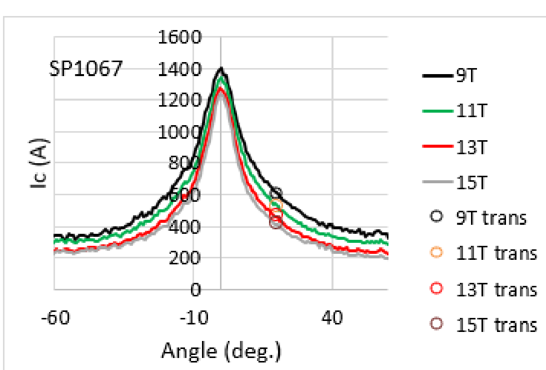


Figure 4.1.16. *Torque magnetometry test results of tape SP1067.*

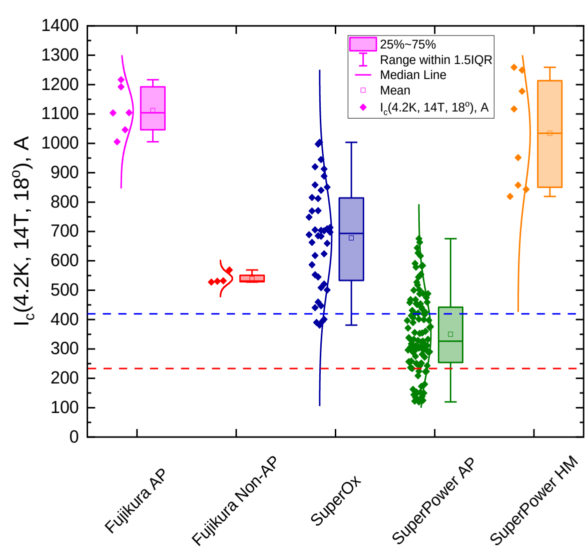


Figure 4.1.17. *Comparison of transport I_c(4.2K, 14T, 18°) for tapes from different vendors*

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.**

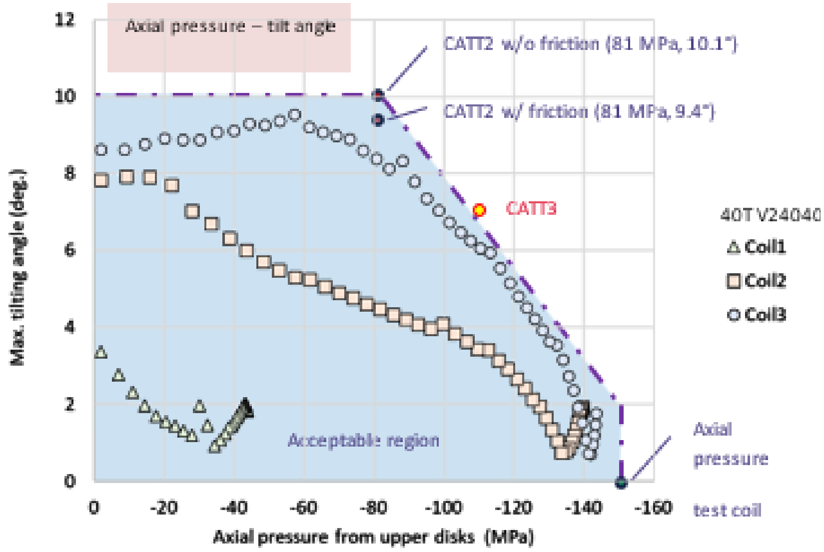


Figure 4.1.18. *The combination of axial pressure and the maximum tape tilt angle. The blue region is believed to be a safe operating space based on the coil test results and the actual 40T magnet design lies within this space.*

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.

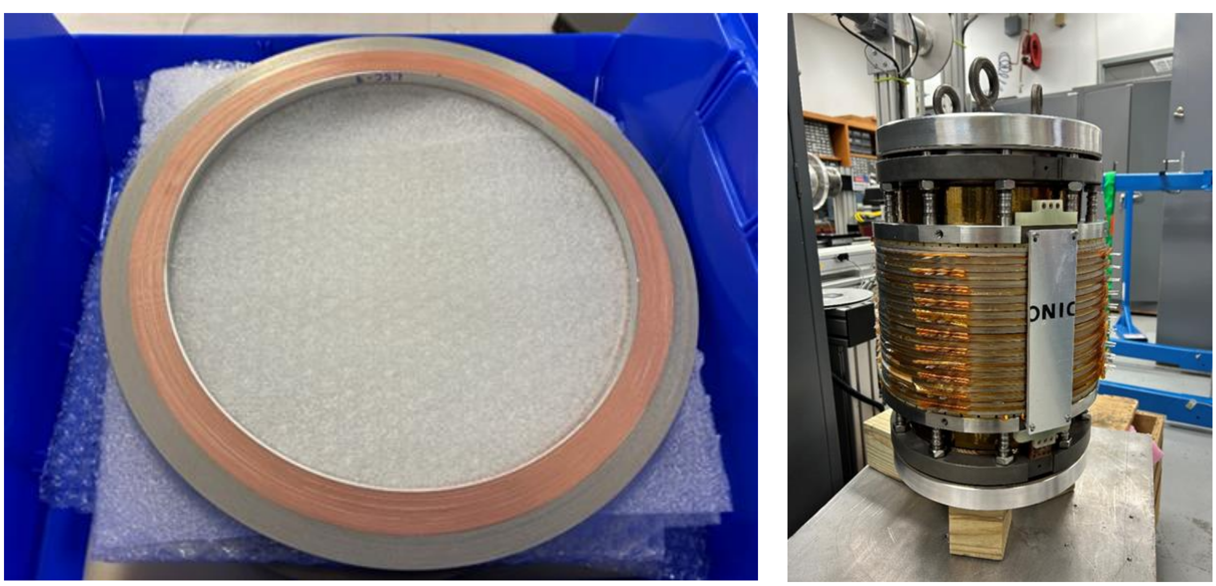


Figure 4.1.19. *A single module from the LSC is shown on the left. The completed LSC stack with all 22 modules after pre-compression is shown on the right.*

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.

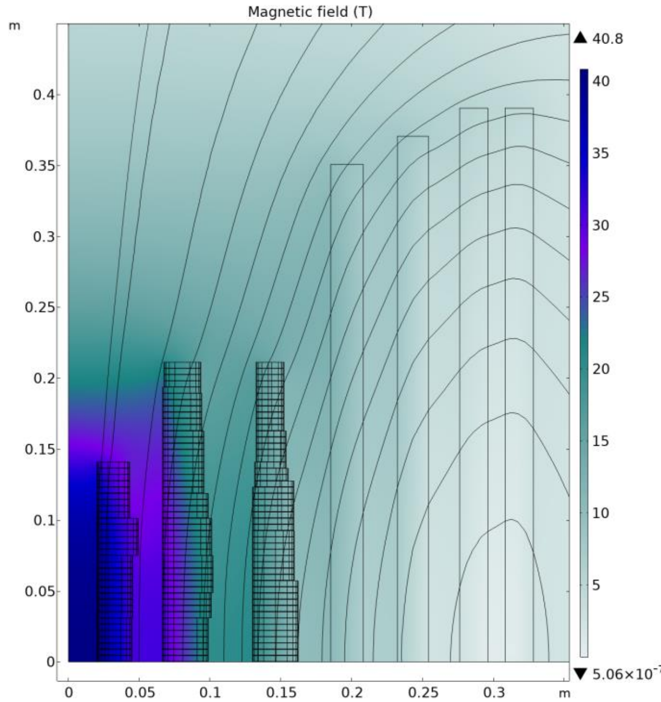


Figure 4.1.20. *Magnetic Field of Preliminary Design. The axis of symmetry is on the left and the mid-place is at the bottom. The three inner coils use REBCO tape and have graded external reinforcement. The outer four coils use Nb_3Sn and NbTI superconductors.*

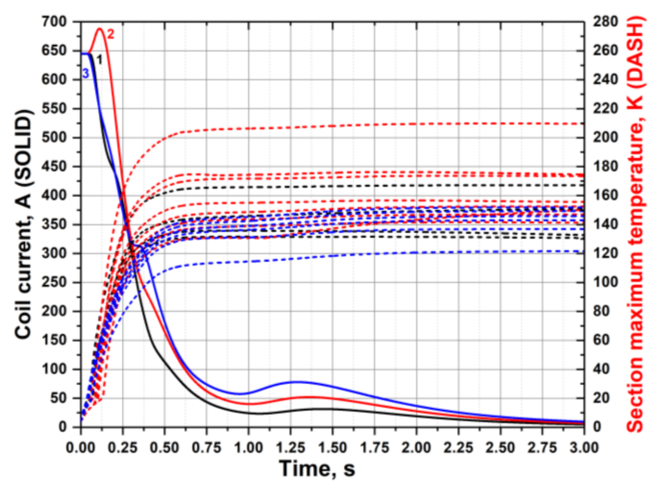


Figure 4.1.21. *Quench simulation.*

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 2.02[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		e202400395	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.	*$^1H/^{17}O$ 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

152

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)	Experiments 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	Experiment s 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**

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 (Deferred from prev. year)	Experiments 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 Subscription Rate	Days Subscription 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	Forooohar	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
Hendrik	Luesch	University of Florida	FL	USA
Manoj	Madheswaran	University of Florida	FL	USA
Indu	Malut	University of Florida	FL	USA
Vinay	Malut	University of Florida	FL	USA
Joseph	Mangun	University of Florida	FL	USA
Nesmine	Maptue	University of Florida	FL	USA
Joseph	Marcinko	Polymer Synergies, LLC	FL	USA
Erin	Marshall	University of Florida	FL	USA
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
Federica	Montesanto	University of Florida	FL	USA
Joshua	Moon	University of Florida	FL	USA
Emma	Mulry	University of Florida	FL	USA
Sameer	Naik	University of Florida	FL	USA
Jibe Labenz	Nebato	University of Florida	FL	USA
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
Rojina	Pad	University of California, Irvine	CA	USA
Shrina	Patel	University of Florida	FL	USA
Joshua	Pegoraro	University of Florida	FL	USA
Qingqing (Emily)	Peng	University of Florida	FL	USA
Nessa	Pesaran Afsharian	University of Florida	FL	USA
Haley	Peters	University of Florida	FL	USA
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
Michael	Pizzi	University of Florida	FL	USA
Cathy	Powers	University of Florida	FL	USA
Shane	Priester	University of Florida	FL	USA

First Name	Last Name	Organization	State	Country
Wonn	Pyon	University of Florida	FL	USA
Jai	Raccioppi	University of Florida	FL	USA
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
Aleyna	Ross	University of Florida	FL	USA
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
Qingyang	Shen	University of Florida	FL	USA
Zachary	Simon	University of Florida	FL	USA
Zachary	Smith	Massachusetts Institute of Technology	MA	USA
Maurice	Swanson	University of Florida	FL	USA
Lee	Sweeney	University of Florida	FL	USA
Tanja	Taivassalo	University of Florida	FL	USA
Hoan Dan	Tam Pham	University of Florida	FL	USA
Nguyen	Thanh Tri	University of Florida	FL	USA
Emily	Tobin	University of Florida	FL	USA
Allison	Traiger	University of Florida	FL	USA
Dana	Tuyn	University of Florida	FL	USA
Diana	Tymochko	University of Florida	FL	USA
Shahabeddin	Vahdat	University of Florida	FL	USA
David	Vaillancourt	University of Florida	FL	USA
Sergey	Vasenkov	University of Florida	FL	USA
Kaushal	Vedula	University of Florida	FL	USA
Ngan	Vu	University of Florida	FL	USA
Glenn	Walter	University of Florida	FL	USA
Kevin (Ka)	Wang	University of Florida	FL	USA
Anuradha	Wijesekara	University of Florida	FL	USA
Bradley	Wilkes	University of Florida	FL	USA
Lakiesha	Williams	University of Florida	FL	USA
Marcelo	Wood	University of California, Irvine	CA	USA

DC FIELD (104 INTERNATIONAL, 435 NATIONAL USERS)

First Name	Last Name	Organization	Country
Francesca	Adami	University College Dublin	Ireland
Andrea	Alimenti	Roma Tre University	Italy
Daniel	Antoniou	University of Oxford	UK
Emil	Ares	University of Cambridge	UK
Geetha	Balakrishnan	University of Warwick	UK
Oishee	Banerjee	University of Cambridge	UK
Antonio	Bianconi	National Research Council CNR	Italy
Kaylee	Biggart	University of Waterloo	Canada
Vittorio	Boccone	Dectris Ltd.	Switzerland
Frédéric	Boivin	McGill University	Canada
Bernd	Buechner	Technical University of Dresden	Germany
Jessica	Chapman	University of Cambridge	UK
Hanyi	Chen	University of Cambridge	UK
Jiasheng	Chen	University of Cambridge	UK
Nicholas	Chilton	Australian National University	Australia
Joonyoung	Choi	Kyungpook National University	South Korea
Min Hyuk	Choi	Pohang University of Science and Technology	South Korea
Radu	Coldea	University of Oxford	UK
Emmelyne	Cuza	University College Dublin	Ireland
Tsotne	Dadiani	University of L'Aquila	Italy
Yoram	Dagan	Tel-Aviv University	Israel
Andreas	Danopoulos	National and Kapodistrian University of Athens	Greece
Damien	Dooley	University of Cambridge	UK
Irina	Drichko	Ioffe Physical-Technical Institute of the Russian Academy of Sciences	Russia
Yuhan	Du	East China Normal University	China
Alex	Eaton	University of Cambridge	UK
Thenmozhi	Elango	University of Cambridge	UK
Luis	Foa Torres	University of Chile	Chile
Patrick	Fournier	University of Sherbrooke	Canada
Masaki	Fujita	Tohoku University IMR	Japan
Guillaume	Gervais	McGill University	Canada
Adrien	Gourgout	University of Sherbrooke	Canada
Gael	Grissonnanche	Institute Polytechnic De Paris	France
Audrey	Grockowiak	Leibniz Institute for Solid State and Materials Research Dresden	Germany
Chunyu	Guo	Max Planck Institute for Structure and Dynamics of Matter, Hamburg	Germany
David	Herbert	University of Manitoba	Canada
Robert	Hill	University of Waterloo	Canada
Charles	Ioro-Duval	University of Sherbrooke	Canada
Deepshikha	Jaiswal-Nagar	IISER Thiruvananthapuram	India
Ho Seong	Jeon	Pohang University of Science and Technology	South Korea
Xiangyu	Jiang	East China Normal University	China
YounJung	Jo	Kyungpook National University	South Korea

First Name	Last Name	Organization	Country
Myung-Hwa	Jung	Sogang University	South Korea
Woun	Kang	Ewha Womans University	South Korea
Reizo	Kato	RIKEN	Japan
Bumjoon	Kim	Pohang University of Science and Technology	South Korea
Jun Sung	Kim	Pohang University of Science and Technology	South Korea
Seohee	Kim	Pusan National University	South Korea
Sangjin	Kim	Seoul National University	South Korea
Minsik	Kong	Pusan National University	South Korea
Panayotis	Kyritsis	National and Kapodistrian University of Athens	Greece
Zoi	Lada	University College Dublin	Ireland
Bella	Lake	Helmholtz Zentrum-Berlin	Germany
Jun Seong	Lee	Pohang University of Science and Technology	South Korea
Guanping	Li	University of Tokyo	Japan
Yanzhao	Liu	Peking University	China
Gennady	Logvenov	Max Planck Institute for Solid State Research, Stuttgart	Germany
Mengmeng	Long	University of Cambridge	UK
Hongcheng	Lu	Huazhong University of Science and Technology	China
Yuji	Matsuda	Kyoto University	Japan
Philip	Moll	Max Planck Institute for Structure and Dynamics of Matter, Hamburg	Germany
Grace	Morgan	University College Dublin	Ireland
Keizo	Murata	Osaka City University	Japan
Gwansuk	Oh	Pohang University of Science and Technology	South Korea
Shin-ichi	Ohkoshi	University of Tokyo	Japan
Ryutaro	Okuma	University of Tokyo	Japan
Matthew	Pearce	University of Oxford	UK
Antonio	Politano	University of L'Aquila	Italy
Nicholas	Popiel	University of Cambridge	UK
Artem	Pronin	University of Stuttgart	Germany
Carsten	Putzke	University of Bristol	UK
Naina	Reddy	University of Cambridge	UK
Gilles	Rodway-Gant	University of Cambridge	UK
Mouli	Roy Chowdhury	Indian Institute of Technology, Guwahati	India
Shay	Sandik	Tel-Aviv University	Israel
Juan	Santana Gonzalez	Ecole Polytechnique	France
Suchitra	Sebastian	University of Cambridge	UK
Hyeongwoo	Seo	Pohang University of Science and Technology	South Korea
Zeping	Shi	East China Normal University	China
Baldeep	Sidhu	University of Manitoba	Canada
Itai	Silber	Tel-Aviv University	Israel
Ivan	Smirnov	Ioffe Physical-Technical Institute of the Russian Academy of Sciences	Russia
Hyebin	Son	Sogang University	South Korea

First Name	Last Name	Organization	Country
Olaf	Stefanczyk	University of Tokyo	Japan
Thomas	Szkopek	McGill University	Canada
Louis	Taillefer	University of Sherbrooke	Canada
Takanori	Taniguchi	Tohoku University IMR	Japan
Ken Heng	Teoh	University of Cambridge	UK
Subhash	Thota	Indian Institute of Technology, Guwahati	India
Michal	Valiska	Charles University, Prague, Czechia	Czech Republic
Olesia	Voloshyna	Technical University of Dresden	Germany
Jian	Wang	Peking University	China
Ziqiao	Wang	Peking University	China
Theo	Weinberger	University of Cambridge	UK
Michal	Winiarski	Gdansk University of Technology	Poland
Joachim	Wosnitza	Helmholtz Zentrum Dresden-Rossendorf	Germany
Wenbin	Wu	East China Normal University	China
Zheyu	Wu	University of Cambridge	UK
Asaf	Yagoda	Tel-Aviv University	Israel
Oulin	Yu	McGill University	Canada
Xiang	Yuan	East China Normal University	China
Cheng	Zhang	Fudan University	China
Ling	Zhang	Max Planck Institute for Structure and Dynamics of Matter, Hamburg	Germany
Sergei	Zvyagin	Helmholtz Zentrum Dresden-Rossendorf	Germany

First Name	Last Name	Organization	State	Country
Muhsin	Abdul Karim	University of Notre Dame	IN	USA
Dmytro	Abraimov	National High Magnetic Field Laboratory	FL	USA
Gokul	Acharya	University of Arkansas	AR	USA
Carlos	Acosta	Florida International University	FL	USA
Samuel	Adegboyega	Florida State University	FL	USA
Denis	Aglagul	Rensselaer Polytechnic Institute	NY	USA
Kaveh	Ahadi	Ohio State University	OH	USA
Charles	Ahn	Yale University	CT	USA
Md Salman	Ahsanullah	University of Kansas	KS	USA
Kirstin	Alberi	National Renewable Energy Laboratory	CO	USA
Sarah	Alkidim	Brown University	RI	USA
Jacob	Amontree	Columbia University	NY	USA
Melissa	Anderson	Baylor University	TX	USA
Badih	Assaf	University of Notre Dame	IN	USA
Rabindranath	Bag	Duke University	NC	USA
Fedor	Balakirev	National High Magnetic Field Laboratory	NM	USA
Sudhaman	Balguri	Boston College	MA	USA
Luis	Balicas	National High Magnetic Field Laboratory	FL	USA
Arnab	Banerjee	Purdue University	IN	USA

First Name	Last Name	Organization	State	Country
Abhishek	Banerjee	Harvard University	MA	USA
Jeseok	Bang	National High Magnetic Field Laboratory	FL	USA
Alimamy	Bangura	National High Magnetic Field Laboratory	FL	USA
Paola	Barbara	Georgetown University	DC	USA
Arup	Barua	University of South Florida	FL	USA
Dmitri	Basov	Columbia University	NY	USA
Ryan	Baumbach	University of California, Santa Cruz	CA	USA
Craig	Beaumier	Lake Shore Cryotronics	OH	USA
Christianne	Beekman	National High Magnetic Field Laboratory	FL	USA
Bishnu	Belbase	Purdue University	IN	USA
Elliot	Bell	University of Minnesota, Twin Cities	MN	USA
Shermane	Benjamin	National High Magnetic Field Laboratory	FL	USA
Sara	Bey	University of Notre Dame	IN	USA
Brenna	Bierman	University of Wisconsin, Madison	WI	USA
Shubham	Bisht	Florida State University	FL	USA
Ananya	Biswas	Rice University	TX	USA
Rikard	Bodin	University of Utah	UT	USA
Elisabeth	Bodnaruk	Cornell University	NY	USA
Chevy	Boegel	University of South Florida	FL	USA
Alexander	Brassington	University of Tennessee, Knoxville	GA	USA
Craig	Bridges	Oak Ridge National Laboratory	TN	USA
Zachary	Brown	Dectris Ltd.	PA	USA
Wilson	Brown	Baylor University	TX	USA
Isaac	Brown	University of Utah	UT	USA
Christopher	Broyles	Washington University in St. Louis	MO	USA
Troy	Brumm	National High Magnetic Field Laboratory	FL	USA
Konstantin	Bukhryakov	Florida International University	FL	USA
Nicholas	Butch	National Institute of Standards and Technology MD	MD	USA
Casey	Calhoun	Princeton University	NJ	USA
Marshall	Campbell	University of California, Irvine	CA	USA
Ian	Campbell	Florida State University	FL	USA
Caravaggio	Caniglia	Stanford University	CA	USA
Gang	Cao	University of Colorado, Boulder	CO	USA
Huibo	Cao	Oak Ridge National Laboratory	TN	USA
Brian	Casas	National High Magnetic Field Laboratory	FL	USA
Bob	Cava	Princeton University	NJ	USA
John	Cenker	Columbia University	NY	USA
Jak	Chakhalian	Rutgers University	NJ	USA
Sudip	Chakraborty	Duke University	NC	USA
Aaron	Chan	University of Michigan	MI	USA
Julia	Chan	Baylor University	TX	USA
Ramakanta	Chapai	Argonne National Laboratory	IL	USA

First Name	Last Name	Organization	State	Country
Raghav	Chaturvedi	Cornell University	NY	USA
Joseph	Checkelsky	Massachusetts Institute of Technology	MA	USA
Yingtai	Chen	Commonwealth Fusion Systems	MA	USA
Alan	Chen	Massachusetts Institute of Technology	MA	USA
Kuan-Wen	Chen	University of Michigan	MI	USA
JL (Jie Lee-Ling)	Cheng	Commonwealth Fusion Systems	MA	USA
Santosh	Chhetri	University of Arkansas	AR	USA
Daniel	Chica	Columbia University	NY	USA
Shalinee	Chikara	National High Magnetic Field Laboratory	FL	USA
Uchenna	Chinaegbomkpa	Clemson University	SC	USA
Eun Sang	Choi	National High Magnetic Field Laboratory	FL	USA
Jason	Chonko	Lake Shore Cryotronics	OH	USA
Jiun-Haw	Chu	University of Washington	WA	USA
Charles	Cimino	Lake Shore Cryotronics	OH	USA
Rachel	Clark	Florida State University	FL	USA
Judith	Clark	Florida State University	FL	USA
Lance	Cooley	National High Magnetic Field Laboratory	FL	USA
Paul	Corbae	University of California, Santa Barbara	CA	USA
Peter	Czajka	National Institute of Standards and Technology MD	MD	USA
Sagar	Dahal	University of Arkansas	AR	USA
E. Dan	Dahlberg	University of Minnesota, Twin Cities	MN	USA
Pengcheng	Dai	Rice University	TX	USA
Ranjit Chandra	Das	Florida State University	FL	USA
Daniel	Davis	National High Magnetic Field Laboratory	FL	USA
Cory	Dean	Columbia University	NY	USA
Louise	Debefve	Cornell University	NY	USA
Connor	Dempsey	University of California, Santa Barbara	CA	USA
Roei	Dery	Massachusetts Institute of Technology	MA	USA
Jonathan	DeStefano	University of Washington	WA	USA
Aravind	Devarakonda	Columbia University	NY	USA
Chetan	Dhital	Kennesaw State University	GA	USA
Rui	Diaz-Pacheco	Commonwealth Fusion Systems	MA	USA
Scott	Dietrich	Villanova University	PA	USA
Charuni	Dissanayake	National High Magnetic Field Laboratory	FL	USA
Iain	Dixon	National High Magnetic Field Laboratory	FL	USA
Alexis	Dominguez	Baylor University	TX	USA
Jason	Dong	University of California, Santa Barbara	CA	USA
Daniel	Duong	University of South Carolina	SC	USA
James	Ehrets	Harvard University	MA	USA
Zachery	Enderson	Georgia Institute of Technology	GA	USA
Lloyd	Engel	National High Magnetic Field Laboratory	FL	USA

First Name	Last Name	Organization	State	Country
Adiat	Fakolujo	University of Tennessee, Knoxville	TN	USA
Zili	Feng	California Institute of Technology	CA	USA
Tania	Fernández Félix	Cornell University	NY	USA
Priscila	Ferrari Silveira Rosa	Los Alamos National Laboratory	NM	USA
Ian	Fisher	Stanford University	CA	USA
Nathanael	Fortune	Smith College	MA	USA
Ashleigh	Francis	Commonwealth Fusion Systems	MA	USA
Corey	Frank	National Institute of Standards and Technology MD	MD	USA
Miguel	Gakiya	Florida State University	FL	USA
Yuxiang	Gao	Rice University	TX	USA
Albert	Gapud	University of South Alabama	AL	USA
Mehak	Ghafoor	Florida State University	FL	USA
Nirmal	Ghimire	George Mason University	VA	USA
Augusto	Ghiotto	University of California, Berkeley	CA	USA
Sayak	Ghosh	Stanford University	CA	USA
Lisa	Glatt	Dectris Ltd.	PA	USA
Shannon	Gould	Washington University in St. Louis	MO	USA
David	Graf	National High Magnetic Field Laboratory	FL	USA
Elizabeth	Green	National High Magnetic Field Laboratory	FL	USA
Robert	Green	Lake Shore Cryotronics	OH	USA
Aliya	Greenberg	Commonwealth Fusion Systems	MA	USA
Laura	Greene	National High Magnetic Field Laboratory	FL	USA
Brittany	Grimm	Florida State University	FL	USA
Yanhong	Gu	University of Tennessee, Knoxville	TN	USA
Yingdong	Guan	Pennsylvania State University	PA	USA
Alex	Guardiola	University of Kansas	KS	USA
Yilmaz	Gul	University of California, Santa Barbara	CA	USA
Yanbo	Guo	University of Florida	FL	USA
Chengqi	Guo	Pennsylvania State University	PA	USA
Adbhut	Gupta	Princeton University	NJ	USA
Thomas	Halloran	National Institute of Standards and Technology MD	MD	USA
Sae Young	Han	Columbia University	NY	USA
Adam	Hand	University of Tennessee, Knoxville	TN	USA
Scott	Hannahs	National High Magnetic Field Laboratory	FL	USA
Zeyu	Hao	Harvard University	MA	USA
Sara	Haravifard	Duke University	NC	USA
Zahid	Hasan	Princeton University	NJ	USA
Yangchen	He	University of Wisconsin, Madison	WI	USA
Don	Heiman	Northeastern University	MA	USA
Eric	Hellstrom	National High Magnetic Field Laboratory	FL	USA
Heshan	Hewa Walpitage	University of Utah	UT	USA

First Name	Last Name	Organization	State	Country
Stephen	Hill	National High Magnetic Field Laboratory	FL	USA
David	Hilton	University of Alabama, Birmingham	AL	USA
Stephen	Holmes	University of Missouri, St Louis	MO	USA
Jarryd	Horn	University of Maryland, College Park	MD	USA
Md Shafayat	Hossain	Princeton University	NJ	USA
Jin	Hu	University of Arkansas	AR	USA
Chaowei	Hu	University of California, Los Angeles	CA	USA
Zhenqi	Hua	Florida State University	FL	USA
Ke	Huang	Stanford University	CA	USA
Robert	Huber	National High Magnetic Field Laboratory	FL	USA
Uyen	Huynh	University of Utah	UT	USA
Chi Ian	Ip	Massachusetts Institute of Technology	MA	USA
Mohammad	Irfan	National High Magnetic Field Laboratory	FL	USA
Md Sazedul	Islam	Florida State University	FL	USA
ZAHIR	ISLAM	Argonne National Laboratory	IL	USA
Marcelo	Jaime	National High Magnetic Field Laboratory	NM	USA
Michelle	Jamer	U.S. Naval Academy	MD	USA
Pablo	Jarillo-Herrero	Massachusetts Institute of Technology	MA	USA
Jan	Jaroszynski	National High Magnetic Field Laboratory	FL	USA
Luis	Jauregui	University of California, Irvine	CA	USA
Kaila	Jenkins	University of Michigan	MI	USA
Michael	Jenkins	University of Tennessee, Knoxville	TN	USA
Zachary	Jernigan	Pennsylvania State University	PA	USA
Qianni	Jiang	Stanford University	CA	USA
Jianyi	Jiang	National High Magnetic Field Laboratory	FL	USA
Zhigang	Jiang	Georgia Institute of Technology	GA	USA
Rongying	Jin	University of South Carolina	SC	USA
Glover	Jones	National High Magnetic Field Laboratory	FL	USA
Robert	Joynt	University of Wisconsin, Madison	WI	USA
Nikolai	Kalugin	New Mexico Institute of Mining and Technology	NM	USA
Fumitake	Kametani	National High Magnetic Field Laboratory	FL	USA
Denis	Karaiskaj	University of South Florida	FL	USA
Shyam Raj	Karullithodi	National High Magnetic Field Laboratory	FL	USA
Hemamala	Karunadasa	Stanford University	CA	USA
Mohd	Khan	National High Magnetic Field Laboratory	FL	USA
Sangsoo	Kim	Florida State University	FL	USA
Youngjae	Kim	National High Magnetic Field Laboratory	FL	USA
Jong-Woo	Kim	Argonne National Laboratory	IL	USA
JUNG HO	KIM	Argonne National Laboratory	IL	USA
Philip	Kim	Harvard University	MA	USA

First Name	Last Name	Organization	State	Country
Sean	Knapp	University of South Florida	FL	USA
Christie	Koay	Columbia University	NY	USA
Adrienn	Komlodi	University of South Florida	FL	USA
Tai	Kong	University of Arizona	AZ	USA
Matthew	Krogstad	Argonne National Laboratory	IL	USA
Jurek	Krzystek	National High Magnetic Field Laboratory	FL	USA
Bryan	Kudisch	Florida State University	FL	USA
Vadym	Kulichenko	National High Magnetic Field Laboratory	FL	USA
Ram	Kumar	University of Maryland, College Park	MD	USA
Takashi	Kurumaji	California Institute of Technology	CA	USA
David	Larbalestier	National High Magnetic Field Laboratory	FL	USA
Chun Ning (Jeanie)	Lau	Ohio State University	OH	USA
Ian	Leahy	National Renewable Energy Laboratory	CO	USA
Jun Sik	Lee	SLAC National Accelerator Laboratory	CA	USA
Minhyea	Lee	University of Colorado, Boulder	CO	USA
Peter	Lee	Florida State University	FL	USA
Sangyun	Lee	National High Magnetic Field Laboratory	FL	USA
Jonathan	Lee	National High Magnetic Field Laboratory	FL	USA
Sang-Eon	Lee	National High Magnetic Field Laboratory	FL	USA
Minseong	Lee	National High Magnetic Field Laboratory	NM	USA
Seng Huat	Lee	Pennsylvania State University	PA	USA
Ho Nyung	Lee	Oak Ridge National Laboratory	TN	USA
Jeremy	Levitan	National High Magnetic Field Laboratory	FL	USA
Sylvia	Lewin	University of Maryland, College Park	MD	USA
Yaochen	Li	University of California, Los Angeles	CA	USA
Lu	Li	University of Michigan	MA	USA
Jia	Li	Brown University	RI	USA
Zizhong	Li	University of Wisconsin, Madison	WI	USA
Jiang-Xiazi	Lin	Brown University	RI	USA
Shan	Lin	Oak Ridge National Laboratory	TN	USA
Jinyu	Liu	University of California, Irvine	CA	USA
Yijing	Liu	Georgetown University	DC	USA
Xinyu	Liu	University of Notre Dame	IN	USA
Ziyu	Liu	Columbia University	NY	USA
Jian	Liu	University of Tennessee, Knoxville	TN	USA
Duminda	Liurukara	Oak Ridge National Laboratory	TN	USA
Rigel	Lochner	Cornell University	NY	USA
Tao	Lu	California Institute of Technology	CA	USA
Jun	Lu	National High Magnetic Field Laboratory	FL	USA
Jared	Madsen	University of Kansas	KS	USA
Amanpreet	Mahmi	University of Tennessee, Knoxville	TN	USA

First Name	Last Name	Organization	State	Country
Nghia	Mai	Ampeers LLC	TX	USA
Milan	Majoros	Ohio State University	OH	USA
Kin Fai	Mak	Cornell University	NY	USA
Paul	Malinowski	University of Washington	WA	USA
Manish	Mandal	Florida State University	FL	USA
David	Mandrus	University of Tennessee, Knoxville	TN	USA
Rupali	Mangotra	Kennesaw State University	GA	USA
Zhiqiang	Mao	Pennsylvania State University	PA	USA
Madalynn	Marshall	Kennesaw State University	GA	USA
Clyde	Martin	National High Magnetic Field Laboratory	FL	USA
Alex	Mayo	Massachusetts Institute of Technology	MA	USA
Ross	McDonald	National High Magnetic Field Laboratory	NM	USA
Stephen	McGill	National High Magnetic Field Laboratory	FL	USA
Michael	McGuire	Oak Ridge National Laboratory	TN	USA
Dillon	McNamara	Florida State University	FL	USA
Elena	Meirzadeh	Columbia University	NY	USA
Dmitri	Mihaliov	University of Michigan	MI	USA
Christopher	Mizzi	National High Magnetic Field Laboratory	NM	USA
Hadi	Mohammadigoushki	Florida State University	FL	USA
Dibya	Mondal	Florida State University	FL	USA
Alex	Moon	National High Magnetic Field Laboratory	FL	USA
Erin	Morissette	Brown University	RI	USA
Emilia	Morosan	Rice University	TX	USA
Daniel	Morris	University of Tennessee, Knoxville	TN	USA
Martin	Mourigal	Johns Hopkins University	MD	USA
Shirin	Mozaffari	University of Tennessee, Knoxville	TN	USA
JP	Muncks	Commonwealth Fusion Systems	MA	USA
Garfield	Murphhy	Florida State University	FL	USA
Tim	Murphy	National High Magnetic Field Laboratory	FL	USA
Janice	Musfeldt	University of Tennessee, Knoxville	TN	USA
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
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
Keith	Surrena	Cornell University	NY	USA
Alexey	Suslov	National High Magnetic Field Laboratory	FL	USA
Josh	Swann	Columbia University	NY	USA
Fazel	Tafti	Boston College	MA	USA
Lixuan	Tai	University of California, Los Angeles	CA	USA
Chia-Tse	Tai	Princeton University	NJ	USA
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

First Name	Last Name	Organization	State	Country
Michael	Zudov	University of Minnesota, Twin Cities	MN	USA
Clara	Zwanziger	Stanford University	CA	USA

EMR (32 INTERNATIONAL, 143 NATIONAL USERS)

First Name	Last Name	Organization	Country
Francesca	Adami	University College Dublin	Ireland
Roman	Boca	Slovak University of Technology in Bratislava	Slovakia
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
Yao	Abusa	Iowa State University	IA	USA
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

First Name	Last Name	Organization	State	Country
Ferdous	Ara	National High Magnetic Field Laboratory	FL	USA
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
Eun Sang	Choi	National High Magnetic Field Laboratory	FL	USA
Wei-Hao	Chou	Florida State University	FL	USA
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
Thomas	Gunnoe	University of Virginia	VA	USA
P. Chris	Hammel	Ohio State University	OH	USA
Manoj Vinayaka	Hanabe Subramanya	Florida State University	FL	USA
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
Tomas	Orlando	National High Magnetic Field Laboratory	FL	USA

First Name	Last Name	Organization	State	Country
Raul	Ortega	Florida State University	FL	USA
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
Erica	Truong	Florida State University	FL	USA

First Name	Last Name	Organization	State	Country
Johan	van Tol	National High Magnetic Field Laboratory	FL	USA
Xiaoling	Wang	California State University, East Bay	CA	USA
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
Mariya	Zhuravleva	University of Tennessee, Knoxville	TN	USA
Mary Ellen	Zvanut	University of Alabama, Birmingham	AL	USA

HBT (1 INTERNATIONAL, 23 NATIONAL USERS)

First Name	Last Name	Organization	State	Country
Guillaume	Gervais	McGill University		Canada
Sadhvikas	Addamane	Sandia National Laboratories	NM	USA
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
Jun	Zhu	Pennsylvania State University	PA	USA

ICR (26 INTERNATIONAL, 75 NATIONAL USERS)

First Name	Last Name	Organization	Country
María	Diéguez	National University of Comahue	Argentina
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

First Name	Last Name	Organization	State	Country
Lissa	Anderson	National High Magnetic Field Laboratory	FL	USA
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
Martha	Chacon	National High Magnetic Field Laboratory	FL	USA
Huan	Chen	National High Magnetic Field Laboratory	FL	USA
Nicole	Coffey	University of Delaware	DE	USA
David	Dayton	Research Triangle Institute International	NC	USA
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
Marek	Polák	National High Magnetic Field Laboratory	FL	USA

First Name	Last Name	Organization	State	Country
Zeljka	Popovic	Florida State University	FL	USA
John	Quinn	National High Magnetic Field Laboratory	FL	USA
Chris	Reddy	Woods Hole Oceanographic Institution	MA	USA
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
Andrew	Yen	Baker Hughes Oilfield Operations, Inc.	TX	USA
Oriane	Yvin	Florida State University	FL	USA
Yael	Zvulunov	Colorado State University	CO	USA

NMR (69 INTERNATIONAL, 201 NATIONAL USERS)

First Name	Last Name	Organization Name	Country
Bon Leif	Amalla	Hokkaido University	Japan
Sharon	Ashbrook	University of St. Andrews	UK
Tahereh	Azizivahed	University of Western Ontario	Canada
Jose Luis	Belmonte	National Autonomous University of Mexico	Mexico
Emma	Borthwick	University of St. Andrews	UK
Steve	Bourgault	University of Quebec at Montreal	Canada
James	Britten	McMaster University	Canada
David	Bryce	University of Ottawa	Canada
Kamilla	Buenning	University of Southern Denmark	Denmark
Gilles	Casano	Aix-Marseille University	France
Satyaki	Chatterjee	University of Iceland	Iceland
Gael	De Paepe	French Alternative Energies and Atomic Energy Commission	France
Navneet	Dwivedi	Integral University	India
Lyndon	Emsley	Ecole Polytechnique Federale de Lausanne	Switzerland
Pierre	Florian	French National Center for Scientific Research	France
Assaf	Gal	Weizmann Institute of Science	Israel
Ehud	Gazit	Tel Aviv University	Israel
Christel	Gervais	Sorbonne University	France
Ieva	Goldberga	French National Center for Scientific Research	France
Eric	Gottwald	Karlsruhe Institute of Technology	Germany
Ernesto	Hernandez - Morales	National Autonomous University of Mexico	Mexico
Erick	Hernandez-Santiago	National Autonomous University of Mexico	Mexico
Yining	Huang	University of Western Ontario	Canada
Sheetal	Jain	Indian Institute of Science, Bengaluru	India
Michael	Jaroszewicz	University of Windsor	Canada
FENG	JIN	Norwegian University of Science and Technology	Norway
Lucas	José	University of Southern Denmark	Denmark
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
Shuting	Li	University of Western Ontario	Canada
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
Alireza	Nari	University of Ottawa	Canada

First Name	Last Name	Organization Name	Country
Armando	Navarro-Huerta	National Autonomous University of Mexico	Mexico
Ulla Gro	Nielsen	University of Southern Denmark	Denmark
Olivier	Ouari	Aix-Marseille University	France
Bijaylaxmi	Patra	Center of Biomedical Research	India
Austin	Peach	French National Center for Scientific Research	France
Vivek	Polshettiwar	Tata Institute of Fundamental Research	India
Nikita	Rao	Indian Institute of Science, Bengaluru	India
Simon	Reichert	Heidelberg University	Germany
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
Charvi	Singhvi	Tata Institute of Fundamental Research	India
Neeraj	Sinha	Center of Biomedical Research	India
Fabio	Souza	Apotex Pharmachem Inc.	Canada
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
Wanli	Zhang	University of Western Ontario	Canada
Ivana	Zlatic	Norwegian University of Science and Technology	Norway

First Name	Last Name	Organization Name	State	Country
Shiva	Agarwal	Western Michigan University	MI	USA
Jamel	Ali	Florida Agricultural and Mechanical University	FL	USA
Adam	Altenhof	Los Alamos National Laboratory	NM	USA
Shoyab	Ansari	University of Texas, Southwestern	TX	USA
Arshia	Arbabian	Florida State University	FL	USA
Jacob	Athey	Florida State University	FL	USA
Jochen	Autschbach	University of Buffalo	NY	USA
Yoongyeong	Baek	Drexel University	PA	USA
Arvin	Bagde	Florida Agricultural and Mechanical University	FL	USA

First Name	Last Name	Organization Name	State	Country
Kushaan	Bahl	Princeton University	NJ	USA
Ivy	Bane	Washington and Jefferson College	PA	USA
Alimamy	Bangura	National High Magnetic Field Laboratory	FL	USA
Aaron	Bayles	Rice University	TX	USA
Jamini	Bhagu	Florida State University	FL	USA
Ashley	Blue	National High Magnetic Field Laboratory	FL	USA
Camereon	Boley	Washington and Jefferson College	PA	USA
Shivangi Nandkumar	Borate	University of Alabama, Tuscaloosa	AL	USA
Cesario	Borlongan	University of South Florida	FL	USA
Jeannine	Brady	University of Florida	FL	USA
William	Brey	National High Magnetic Field Laboratory	FL	USA
Hannah	Bryant	Florida State University	FL	USA
Bruce	Bunnell	Tulane University	LA	USA
Ercan	Cakmak	Oak Ridge National Laboratory	TN	USA
Maria Luiza	Caldas Nogueira	University of Florida	FL	USA
Leah	Casabianca	Clemson University	SC	USA
Tracy	Centanni	University of Florida	FL	USA
Zbigniew	Chajecki	Western Michigan University	MI	USA
Srinivasan	Chandrashekar	Harvard University	MA	USA
Eduard	Chekmenev	Wayne State University	MI	USA
Julius	Chung	Emory University	GA	USA
Brenton	Cooper	Texas Christian University	TX	USA
Myriam	Cotten	Oregon State University	OR	USA
Anvesh Kumar Reddy	Dasari	East Carolina University	NC	USA
Michael	Deck	Florida State University	FL	USA
Victor	Desyatkin	Case Western Reserve University	OH	USA
Angelika	Dewicki	Washington and Jefferson College	PA	USA
Ankit	Dhakal	University of Virginia	VA	USA
Malitha Chathuranga	Dickwella Widanage	National High Magnetic Field Laboratory	FL	USA
Zach	Dowdell	Florida State University	FL	USA
Thierry	Dubroca	National High Magnetic Field Laboratory	FL	USA
Rania	Dumarieh	University of Texas, Southwestern	TX	USA
Samuel	Eddy	West Virginia University	WV	USA
Mustapha	El Hariri El Nokab	Michigan State University	MI	USA
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
Marcus	Foston	Washington University in St. Louis	MI	USA
Reza	Foudazi	University of Oklahoma	OK	USA
Kendra	Frederick	University of Texas, Southwestern	TX	USA
Lucio	Frydman	National High Magnetic Field Laboratory	FL	USA

First Name	Last Name	Organization Name	State	Country
Riqiang	Fu	National High Magnetic Field Laboratory	FL	USA
Zhehong	Gan	National High Magnetic Field Laboratory	FL	USA
Zachary	Gardner	Washington and Jefferson College	PA	USA
Ivanska	Gierbolini Colon	National High Magnetic Field Laboratory	FL	USA
Gaurav	Giri	University of Virginia	VA	USA
Evan	Goodell	College of William and Mary	VA	USA
Petr	Gor'kov	National High Magnetic Field Laboratory	FL	USA
Samuel	Grant	National High Magnetic Field Laboratory	FL	USA
Josef	Grundy	Colorado State University	CO	USA
Terry	Gullion	West Virginia University	WV	USA
Shubha	Gunaga	National High Magnetic Field Laboratory	FL	USA
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
Munir	Humayun	National High Magnetic Field Laboratory	FL	USA
Ivan	Hung	National High Magnetic Field Laboratory	FL	USA
Younggul	Hur	University of Alabama, Tuscaloosa	AL	USA
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
June	Kenyaga	State University of New York, Binghamton	NY	USA
Hahnsung	Kim	Emory University	GA	USA
James	Kimball	Florida State University	FL	USA

First Name	Last Name	Organization Name	State	Country
Abe	Kolko	University of California, Santa Barbara	CA	USA
Kiran	Kumar	FAMU-FSU College of Engineering	FL	USA
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
Frederic	Mentink	National High Magnetic Field Laboratory	FL	USA
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

First Name	Last Name	Organization Name	State	Country
Dmitry	Ostrovsky	University of Colorado, Denver	CO	USA
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

First Name	Last Name	Organization Name	State	Country
Randi	Swanson	University of California, Davis	CA	USA
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
Lukman	Yunusa	Iowa State University	IA	USA
Joseph	Zadrozny	Ohio State University	OH	USA
Rongfu	Zhang	Florida State University	FL	USA
Fuzhong	Zhang	Washington University in St. Louis	MO	USA
Wancheng	Zhao	Michigan State University	MI	USA
Andrea	Zourou	College of William and Mary	VA	USA

PFF (37 INTERNATIONAL, 129 NATIONAL USERS)

First Name	Last Name	Organization	Country
Kirk	Adams	University of Oxford	UK
Ariando	Ariando	National University of Singapore	Singapore
Antonio	Bianconi	National Research Council CNR	Italy
Oliver	Bierwagen	Paul Drude Institute for Solid State Electronics	Germany
Grzegorz	Chajewski	Institute of Low Temperature and Structure Research, Polish Academy of Sciences	Poland
Amit	Chanda	Technical University of Denmark	Denmark
Lin Er	Chow	National University of Singapore	Singapore
Shovan	Dan	Institute of Low Temperature and Structure Research, Polish Academy of Sciences	Poland
Mijkhail	Eremets	Max Planck Institute for Chemistry, Mainz	Germany
Chris	Grovenor	University of Oxford	UK
Chunyu	Guo	Max Planck Institute for Structure and Dynamics of Matter, Hamburg	Germany
Georg	Hoffmann	Paul Drude Institute for Solid State Electronics	Germany
Junxiong	Hu	National University of Singapore	Singapore
Thor	Hvid-Olsen	Technical University of Denmark	Denmark
William	Iliffe	CCFE STEP	UK
Dariusz	Kaczorowski	Institute of Low Temperature and Structure Research, Polish Academy of Sciences	Poland
Tomasz	Klimczuk	Gdansk University of Technology	Poland
Gennady	Logvenov	Max Planck Institute for Solid State Research, Stuttgart	Germany
Yuji	Matsuda	Kyoto University	Japan
Vasily	Minkov	Max Planck Institute for Chemistry, Mainz	Germany
Kimberly	Modic	Institute of Science and Technology Austria	Austria
Philip	Moll	Max Planck Institute for Structure and Dynamics of Matter, Hamburg	Germany
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

First Name	Last Name	Organization	Country
Ling	Zhang	Max Planck Institute for Structure and Dynamics of Matter, Hamburg	Germany
Wei	Zhang	National University of Singapore	Singapore

First Name	Last Name	Organization	State	Country
Philip	Adams	Louisiana State University	LA	USA
Charles	Ahn	Yale University	CT	USA
James	Analytis	University of California, Berkeley	CA	USA
Xiaojian	Bai	Louisiana State University	LA	USA
Fedor	Balakirev	National High Magnetic Field Laboratory	NM	USA
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
Anthony	Bollinger	Brookhaven National Laboratory	NY	USA
Ivan	Bozovic	Brookhaven National Laboratory	NY	USA
Craig	Bridges	Oak Ridge National Laboratory	TN	USA
Christopher	Broyles	Washington University in St. Louis	MO	USA
Sergey	Bud'ko	Ames Laboratory	IA	USA
Nicholas	Butch	National Institute of Standards and Technology MD	MD	USA
Volodymyr	Buturlim	Idaho National Laboratory	ID	USA
Marshall	Campbell	Los Alamos National Laboratory	NM	USA
Paul	Canfield	Ames Laboratory	IA	USA
Huibo	Cao	Oak Ridge National Laboratory	TN	USA
Mun	Chan	National High Magnetic Field Laboratory	FL	USA
Aaron	Chan	University of Michigan	MI	USA
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
Aiping	Chen	Los Alamos National Laboratory	NM	USA
Yu-Hsin	Chen	Cornell University	NY	USA
Sang Wook	Cheong	Rutgers University	NJ	USA
Jiun-Haw	Chu	University of Washington	WA	USA
Scott	Crooker	National High Magnetic Field Laboratory	NM	USA
Peter	Czajka	National Institute of Standards and Technology MD	MD	USA
Maximilien	Debbas	Massachusetts Institute of Technology	MA	USA
Yuhang	Deng	University of California, San Diego	CA	USA
Jason	Dong	University of California, Santa Barbara	CA	USA
Jimy	Encomendero	Cornell University	NY	USA
Keke	Feng	University of California, San Diego	CA	USA

First Name	Last Name	Organization	State	Country
Priscila	Ferrari Silveira Rosa	Los Alamos National Laboratory	NM	USA
Corey	Frank	National Institute of Standards and Technology MD	MD	USA
Yunpeng	Gao	New Jersey Institute of Technology	NJ	USA
Krzysztof	Gofryk	Idaho National Laboratory	ID	USA
Shannon	Gould	Washington University in St. Louis	MO	USA
David	Graf	National High Magnetic Field Laboratory	FL	USA
Laura	Greene	National High Magnetic Field Laboratory	FL	USA
Yanhong	Gu	University of Tennessee, Knoxville	TN	USA
Yilmaz	Gul	University of California, Santa Barbara	CA	USA
Thomas	Halloran	National Institute of Standards and Technology MD	MD	USA
Tianxiong	Han	Iowa State University	IA	USA
Neil	Harrison	National High Magnetic Field Laboratory	NM	USA
Xi	He	Brookhaven National Laboratory	NY	USA
Qing	Huang	University of Tennessee, Knoxville	TN	USA
Marcelo	Jaime	National High Magnetic Field Laboratory	NM	USA
Luis	Jauregui	University of California, Irvine	CA	USA
Debdeep	Jena	Cornell University	NY	USA
Kaila	Jenkins	University of Michigan	MI	USA
Sunil	Karna	Prairie View A&M University	TX	USA
Caue	Kaufmann Ribeiro	Los Alamos National Laboratory	NM	USA
Rubi	Km	Los Alamos National Laboratory	NM	USA
Tai	Kong	University of Arizona	AZ	USA
Elizabeth	Krenkel	Ames Laboratory	IA	USA
Brinda	Kuthanazhi	Ames Laboratory	IA	USA
Hyunchul	Kwon	University of California, Berkeley	CA	USA
Sangyun	Lee	National High Magnetic Field Laboratory	FL	USA
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								

2024 AMRIS NSF Funded

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 $AA'Cr_4Se_8$ 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 $LuMn_6Sn_6$	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 Fe_3Ga_4 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([illegible]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								

2024 EMR

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 Sciglliani (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								
Cameroon 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					
Cameron 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								

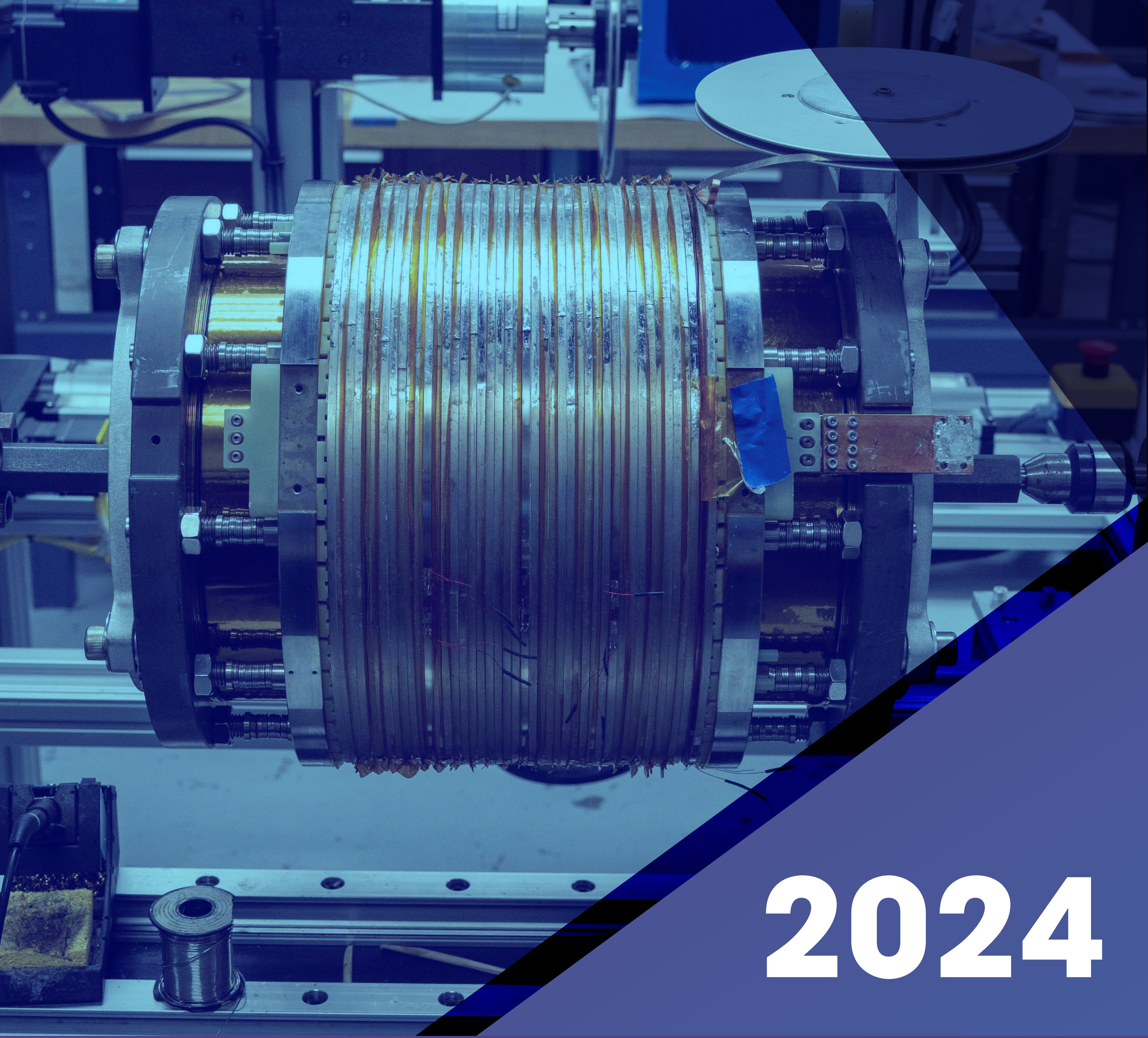
Participants (Name, Role, Org., Dept.)				Funding Sources (Funding Agency, Division, Award #)			Proposal #	Proposal Title	Discipline	Exp. #	Days Used
James Shogren-Harris (S)	**PI ***	**University of Alabama, Tuscaloosa**	**Chemical and Biological Engineering**	NSF	CBET - Chemical, Bioengineering, Environmental, 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								

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								

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**



2024

Supported by the National Science and the State of Florida

NATIONAL HIGH
MAGNETIC FIELD LABORATORY

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

300