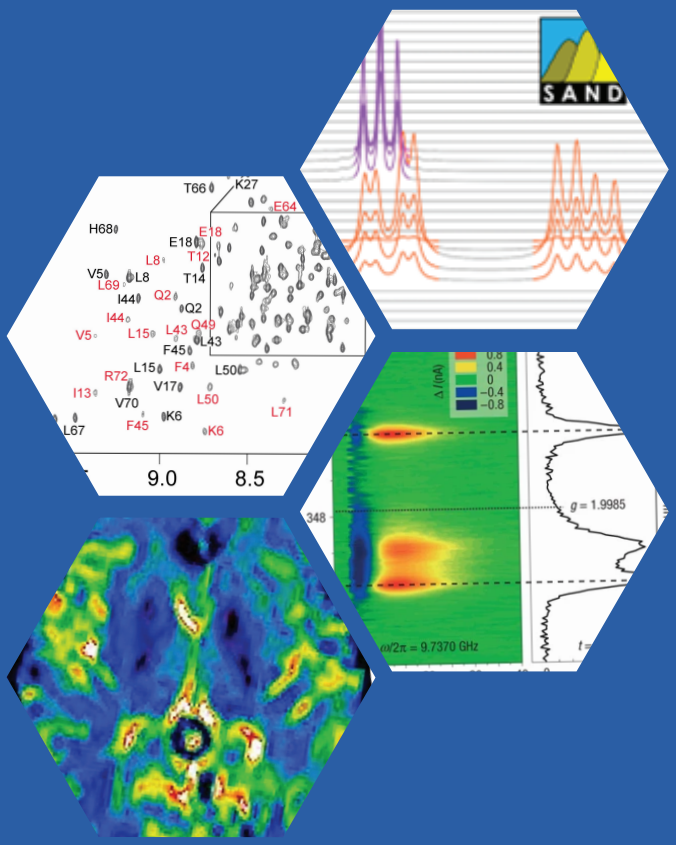
53rd Southeastern Magnetic Resonance Conference

Hosted by the National MagLab & UF • November 14-16 • Gainesville, FL

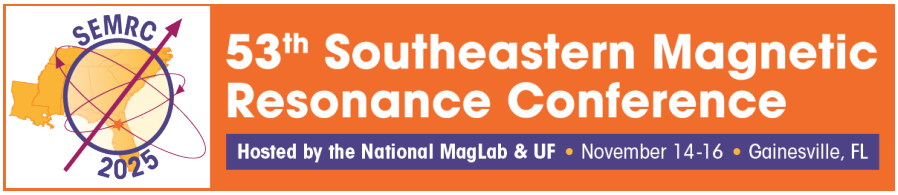


Harrell Medical Education Building
University of Florida College of Medicine

November 14-16, 2025

NATIONAL HIGH MAGNETIC FIELD LABORATORY

UF UNIVERSITY of FLORIDA



CONFERENCE SCHEDULE

Friday, November 14, 2025

5:00 PM Registration, Poster Setup & Viewing

Session 1 – Welcome & Opening Session

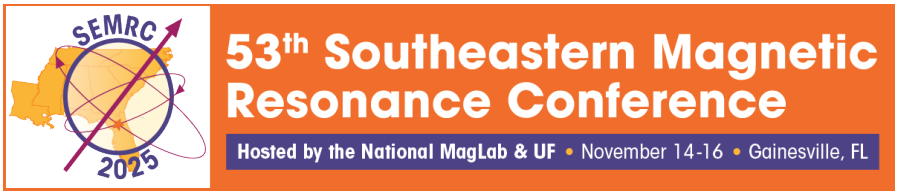
6:30 PM	Welcome Remarks	Charlie Khemtong, Ph.D. *University of Florida*
6:35 PM	**Keynote 1**: *Non-equilibrium Processes Studied by Pressure-jump NMR*	Adriaan Bax, Ph.D. *NIDDK/NIH*
7:15 PM	*Flow Synthesis of Hyperpolarized Metabolites from Parahydrogen*	C. Russell Bowers, Ph.D. *University of Florida*
7:35 PM	*Unlocking Early Pancreatic Cancer Detection through Zinc-sensitive Metabolic MRI*	Veronica Clavijo Jordan, Ph.D. *MGH/Harvard Medical School*
8:00 PM	***Poster Presentations and Reception***	
10:00 PM	*End day*	

Saturday, November 15, 2025

Session 2 – MRI and Neurological Applications: Dedicated to Prof. Thomas Mareci

Chair: Jens Rosenberg, Ph.D.
University of Florida

8:25 AM	Opening Remarks	William Brey, Ph.D. *NHMFL/Florida State University*
8:30 AM	**Keynote 2**: *35 Years of (N)MR Spectroscopy in the Human Brain*	Peter Barker, D.Phil. *Johns Hopkins University*
9:10 AM	*Longitudinal Changes in Microstructure Are Related to Changes in Gut Microbiome Following Morphine Use*	Luis Colon-Perez, Ph.D. *U North Texas Health Sci Ctr*
9:30 AM	*Remote Palpation of Live Human Brain Using MR Elastography*	Magdoom Kulam, Ph.D. *NICHD/NIH*
9:50 AM	*Gradient Coil Design Considerations for Neuroimaging*	Garrett Astary, Ph.D. *GE Healthcare MR*
10:10 AM	*Is the Brain a Hyperbolic Network*	Daniel DeYoung, Ph.D. *Albion College*
10:25 AM	***Coffee Break***	



Session 3 – Solution NMR and Applications

Chair: Joanna Long, Ph.D.
University of Florida

10:50 AM	*Cold-water Chemistry*	Bill Baker, Ph.D. *University of South Florida*
11:10 AM	*Noncanonical RNA binding in LARP6*	Robert Silvers, Ph.D. *Florida State University*
11:25 AM	*Molecular Dynamics Simulations to Predict NMR Relaxation of Mixtures in Strongly Inhomogeneous Fields*	Tyler Meldrum, Ph.D. *William & Mary*
11:40 AM	*High-Resolution ^{13}C NMR Reveals Enhanced Hepatic Fatty Acid Oxidation in AATD Mouse Model*	Qingyang Shen *University of Florida*
11:55 AM	*Metabolite Fraction Libraries for Quantitative NMR Metabolomics*	Art Edison, Ph.D. *University of Georgia*
12:10 PM	***Lunch***	

Session 4 – EPR and Applications I

Chair: Stephen Hill, D.Phil.
NHMFL/Florida State University

1:30 PM	**Keynote 3:** *Floquet Spin-Pair States in a π-Conjugated Polymer Thin Film*	Christoph Boehme, Ph.D. *University of Utah*
2:10 PM	*Multiphoton State Transitions in the Multilevel Spin System Gd^{3+}:YVO_4*	Sabastian Atwood, Ph.D. *NHMFL & Florida State University*
2:25PM	*Frequency and Bandwidth Tunable Photonic Band Gap Resonators for Pulse EPR with at least Tenfold Greater Concentration Sensitivity*	Alex Smirnov, Ph.D. *North Carolina State University*
2:40 PM	*Multi-Functional Role of Oxalate Decarboxylase Revealed by EPR Studies*	Zain Becerra, Ph.D. *University of Florida*
2:55 PM	***Coffee Break***	

Session 5 – Solid-State NMR

Chair: Leah Casabianca, Ph.D.
Clemson University

3:20 PM	*Solid-State NMR of Insect Wing Membranes and a Refined Structure of Chitin*	Terry Gullion, Ph.D. *West Virginia University*
3:40 PM	*Structure Determination of Membrane Proteins in Magnetically Aligned Discoidal Lipid Mimetics by Solid-State NMR*	Alexander Nevzorov, Ph.D. *North Carolina State University*

4:00 PM	*Mechanochemical Routes to Conventional and Integrative Pharmaceutical Solid Forms: Insights from PXRD and Multinuclear Solid-State NMR Spectroscopy*	Peyton Osborn *NHMFL/Florida State University*
4:15 PM	*Structural Characterization of Surface Immobilized Platinum Hydrides by Indirect Detection Solid State NMR Spectroscopy*	Benjamin Atterberry, Ph.D. *University of Florida*
4:30 PM	*Structural Insight into Inhibitor-Mediated Modulation of Huntingtin Exon 1 Aggregation*	Greeshma Jain, PhD. *University of Florida*
4:45 PM	*Gangliosides Promote Structural Heterogeneity in Aβ42 Aggregates*	Jhinuk Saha, Ph.D. *NHMFL/Florida State University*
5:00 PM	***Break***	

Session 6 – Lightning Presentations by Graduate Students & Postdocs

Chair: Luiza Nogueira, Ph.D.
University of Florida

5:20 PM	*Evaluating novel bTurea-based biradicals for MAS-DNP*	Shubha Gunaga, Ph.D. *NHMFL/Florida State University*
	Elucidating Electronic Structure and Relaxation Pathways of Transition Metal Complexes via High Power EPR Spectroscopy	Kavipriya Thangavel, Ph.D. *NHMFL/Florida State University*
	Probing the Structures and Dynamics of Cobaltocenium Compounds via Ultra-Wideline ^{59}Co Solid-State NMR	Dominic Chantra *NHMFL/Florida State University*
	Design and Optimization of Highly Aligned Peptoid Macrodiscs for Solid-State NMR Studies of Membrane Proteins	Adit Shah *North Carolina State University*
	Measuring Slow Cerebrospinal Fluid Velocities in Preclinical Models Using Optimized Phase Contrast MRI at 21.1 T	Dayna Richter *NHMFL/Florida State University*
	Engineered Iron Oxide Interfaces Enable Reliable MRI Tracking of Therapeutic Extracellular Vesicles	Arshia Arbabian *NHMFL/Florida State University*
6:20 PM	***Dinner***	
8:00 PM	***Poster Viewing***	
9:30 PM	*End day*	

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Sunday, November 16, 2025

Session 7 – MRI: Emerging Technologies and Innovations

Chair: Bradley Wilkes, Ph.D.
University of Florida

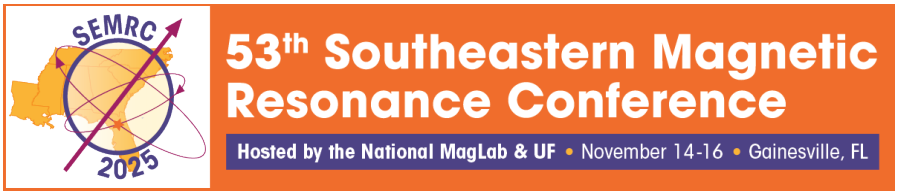
8:30 AM	*DMRI is a Flexible Platform for Assessing Aberrant Metabolism*	Matthew Merritt, Ph.D. *University of Florida*
8:50 AM	*A Multi-nuclear Volume Coil for H/X Pre-clinical MR at Ultra High Magnetic Fields*	David Doty, Ph.D. *Doty Scientific, Inc.*
9:05 AM	*BOLD Functional Connectivity Correlates of PTSD Severity and Chronicity during Image Viewing*	Robert Claar *University of Florida*
9:20 AM	*Calibrated MR-ARFI with a Non-Magnetic Micropositioner*	Ryan Willoughby, Ph.D. *University of Alabama at Birmingham*
9:35 AM	*Imaging Neuronal Transmission using Novel Genetic Encodable MRI Reporters*	Nan Li, Ph.D. *UT Southwestern Medical Center*
9:55 AM	***Coffee Break***	

Session 8 – EPR and Applications II

Chair: Alexander Angerhofer, Ph.D.
University of Florida

10:30 AM	*Optimization Methods and Instrumental Advances in Dissolution Dynamic Nuclear Polarization*	Lloyd Lumata, Ph.D. *University of Texas at Dallas*
10:50 AM	*Achieving Liquid-State ^{1}H DNP through Particle-Mediated ^{1}H–^{1}H Cross Relaxation.*	Sungsool Wi, Ph.D. *NHMFL/Florida State University*
11:05 AM	*Optical Control of Molecular Qubits*	Haochuan Mao, Ph.D. *Florida State University*
11:20 AM	*Beyond The First Coordination Sphere: Pulsed EPR Spectroscopy Sheds Light on Outer-Sphere Interactions Driving Enzyme Catalysis*	Brad Pierce, Ph.D. *University of Alabama*
11:40 AM	*From light to friction: how metal oxides drive radical formation in lubricants*	Tatyana I. Smirnova, Ph.D. *North Carolina State University*
11:55 AM	*Intrinsic and Cooperative Dynamics of α-Synuclein Terminal Domains under Controlled Confinement*	Kurt Warncke, Ph.D. *Emory University*
12:10 AM	***Conference Highlights & Closing Remarks***	Charlie Khemtong, Ph.D. *University of Florida*

Adjourn or AMRIS Facility Tour (optional)



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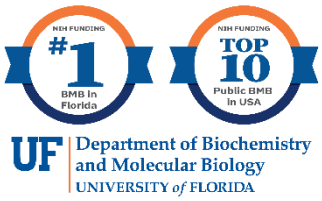

Abstract No.		Presenting Author	Institution	Abstract Title
Keynotes				
K01	NMR	Adriaan Bax	NIDDK/NIH	Non-equilibrium Processes Studied by Pressure-jump NMR
K02	MRI	Peter Barker	Johns Hopkins University	35 Years of (N)MR Spectroscopy in the Human Brain
K03	EPR	Christoph Boehme	University of Utah	Floquet Spin-Pair States in a π-Conjugated Polymer Thin Film
Invited Talks				
IT01	NMR/MRI	C. Russell Bowers	University of Florida	Flow Synthesis of Hyperpolarized Metabolites from Parahydrogen
IT02	MRI	Veronica Clavijo Jordan	MGH/Harvard Medical School	Unlocking Early Pancreatic Cancer Detection through Zinc-sensitive Metabolic MRI
IT03	MRI	Luis Colon-Perez	U North Texas Health Sci Ctr	Longitudinal Changes in Microstructure Are Related to Changes in Gut Microbiome Following Morphine Use
IT04	MRI	Magdoom Kulam	NICHD/NIH	Remote Palpation of Live Human Brain Using MR Elastography
IT05	MRI	Garrett Astary	GE Healthcare MR	Gradient Coil Design Considerations for Neuroimaging
IT06	NMR	Bill Baker	University of South Florida	Remote Palpation of Live Human Brain Using MR Elastography
IT07	NMR	Terry Gullion	West Virginia University	Solid-State NMR of Insect Wing Membranes and a Refined Structure of Chitin
IT08	NMR	Alexander Nevzorov	North Carolina State University	Solid-State NMR of Insect Wing Membranes and a Refined Structure of Chitin
IT09	MRI	Matthew Merritt	University of Florida	DMRI is a Flexible Platform for Assessing Aberrant Metabolism
IT10	EPR/DNP	Lloyd Lumata	University of Texas at Dallas	Optimization Methods and Instrumental Advances in Dissolution Dynamic Nuclear Polarization
IT11	EPR	Brad Pierce	University of Alabama	Beyond The First Coordination Sphere: Pulsed EPR Spectroscopy Sheds Light on Outer-Sphere Interactions Driving Enzyme Catalysis

Contributed Talks				
CT01	MRI	Daniel DeYoung	Albion College	Is the Brain a Hyperbolic Network
CT02	NMR	Robert Silvers	Florida State University	Noncanonical RNA binding in LARP6
CT03	NMR	Tyler Meldrum	William and Mary	Molecular Dynamics Simulations to Predict NMR Relaxation of Mixtures in Strongly Inhomogeneous Fields
CT04	NMR	Qingyang Shen	University of Florida	High-Resolution ^{13}C NMR Reveals Enhanced Hepatic Fatty Acid Oxidation in AATD Mouse Model
CT05	NMR	Art Edison	University of Georgia	Metabolite Fraction Libraries for Quantitative NMR Metabolomics
CT06	EPR	Sabastian Atwood	FSU- NHMFL	Multiphoton State Transitions in the Multilevel Spin System Gd^{3+}:YVO_4
CT07	EPR	Alex Smirnov	North Carolina State University	Frequency and Bandwidth Tunable Photonic Band Gap Resonators for Pulse EPR with at least Tenfold Greater Concentration Sensitivity
CT08	EPR	Zain Becerra	University of Florida	Multi-Functional Role of Oxalate Decarboxylase Revealed by EPR Studies
CT09	NMR	Peyton Osborn	FSU- NHMFL	Mechanochemical Routes to Conventional and Integrative Pharmaceutical Solid Forms: Insights from PXRD and Multinuclear Solid-State NMR Spectroscopy
CT10	NMR	Benjamin Atterberry	University of Florida	Structural Characterization of Surface Immobilized Platinum Hydrides by Indirect Detection Solid State NMR Spectroscopy
CT11	NMR	Greeshma Jain	University of Florida	Structural insight into inhibitor-mediated modulation of Huntingtin Exon 1 aggregation
CT12	NMR	Jhinuk Saha	FSU- NHMFL	Gangliosides Promote Structural Heterogeneity in Aβ42 Aggregates

CT13	MRI	David Doty	Doty Scientific, Inc.	A Multi-nuclear Volume Coil for H/X Pre-clinical MR at Ultra High Magnetic Fields
CT14	MRI	Robert Claar	University of Florida	BOLD Functional Connectivity Correlates of PTSD Severity and Chronicity during Image Viewing
CT15	MRI	Ryan Willoughby	University of Alabama at Birmingham	Calibrated MR-ARFI with a Non-Magnetic Micropositioner
CT16	MRI	Nan Li	UT Southwestern Medical Center	Imaging Neuronal Transmission using Novel Genetic Encodable MRI Reporters
CT17	EPR/DNP	Sungsool Wi	FSU- NHMFL	Achieving Liquid-State ^{1}H DNP through Particle-Mediated ^{1}H–^{1}H Cross Relaxation
CT18	EPR	Haochuan Mao	Florida State University	Optical Control of Molecular Qubits
CT19	EPR	Tatyana I. Smirnova	North Carolina State University	From light to friction: how metal oxides drive radical formation in lubricants
CT20	EPR	Kurt Warncke	Emory University	Intrinsic and Cooperative Dynamics of α-Synuclein Terminal Domains under Controlled Confinement
Lightning Talks				
LT01	EPR/DNP	Shubha S. Gunaga	FSU- NHMFL	Evaluating novel bTurea-based biradicals for MAS-DNP
LT02	EPR	Kavipriya Thangavel	FSU- NHMFL	Elucidating Electronic Structure and Relaxation Pathways of Transition Metal Complexes via High Power EPR Spectroscopy
LT03	NMR	Dominic Chantra	FSU- NHMFL	Probing the Structures and Dynamics of Cobaltocenium Compounds via Ultra-Wideline ^{59}Co Solid-State NMR
LT04	NMR	Adit Shah	North Carolina State University	Design and Optimization of Highly Aligned Peptoid Macrodiscs for Solid-State NMR Studies of Membrane Proteins

LT05	MRI	Dayna Richter	FSU- NHMFL	Measuring Slow Cerebrospinal Fluid Velocities in Preclinical Models Using Optimized Phase Contrast MRI at 21.1 T
LT06	MRI	Arshia Arbabian	FSU- NHMFL	Engineered Iron Oxide Interfaces Enable Reliable MRI Tracking of Therapeutic Extracellular Vesicles
Posters - EPR				
P001	EPR/DNP	Ishani Marasinghage	University of Florida	Local Charge Distribution Modulates Hydration Dynamics in the Intrinsically Disordered Protein IA3
P002	NMR/DNP	Sungsool Wi	FSU – NHMFL	Advancing Liquid-State ^{19}F DNP: High-Field, Large-Volume Overhauser Polarization at Ambient Temperature
P003	EPR	Tianyan Li	University of Florida	Investigating the Impact of Charge Distributions on the Unfolded and Folded Conformations of IA3s
P004	EPR/DNP	Tomas Orlando	FSU – NHMFL	Liquid State ^{13}C and ^{19}F DNP-Enhanced NMR Spectroscopy in One and Two Dimensions
P005	EPR	Mahsa Moshari	University of Florida	Phase & Dynamic Behavior in Lyotropic Liquid Crystals for MRI Agent Design and Drug Delivery by Magnetic Resonance Spectroscopy
P006	EPR	Kiera Powers	FSU – NHMFL	Functionalized Materials as Polarizing Agents for Dynamic Nuclear Polarization in Liquids
P007	EPR	Brittany Grimm	FSU – NHMFL	EPR Characterization of a Photo-Responsive Fe^{3+} Spin-Crossover Complex
P008	EPR	Shayak Biswas	University of Florida	Effects of Anomeric Linkage of α- and β-Cerebrosides on Biophysical Properties of the Lipid Membrane
P009	EPR	Korrigan Amadi	FSU – NHMFL	Field homogeneity Improvement and Dead-Time Reduction for an Integrated EPR and DNP Spectrometer
P010	EPR	Hana Alsheikh	University of Florida	Effects of Anomeric Linkage of α- and β-Cerebrosides on Biophysical Properties of the Lipid Membrane

P011	EPR	Johan van Tol	FSU – NHMFL	A 263 GHz Pulsed EPR Spectrometer with AWG Capabilities
P012	EPR	Shamiul Islam	University of Florida	Biophysical Characterization of GPI Anchor Conformation Using a Synthetic Bifunctional Probe
P013	EPR	Shady Fouad	Emory University	Coupling of protein backbone and solvent dynamics in α-synuclein revealed by using controlled confinement and multi-probe EPR spectroscopy
P014	EPR	Kavipriya Thangavel	FSU – NHMFL	Elucidating Electronic Structure and Relaxation Pathways of Transition Metal Complexes via High Power EPR Spectroscopy
P015	EPR	Ritu Kaushik	University of Florida	Engineering Surface Lysines and Hydrophobic Clusters to Modulate Hydration, Stability, and Bioconjugation in Bacillus subtilis Lipase A
P016	EPR	Ivan Weaver	FSU – NHMFL	CW and Pulsed EPR Investigation of HoW_{10} Crystals as Potential Spin Qubit Materials
Posters - MRI				
P017	MRI	Barbara Balsamo	University of Florida	Region-specific GNAL Knockout Reveals Differential Network Dysfunction in a Mouse model of Dystonia
P018	MRI	Nesmine Maptue	University of Florida	In vivo Hyperpolarized ^{13}C MRI Detects Abnormal Mitochondrial Metabolism in CDAA-induced Hepatic Steatosis
P019	MRI	Dayna Richter	FSU- NHMFL	Measuring Slow Cerebrospinal Fluid Velocities in Preclinical Models Using Optimized Phase Contrast MRI at 21.1 T
P021	MRI	Gaurav Sharma	University of Florida	Accelerating jHSQC Acquisition through Non-Uniform sampling: Achieving Uniform-quality Spectra in Half the time
P020	MRI	Arshia Arbabian	FSU- NHMFL	Engineered Iron Oxide Interfaces Enable Reliable MRI Tracking of Therapeutic Extracellular Vesicles
P022	MRI	Diba Allameh Zadeh	University of Florida	Characterization of lipid based Lyotropic Liquid Crystals Phase Behavior and Their Potential as MRI Contrast Agents and therapeutic Applications

P023	MRI	Warren Boschen	Vanderbilt university	Phase Dispersion in Multiband Imaging
P024	MRI	Emily G. Cushman	Clemson University	An Educational Approach to Connecting Chemistry and Healthcare Using Magnetic Resonance Imaging
P025	MRI	Julia Martin	FSU- NHMFL	Methodologies for analyzing RF shield efficiency at 21.1T MRI
P026	MRI	Kate Payen	FSU- NHMFL	Sustainability: Assessing ways to reduce energy consumption in NMR/MRI systems
Posters - NMR				
P027	NMR	Greeshma Jain	University of Florida	Structural insight into inhibitor-mediated modulation of Huntingtin Exon 1 aggregation
P028	NMR	Beining Jin	University of Florida	The Conformational Equilibria of a Human GPCR Compared between Lipid Vesicles and Aqueous Solutions by Integrative ^{19}F-NMR
P029	NMR	Nessa Pesaran Afsharian	University of Florida	^{19}F-NMR quantification of drug efficacy exemplified with the human A_{2A} adenosine receptor
P030	NMR	Viraj Wijesekara	University of Florida	Investigating lipid organization and GPCR-lipid interactions in membrane mimetics with NMR spectroscopy and molecular dynamic simulations
P031	NMR	Rongfu Zhang	FSU- NHMFL	A ^{17}O Solid-State NMR Relaxation Approach for Probing Water on Membrane Surfaces
P032	NMR	Nazifa Tasnim Ahmad	FSU-FAMU-NHMFL	Gangliosides GM3 And GD3 Modulate Insulin Aggregation Pathways and Reduce Cytotoxicity Through Structural Remodeling
P033	NMR	Cletus Obi	FSU-FAMU-NHMFL	Magnetic Alignment of Saponin-based Lipid Nanodiscs
P034	NMR	Sara Termos	FSU- NHMFL	Nutation-Induced Distortions in Solid-State NMR Spectra of High-Spin Quadrupolar Nuclei

P035	NMR	Rajan Rai	FSU- NHMFL	Understanding Self-Association of Fluorinated Phenylalanine through NMR Spectroscopy and Quantum Chemistry
P036	NMR	Alexander Perez	FSU- NHMFL	Mechanochemical Synthesis and Multinuclear Solid-State NMR Characterization of Amoxicillin Hydrochloride Salts
P037	NMR	Jiaxing Fan	FSU- NHMFL	Structurally characterizing FtsL101-146 in lipid bilayers
P038	NMR	Shashwata Moitra	Cryogenic Ltd	An experimental proof of the applicability of cryogen-free technology for high resolution solid state and liquid state NMR
P039	NMR	Sean Holmes	FSU- NHMFL	Pushing the Limits of NMR Crystallography: A Study on Three Forms of Glycylglycine
P040	NMR	Sekinah Dauda	Clemson University	Understanding Interactions between Micro and Nano Plastics with Metabolites at the Molecular Level
P041	NMR	Jordan Sanders	Clemson University	Developing a Tool to Understand the Structure of Hydrogens on Nanoplastics Surface
P042	NMR	Makaylab Grandal	Rowan University	Investigating the Relationship Between Carbon Quantum Dots and Nuclear Spin Relaxation
P043	NMR	Kattayani Sarkar	University of Florida	Design and NMR Investigation of Ni^{2+}-Chelated Monoolein Nanoparticles: A Path to Stabilizer-Free Lipid Carriers
P044	NMR	Tzu-Ying Chiu	Georgia Institute of Technology	Peptide nanostructures can be pathological or therapeutic: how solid-state NMR guides control assembly pathways to produce desired molecular structures
P045	NMR	Rasaq Ayinde Adams	University of Florida	Unveiling Catalytic Intermediates on Metal Nanoparticle Surfaces via Parahydrogen-Enhanced NMR
P046	NMR	Neel Shah	University of Florida	Microwave Fixation Prevents Post-Mortem Metabolism for NMR Spectroscopy Metabolomics