

MONDAY ORAL PRESENTATIONS

* Invited Paper

Plenary and Prize Session

SESSION II.01: Plenary and Prize Session
Session Chairs: Peter Gehring, Young Lee, Katie Weigandt and Stephen Wilson
Monday Morning, June 6, 2022
UMC Conference Room 235

8:00 AM WELCOME AND INSTRUCTIONS

8:15 AM *II.01.01
CLIFFORD G. SHULL PRIZE WINNER: Tailoring Instruments to the Science and the Source: 35 Years at the NCNR [Dan A. Neumann](#); National Institute of Standards and Technology, United States

9:10 AM *II.01.02
PLENARY: The Dark Energy of Quantum Materials [Laura Greene](#); Florida State University, United States

9:45 AM BREAK

Advances in Neutron Facilities, Instrumentation and Software

SESSION A1.01: Facilities
Session Chair: John Ankner
Monday Morning, June 6, 2022
UMC West Ballroom 208

10:15 AM A1.01.01
Development of Neutron Scattering Facilities at the McMaster Nuclear Reactor [Patrick Clancy](#); McMaster University, Canada

10:45 AM A1.01.02
Reactor Institute Delft 2.0 [Jeroen Plomp](#); Delft University of Technology, Netherlands

11:00 AM A1.01.03
New Guide System and Upgraded Instrument Suite at HFIR after Beryllium Reflector Change [Georg Ehlers](#), Amy Jones, Michael C. Hoffmann, Lowell Crow, Franz X. Gallmeier, Thomas Huegle, Matthew J. Frost, Cassie S. Sabens, Kenneth C. Littrell, Richard M. Ibberson, Lisa DeBeer-Schmitt, Garrett E. Granroth, Sai Venkatesh Pingali, Hassina Z. Bilheux, Yuxuan Zhang, Andrii Y. Kovalevskiy, Travis J. Williams, Adam Aczel and Matthias D. Frontzek; Oak Ridge National Laboratory, United States

11:15 AM A1.01.04
Neutron Beamline Shielding Studies for the HFIR Beryllium Reflector Replacement Project [Kyle Grammer](#) and Wei Lu; Oak Ridge National Laboratory, United States

11:30 AM A1.01.05
Future of Development Beamlines at the High Flux Isotope Reactor after the upcoming HFIR Beryllium Reflector Replacement [Lowell Crow](#); Oak Ridge National Laboratory, United States

11:45 AM A1.01.06
The Cold Source Upgrade Project at the NIST Center for Neutron Research [Rodrigo Vilaseca](#), Daniel Adler, Donald Pierce, Brian J. Kirby and Dan A. Neumann; NIST, United States

12:00 PM A1.01.07
Preliminary Neutronics Design of a Second Target Station at the ORNL's SNS [Igor Remec](#), Franz X. Gallmeier, Kristel Ghoos, Tucker McClanahan, Thomas Miller, Kumar Mohindroo, Wouter de Wet and Lukas Zavorka; Oak Ridge National Laboratory, United States

12:15 PM A1.01.08
Development of Polarized Neutron at the China Spallation Neutron Source [Tianhao R. Wang](#)^{1,2} and Xin Tong^{1,2}; ¹China Spallation Neutron Source, China; ²Institute of high energy physics, China

Hard Condensed Matter

SESSION B1.01: Magnetism and Topological Band Structures
Session Chair: Martin Greven
Monday Morning, June 6, 2022
UMC East Ballroom 212

10:15 AM *B1.01.01
Neutron Diffraction Studies on the Magnetic Properties of $YMn_6Sn_6-xGe_x$ [Rebecca L. Dally](#)¹, Peter Siegfried^{2,2}, Hari Bhandari², David Jones², Dina Michel^{2,2}, Madhav Ghimire³, Lekhanath Poudel¹, Markus Bleuel¹, Jeffrey W. Lynn¹, Igor Mazin^{2,2} and Nirmal Ghimire^{2,2}; ¹National Institute of Standards and Technology, United States; ²George Mason University, United States; ³Tribhuvan University, Nepal

10:45 AM B1.01.02
Weyl Mediated Helical Magnetism in NdAlSi and NdAlGe [Jonathan Gaudet](#)^{1,2,3}, Hung-Yu Yang⁴, Santu Baidya⁵, Baozhu Lu⁶, Guangyong Xu¹, Yang Zhao^{1,2}, Jose A. Rodriguez-Rivera^{1,2}, Christina Hoffmann⁷, Lisa DeBeer-Schmitt⁷, Adam Aczel⁷, David Graf⁸, Darius Torchinsky⁶, Predrag Nikolic^{9,3}, David Vanderbilt⁵, Tafti Fazel⁴ and Collin Broholm^{3,1}; ¹National Institute of Standards and Technology, United States; ²University of Maryland, United States; ³Johns Hopkins University, United States; ⁴Boston College, United States; ⁵Rutgers University, United States; ⁶Temple University, United States; ⁷Oak Ridge National Laboratory, United States; ⁸National High Magnetic Field Laboratory, United States; ⁹George Mason University, United States

11:00 AM B1.01.03
Field-Induced Fan-like Magnetic Orders in Topological $EuIn_2As_2$ Studied by Single-Crystal Neutron Diffraction [Simon X. Riberolles](#)¹, Thais Victa Trevisan^{1,2}, Brinda Kuthanazhi^{1,2}, Feng Ye³, D. C. Johnston^{1,2}, Sergey L. Bud'ko^{1,2}, Paul C. Canfield^{1,2}, R. J. McQueeney^{1,2}, Peter P. Orth^{1,2} and Benjamin G. Ueland¹; ¹Ames Laboratory, United States; ²Iowa State University of Science and Technology, United States; ³Oak Ridge National Laboratory, United States

11:15 AM B1.01.04

Single Pair of Weyl Points in a Time-Reversal Symmetry Broken Semi-Metal Keith Taddei¹, Li Yin¹, Duminda Sanjeeva², Yu Li³, Jie Xing⁴, Clarina dela Cruz¹, Daniel Phelan³, Athena Sefat¹ and David Parker¹; ¹Oak Ridge National Laboratory, United States; ²MURR, United States; ³Argonne National Laboratory, United States; ⁴University of South Carolina, United States

11:30 AM B1.01.05

Spin Dynamics in the Antiferromagnetic Topological Insulator MnBi₂Te₇ Bing Li^{1,2}, Simon X. Riberolles^{1,2}, Daniel M. Pajerowski³, J.-Q. Yan³ and R. J. McQueeney^{1,2}; ¹Ames Laboratory, United States; ²Iowa State University of Science and Technology, United States; ³Oak Ridge National Laboratory, United States

11:45 AM B1.01.06

Topological Magnons in a Honeycomb Lattice Magnet CoTiO₃ Bo Yuan^{1,2}, Matthew Stone³, Guo-Jiun Shu⁴, Fangcheng Chou⁵, Patrick Clancy⁶ and Young-June Kim¹; ¹University of Toronto, Canada; ²Max Planck Institute for the Structure and Dynamics of Matter, Germany; ³Oak Ridge National Laboratory, United States; ⁴National Taipei University of Technology, Taiwan; ⁵National Taiwan University, Taiwan; ⁶McMaster University, Canada

12:00 PM B1.01.07

Gapless Dirac magnons in CrCl₃ Despina Louca¹, John Schneeloch¹, Yu Tao¹, Yongqiang Cheng² and Luke Daemen²; ¹University of Virginia, United States; ²Oak Ridge National Laboratory, United States

12:15 PM B1.01.08

Spin Excitations in Co-doped FeSn Tao Xie¹, Qiangwei Yin², Qi Wang², Alexander I. Kolesnikov¹, Garrett E. Granroth¹, Douglas L. Abernathy¹, Dongliang Gong³, Zhiping Yin⁴, Hechang Lei² and Andrey Podlesnyak¹; ¹Neutron Scattering Division, Oak Ridge National Laboratory, United States; ²Department of Physics and Beijing Key Laboratory of Opto-Electronic Functional Materials & Micro-Nano Devices, Renmin University of China, China; ³Department of Physics and Astronomy, University of Tennessee, United States; ⁴Center for Advanced Quantum Studies and Department of Physics, Beijing Normal University, China

Soft Matter

SESSION C1.01: Field-Driven Structures in Soft Matter
Session Chair: Xiaodan Gu
Monday Morning, June 6, 2022
UMC Conference Room 235

10:15 AM *C1.01.01

Altering Block Copolymer (BCP) Self-Assembly and Phase Behavior via Magnetic Field Processing Grace V. Kresge, Karthika Suresh and Michelle A. Calabrese; University of Minnesota Twin Cities, United States

10:45 AM C1.01.02

Measuring and Modeling Interactions Between Orientable Nanoparticles in Flow Patrick T. Corona, Jiamin Zhang, L. Gary Leal and Matthew Helgeson; University of California Santa Barbara, United States

11:00 AM C1.01.03

Simultaneous Measurement of Structure and Rheology of Rod like Systems at High Shear Rates Katie M. Weigandt, Ryan P. Murphy, Steve Kuei, Paul Salipante and Steven D. Hudson; National Institute of Standards and Technology, United States

11:15 AM C1.01.04

Rheo-Small Angle Neutron Scattering Measurements of Shear-Thickening Colloidal Suspensions with Varying Interparticle Friction Yu-Fan J. Lee¹, Scott Brown² and Norman Wagner¹; ¹University of Delaware, United States; ²The Chemours Company, United States

11:30 AM C1.01.05

An Analytical Method for Reconstructing the Orientation Ordering of Soft Matter Constituents from Their Scattering Anisotropy Guan-Rong Huang¹, Jan Michael Carrillo¹, Yangyang Wang¹, Changwoo Do¹, Yuya Shinohara¹, Takeshi Egami¹, Lionel Porcar², Yun Liu³, Bobby G. Sumpter¹ and Wei-Ren Chen¹; ¹Oak Ridge National Laboratory, United States; ²Institut Laue-Langevin, France; ³National Institute of Standards and Technology, United States

11:45 AM C1.01.06

Extracting Meaning from Alignment Factor Peter Gilbert¹, Yun Liu^{1,2} and Paul D. Butler¹; ¹NIST Center for Neutron Research, United States; ²University of Delaware, United States

12:00 PM C1.01.07

Probing Topological Transitions of Inverse Worm-like Micelles Subject to Transient Shear Flow using Dielectric RheoSANS Noah J. Cho¹ and Jeffrey J. Richards²; ¹Corning Korea, Korea (the Republic of); ²Northwestern University, United States

Neutron Physics

SESSION G1.01: Neutron Physics I
Session Chair: Dusan Sarenac
Monday Morning, June 6, 2022
UMC Aspen Room 285, 287, 289

10:15 AM *G1.01.01

Pendellösung Interferometry Measurement of the Neutron Charge Radius and Constraints on New Physics Benjamin Heacock¹, Fujiie Takuhiro², Robert W. Haun³, Albert Henins¹, Katsuya Hirota², Takuya Hosobata⁴, Michael G. Huber¹, Masaaki Kitaguchi², Dmitry Pushin⁵, Hirohiko Shimizu², Masahiro Takeda⁴, Robert Valdillez⁶, Yutaka Yamagata⁴ and Albert Young⁶; ¹National Institute of Standards and Technology, United States; ²Nagoya University, Japan; ³Tulane University, United States; ⁴RIKEN, Japan; ⁵University of Waterloo, Canada; ⁶North Carolina State University, United States

10:45 AM G1.01.02

Measuring Higher Order Neutron-Silicon Structure Factors with Pendellösung Interferometry Using a Pulsed Beam Robert Valdillez¹, Leah Broussard², Matthew J. Frost², Robert W. Haun³, Benjamin Heacock⁴, Colin Heikes⁵, Albert Henins⁴, Katsuya Hirota⁶, Shannon F. Hoogerheide⁴, Takuya Hosobata⁷, Michael G. Huber⁴, Masaaki Kitaguchi⁶, Dmitry Pushin⁸, Hirohiko Shimizu⁶, Masahiro Takeda⁷, Fujiie Takuhiro⁶, Yutaka Yamagata⁷ and Albert Young¹; ¹North Carolina State University, United States; ²Oak Ridge National Laboratory, United States; ³University of Colorado Boulder, United States; ⁴National Institute of Standards and Technology, United States; ⁵Northrop Grumman, United States; ⁶Nagoya University, Japan; ⁷RIKEN, Japan; ⁸University of Waterloo, Canada

11:00 AM G1.01.03

Quantum Information Model for Neutron Diffraction Shows Promise for Neutron Optics Design Olivier Nahman-Lévesque¹, Dusan Sarenac¹, David Cory¹, Benjamin Heacock², Michael G. Huber² and Dmitry Pushin¹; ¹University of Waterloo, Canada; ²National Institute of Standards and Technology, United States

11:15 AM G1.01.04

Neutron Interferometry and Current Advances Dmitry Pushin¹, Benjamin Heacock², Michael G. Huber², Dusan Sarenac¹, Chandra B. Shahi³, Ivar Taminau¹ and David Cory^{1,1}; ¹University of Waterloo, United States; ²National Institute of Standards and Technology, United States; ³University of Maryland, United States

11:30 AM G1.01.05

Generation and Detection of Structured Waves of Neutrons and Light Charles W. Clark¹, Dusan Sarenac², Melissa E. Henderson², Huseyin Ekinci², Chandra B. Shahi¹, David Cory², Lisa DeBeer-Schmitt³, Michael G. Huber¹, Connor L. Kapahi² and Dmitry Pushin²; ¹National Institute of Standards and Technology, United States; ²University of Waterloo, Canada; ³Oak Ridge National Laboratory, United States

11:45 AM G1.01.06

Spin-Orbit Correlations in Neutron Beams Dusan Sarenac¹, Connor L. Kapahi¹, Wangchun Chen², Charles W. Clark³, David Cory¹, Michael G. Huber², Ivar Taminau¹, Kirill Zhernenkov⁴ and Dmitry Pushin¹; ¹University of Waterloo, Canada; ²National Institute of Standards and Technology, United States; ³Joint Quantum Institute, National Institute of Standards and Technology and University of Maryland, United States; ⁴Jülich Centre for Neutron Science at Heinz Maier-Leibnitz Zentrum, Germany

12:00 PM G1.01.07

Measurements of the Neutron's Charge Distribution; a History Michael G. Huber¹, Benjamin Heacock¹, Robert Valdille², Fujiie Takuhiro³, Masaaki Kitaguchi³, Hirohiko Shimizu³, Katsuya Hirota⁴, Masahiro Takeda⁴, Yutaka Yamagata⁴, Dmitry Pushin^{5,6} and Albert Young²; ¹NIST, United States; ²North Carolina State University, United States; ³Nagoya University, Japan; ⁴RIKEN, Japan; ⁵University of Waterloo, Canada; ⁶Institute for Quantum Computing, Canada

12:15 PM G1.01.08

Precision Measurement of the Gravitational Constant via Three-Phase Grating Neutron Interferometry Connor L. Kapahi^{1,2}, Dusan Sarenac², Charles W. Clark³, David Cory^{1,2}, Benjamin Heacock³, Michael G. Huber³, Youngju Kim³ and Dmitry Pushin^{1,2}; ¹University of Waterloo, Canada; ²Institute for Quantum Computing, Canada; ³National Institute of Standards and Technology, United States

Hard Condensed Matter

SESSION B1.02: Disorder Inhomogeneity and Strong Correlations
Session Chair: Olivier Delaire
Monday Afternoon, June 6, 2022
UMC East Ballroom 212

1:45 PM *B1.02.01

Correlated Structural Inhomogeneity in Oxide Superconductors Martin Greven; University of Minnesota, United States

2:15 PM B1.02.02

Large Change of Interlayer Vibrational Coupling with Stacking in $\text{Mo}_{1-x}\text{W}_x\text{Te}_2$ John Schneeloch¹, Yu Tao¹, Jaime A. Fernandez-Baca², Guangyong Xu³ and Despina Louca¹; ¹University of Virginia, United States; ²Oak Ridge National Laboratory, United States; ³National Institute of Standards and Technology, United States

2:30 PM B1.02.03

Role of Magnetic Defects and Defect-Engineering of Magnetic Topological Insulators Farhan Islam^{1,2}, Daniel M. Pajerowski³, jiaqiang yan³, R. J. McQueeney^{1,2} and David Vaknin^{1,2}; ¹Iowa State University of Science and Technology, United States; ²Ames Laboratory, United States; ³Oak Ridge National Laboratory, United States

2:45 PM B1.02.04

Diffuse Neutron and X-Ray Scattering from Inorganic Halide Perovskites Matthew Krogstad¹, Alex Rettie², Stephan Rosenkranz¹, Duck Young Chung¹, Mercuri Kanatzidis³, Feng Ye⁴, Yaohua Liu⁴, Xing He⁵, Tyson L. Lanigan-Atkins⁵, Olivier Delaire⁵ and Raymond Osborn¹; ¹Argonne National Laboratory, United States; ²University College London, United Kingdom; ³Northwestern University, United States; ⁴Oak Ridge National Laboratory, United States; ⁵Duke University, United States

3:00 PM B1.02.05

Impact of Site-Specific Cation Disorder on the Magnetic Structure Formation and Evolution in Entropy-Stabilized Perovskite Oxides Nathan D. Arndt¹, Brianna Musico², Keon Sahebkar¹, Qiang Zhang³, Alessandro Mazza³, Veerle Keppens², T. Z. Ward³ and Ryan Need¹; ¹University of Florida, United States; ²The University of Tennessee, Knoxville, United States; ³Oak Ridge National Laboratory, United States

3:15 PM B1.02.06

The Nature of Local Dynamic Order in $\text{CH}_3\text{NH}_3\text{PbI}_3$ Tyler C. Sterling¹, Nicholas Weadock^{2,2}, Ballal Ahmed³, Elif Ertekin³, Michael Toney^{2,2} and Dmitry Reznik^{1,2}; ¹University of Colorado, Boulder, United States; ²University of Colorado Boulder, United States; ³University of Illinois at Urbana-Champaign, United States

Advances in Neutron Facilities, Instrumentation and Software

SESSION A1.02: Software: Instrumentation
Session Chair: Paul Butler
Monday Afternoon, June 6, 2022
UMC West Ballroom 208

2:00 PM A1.02.01

Material Decomposition for Hyperspectral Neutron Tomography Charles A. Bouman¹, Gregory Buzzard, T¹, Mohammad Samin Nur Chowdhury¹, Singanallur Venkatakrishnan² and Hassina Z. Bilheux²; ¹Purdue University, United States; ²Oak Ridge National Laboratory, United States

2:30 PM A1.02.02

McStas2CAD: A Python-based Software Package for Scattering Instrument Concept Geometry Conversion Matthew J. Frost and Lee Robertson; Oak Ridge National Laboratory, United States

2:45 PM A1.02.03

Towards a User-friendly Workflow for Monte Carlo Neutron Scattering Simulations Fahima Islam, Garrett E. Granroth, Jiao Lin and Thomas Huegle; Neutron Scattering Division, United States

3:00 PM A1.02.04

Tally Components in McStas Thomas Huegle, Matthew J. Frost, Garrett E. Granroth and Lee Robertson; Oak Ridge National Laboratory, United States

3:15 PM A1.02.05

Neutron Velocity Selector Design and Impact on Simulation William T. Higgins, Thomas Huegle, Kenneth C. Littrell, Franz X. Gallmeier and Georg Ehlers; Oak Ridge National Laboratory, United States

Soft Matter

SESSION C1.02: Conjugated Polymers
 Session Chair: Megan Robertson
 Monday Afternoon, June 6, 2022
 UMC Conference Room 235

2:00 PM *C1.02.01

Analysis of the Structure and Dynamics of Conjugated Polymers via Combined Neutron Scattering and Molecular Simulations Caitlyn M. Wolf¹ and Lilo D. Pozzo^{2,2}; ¹NIST, United States; ²University of Washington, United States

2:30 PM C1.02.02

Unraveling the Side Chain Effects on Solution Structure of Donor-Acceptor Conjugated Polymers Zhiqiang Cao¹, Zhaofan Li², Miao Xiong³, Guorong Ma¹, Luke Galuska¹, Song Zhang¹, Michael Ocheje⁴, Gage Mason⁴, Changwoo Do³, Kunlun Hong⁵, Ting Lei³, Simon Rondeau-Gagné⁴, Wenjie Xia² and Xiaodan Gu¹; ¹University of Southern Mississippi, United States; ²North Dakota State University, United States; ³Peking University, China; ⁴University of Windsor, Canada; ⁵Oak Ridge National Laboratory, United States

2:45 PM C1.02.03

Effect of Polystyrene Additives and Solvent Quality on the Conformation and Self-Assembly of Conjugated Polymers in Mixed Solutions Sage Scheiwiler, Lilo D. Pozzo and Lorenzo Guio; University of Washington, United States

3:00 PM C1.02.04

CANCELLED Chain Growth Kinetics of Conjugated Polymers on Ferromagnetic Nanoparticles Investigated by SANS Lilin He; Oak Ridge National Laboratory, United States

3:15 PM C1.02.05

Combining Inelastic Neutron Scattering and Molecular Dynamics Simulation to Probe Conjugated Polymer Dynamics Xiaodan Gu¹, Zhiqiang Cao¹, Wenjie Xia² and Amirhadi Alesadi²; ¹University of Southern Mississippi, United States; ²North Dakota State University, United States

Structural Materials and Engineering

SESSION F1.01: Using Neutrons for Advanced Manufacturing Characterization
 Session Chair: Zhenzhen Yu
 Monday Afternoon, June 6, 2022
 UMC Aspen Room 285, 287, 289

2:00 PM *F1.01.01

CANCELLED Determining Residual Stress in Weldments and Additively Manufactured Parts by Neutron Diffraction Hamid Eisazadeh; Old Dominion University, United States

2:30 PM F1.01.02

Application of Neutron Grating Interferometry in Metal Additive Manufacturing Youngju Kim¹, Caitlyn M. Wolf², Sarah M. Robinson², Michael Cyrus Daugherty², Jacob M. LaManna², David Jacobson², Eli Baltic², Paul A. Kienzle², Katie M. Weigand², Nikolai N. Klimov², Michael G. Huber², Peter N. Bajcsy², Ryan P. Murphy², Jongyul Kim³, Wook Jin Lee⁴, Seung Wook Lee⁴ and Daniel S. Hussey²; ¹University of Maryland, United States; ²National Institute of Standards and Technology, United States; ³Korea Atomic Energy Research Institute, Korea (the Republic of); ⁴Pusan National University, Korea (the Republic of)

2:45 PM F1.01.03

Stresses Due to Friction Stir Weld Repair of Simulated Cracks in 304L Stainless Steel Plates Thomas Gnaupel-Herold¹, Madhumanti Bhattacharyya², Indrajit Charit², Krishnan Raja², Jens Darsell³ and Saumyadeep Jana³; ¹NIST, United States; ²University of Idaho, United States; ³PNNL, United States

3:00 PM F1.01.04

Implications of Machining on Residual Stresses and Mechanical Properties of 316L Walls fabricated via Hybrid Additive Manufacturing Christopher Fancher, Rangasayee Kannan, Kyle Saleeby, Thomas Feldhausen and Peeyush Nandwana; Oak Ridge National Laboratory, United States

Advances in Neutron Facilities, Instrumentation and Software

SESSION A1.03: Software: Data Analysis and Modeling
 Session Chair: Charles Bouman
 Monday Afternoon, June 6, 2022
 UMC West Ballroom 208

3:45 PM A1.03.01

Browser Based Visualization of Large 3D Datasets using NVIDIA IndeX Evan Carlin¹, Kevin Bruhwiler¹, Robert Nagler¹, David Bruhwiler¹, Christina Hoffmann², Andrei T. Savici², Zachary Morgan², Matthew Tucker², Alexander Kuhn³, Jörg Mensmann³, Peter Messmer³, Marc Nienhaus³, Steffen Roemer³ and Dragos Tatulea³; ¹RadiaSoft LLC, United States; ²Oak Ridge National Laboratory, United States; ³NVIDIA, Germany

4:00 PM A1.03.02

Addressing the Resource Problem Through Community. SasView: An "Open, Collaborative, Community Development" Platform for Small Angle Scattering Paul D. Butler^{1,2,3}; ¹National Institute of Standards and Technology, United States; ²University of Delaware, United States; ³The University of Tennessee, Knoxville, United States

4:15 PM A1.03.03

Event Based Data Analysis and Visualization in Neutron Spectroscopy Andrei T. Savici¹, Igor Zaliznyak², Garrett E. Granroth¹ and Ovidiu Garlea¹; ¹Oak Ridge National Laboratory, United States; ²Brookhaven National Laboratory, United States

4:30 PM A1.03.04

Do We Need an ISO Standard for the Reduction of Time-of-Flight Powder Diffraction Data? Malcolm Guthrie; Oak Ridge National Laboratory, United States

4:45 PM A1.03.05

Hyperspectral Neutron CT with Material Decomposition Thilo Balke^{1,2}, Alexander Long¹, Sven C. Vogel¹, Brendt Wohlberg¹ and Charles Bouman²; ¹Los Alamos National Laboratory, United States; ²Purdue University, United States

5:00 PM A1.03.06

Simulation of Inelastic Neutron Scattering Spectra for Direct and Indirect-Geometry Instruments with AbINS Adam Jackson and Sanghamitra Mukhopadhyay; Science and Technology Facilities Council, UK, United Kingdom

5:15 PM A1.03.07

Generic Calibration Workflow for Time-of-Flight Instruments Yuanpeng Zhang; Oak Ridge National Laboratory, United States

Materials Chemistry and Energy

SESSION E1.01: Materials Chemistry and Energy I

Session Chair: Graeme Luke
Monday Afternoon, June 6, 2022
UMC Aspen Room 285, 287, 289

3:45 PM *E4.04.01

Excess Vibrational Entropy in Metallic and Molecular Glasses [Hillary Smith](#)¹, Claire N. Saunders², Camille Bernal², Stefan H. Lohaus², Douglas L. Abernathy³, Jiao Lin³, Marios Demetriou⁴ and Brent Fultz²; ¹Swarthmore College, United States; ²Caltech, United States; ³Oak Ridge National Laboratory, United States; ⁴Glassmetal, United States

4:15 PM E4.04.02

The Two-Dimensional Nature of Dynamic Disorder in Hybrid Metal Halide Perovskite Semiconductors [Nicholas Weadock](#)¹, Tyler C. Sterling¹, Matthew Krogstad², Feng Ye³, David Vonshen⁴, Julian Vigi⁵, Ballal Ahammed⁶, Peter Gehring⁷, Hans-Georg Steinrueck⁸, Elif Ertekin⁶, Hemamala Karunadasa⁵, Dmitry Reznik¹ and Michael Toney¹; ¹University of Colorado Boulder, United States; ²Argonne National Laboratory, United States; ³Oak Ridge National Laboratory, United States; ⁴Rutherford Appleton Laboratory, United Kingdom; ⁵Stanford University, United States; ⁶University of Illinois at Urbana-Champaign, United States; ⁷National Institute of Standards and Technology, United States; ⁸Universität Paderborn, Germany

4:30 PM E4.04.03

Neutron Scattering to Characterize Adsorbents and Their Hosts [Craig M. Brown](#)¹, Ryan Klein², Benjamin A. Trump¹ and Hayden A. Evans¹; ¹NIST Center for Neutron Research, United States; ²National Renewable Energy Laboratory, United States

4:45 PM E4.04.04

Neutron Scattering Kernels for Methane I & II and Ethane III J. R. Granada¹, J.I. Márquez Damián², S. Rudic³ and G. Skoro³; ¹Argentine Atomic Energy Commission, Argentina; ²European Spallation Source ERIC, Sweden; ³ISIS Facility, United Kingdom

5:00 PM E4.04.05

Structure Modulation of LnMnFeO₄ upon Oxidation into LnMnFeO_{4.5} (Ln=Y, Yb, Lu) [Tianyu Li](#) and Efrain E. Rodriguez; University of Maryland, United States

5:15 PM E4.04.06

Diffusion Dynamics of FLiNaK Molten Salt Characterized with Quasi-Elastic Neutron Scattering [Brent J. Heuser](#), Golam Rakib and Yang Zhang; University of Illinois, United States

Hard Condensed Matter

SESSION B1.03: Novel Magnetic Structures and Excitations

Session Chair: Rebecca Dally
Monday Afternoon, June 6, 2022
UMC East Ballroom 212

4:00 PM *B1.03.01

Coexisting Singlet and Ordered Spins in a Complex Quasi-2D magnet Cu₃B₂O₆ [Bo Yuan](#)¹, Kemp Plumb², Matthew Stone³, Yiming Qiu⁴, Nicholas Butch⁴, Guangyong Xu⁴, Patrick Clancy⁵ and Young-June Kim⁶; ¹Max Planck Institute for the Structure and Dynamics of Matter, Germany; ²Brown University, United States; ³Oak Ridge National Laboratory, United States; ⁴National Institute of Standards and Technology, United States; ⁵McMaster University, Canada; ⁶University of Toronto, Canada

4:30 PM B1.03.02

Longitudinal Magnon Decay and Renormalization in Ba₂FeSi₂O₇ [Seunghwan Do](#)¹, [Hao Zhang](#)², [Travis J. Williams](#)¹, [Tao Hong](#)¹, [Ovidiu Garlea](#)¹, [Jose A. Rodriguez-Rivera](#)³, [Tae-Hwan Jang](#)⁴, [Sang-Wook Cheong](#)⁵, [Jae-Hoon Park](#)⁴, [Cristian Batista](#)² and [Andrew D. Christianson](#)¹; ¹Oak Ridge National Laboratory, United States; ²The University of Tennessee, Knoxville, United States; ³NIST Center For Neutron Research, United States; ⁴MPPHC-CPM, Max Planck POSTECH/Korea Research Initiative, Korea (the Republic of); ⁵Rutgers, The State University of New Jersey, United States

4:45 PM B1.03.03

Magnetic Structures and Dynamics in CuMnAs and Related Cu₂Sb-type Antiferromagnets [Daniel Shoemaker](#); University of Illinois at Urbana-Champaign, United States

5:00 PM B1.03.04

Bootstrapped Dimensional Crossover of a Spin Density Wave in Layered Nickelate [Anjana M. Samarakoon](#)¹, [Joerg Strempler](#)¹, [Feng Ye](#)², [Yiming Qiu](#)³, [Stephan Rosenkranz](#)¹, [Michael Norman](#)¹, [John Mitchell](#)¹ and [Daniel Phelan](#)¹; ¹Argonne National Laboratory, United States; ²Oak Ridge National Laboratory, United States; ³National Institute of Standards and Technology, United States

5:15 PM B1.03.05

Chemically-Induced Magnetic Dead Shells in Superparamagnetic Ni Nanoparticles from Polarized Small-Angle Neutron Scattering [Bhaskar Das](#)¹, [Joseph Batley](#)¹, [Kathryn L. Krycka](#)², [Julie A. Borchers](#)², [Patrick Quarterman](#)², [Caroline Korostynski](#)¹, [My Nguyen](#)¹, [Ishita Kamboj](#)¹, [Eray Aydil](#)³ and [Chris Leighton](#)¹; ¹University of Minnesota, United States; ²National Institute of Standards and Technology, United States; ³New York University, United States

Biology, Biophysics and Biotechnology

SESSION D1.01: Structure and Dynamics of Proteins and Peptide Assemblies

Session Chairs: Elizabeth Kelley and Haden Scott
Monday Afternoon, June 6, 2022
UMC Conference Room 235

4:00 PM *D1.01.01

Supramolecular Self-Assembly of Computationally Designed Coiled Coil Building Blocks [Nairiti J. Sinha](#); University of California, Santa Barbara, United States

4:30 PM D1.01.02

Studying Internal Dynamics of the Monoclonal Antibody with SANS and NSE [Roisin Donnelly](#)^{1,2}, [Yun Liu](#)^{2,1} and [Norman Wagner](#)^{1,2}; ¹University of Delaware, United States; ²NIST Center for Neutron Scattering, United States

4:45 PM D1.01.03

Small-Angle Scattering to Understand Preservative-Induced Aggregation of Poloxamer 188 in Pharmaceutical Formulations [Rachel R. Ford](#)¹, [Peter Gilbert](#)¹, [Ken Qian](#)², [Norman Wagner](#)³ and [Yun Liu](#)¹; ¹NIST Center for Neutron Research, United States; ²Eli Lilly & Company, United States; ³University of Delaware, United States

5:00 PM D1.01.04

Investigating Aggregation Surfaces In Thawed Bispecific Antibody Fragments [Julia Greenfield](#); National Institute of Standards and Technology, United States

5:15 PM D1.01.05

Characterize Conformational Flexibility of Monoclonal Antibodies
using Small-Angle Scattering Amy Xu; Louisiana State University,
United States

TUESDAY ORAL PRESENTATIONS

* Invited Paper

Plenary and Prize Session

SESSION I2.01: Plenary and Prize Session
Session Chairs: Peter Gehring, Young Lee, Katie Weigandt and
Stephen Wilson
Tuesday Morning, June 7, 2022
UMC Conference Room 235

8:15 AM FELLOWS ANNOUNCEMENT

8:30 AM *I2.01.01

SCIENCE PRIZE WINNER: Magnons are not Forever Martin Mourigal; Georgia Institute of Technology, United States

9:10 AM *I2.01.02

PLENARY: SANS Contrast Variation Experiments on Multi-Component Biological Complexes: What's the Big Deal? Susan Krueger; National Institute of Standards and Technology, United States

9:45 AM BREAK

Advances in Neutron Facilities, Instrumentation and Software

SESSION A2.05: Instrumentation: Hard Matter
Session Chair: Ken Herwig
Tuesday Morning, June 7, 2022
UMC West Ballroom 208

10:15 AM *A2.05.01

BIFROST: A Multiplexing Indirect Geometry Time-of-Flight Spectrometer for Extreme Environments Rasmus Toft-Petersen^{1,2}, Liam Whitelegg², Bjørn C. Hauback³, Philippe Bourges⁴, Christof Niedermayer⁵, Henrik M. Ronnow⁶, Kim Lefmann⁷ and Niels B. Christensen¹; ¹Technical University of Denmark, Denmark; ²European Spallation Source, Sweden; ³Institute for Energy Technology, Norway; ⁴Laboratoire Léon Brillouin, France; ⁵Paul Scherrer Institut, Switzerland; ⁶Swiss Federal Institute of Technology Lausanne, Switzerland; ⁷Niels Bohr Institute, Denmark

10:45 AM A2.05.02

Update on the Cold Spectrometer Project, PoLAR, at the NCNR Leland W. Harriger¹, Stephen D. Wilson², Jeffrey Lynn¹, Dan A. Neumann¹, Jeremy Cook¹, Donald Pierce¹ and Nancy Hadad¹; ¹National Institute of Standards and Technology, United States; ²University of California, Santa Barbara, United States

11:00 AM A2.05.03

Progress on the Design of Centaur, the Small- and Wide-Angle Neutron Scattering Diffractometer/Spectrometer at the Second Target Station of SNS Shuo Qian; Oak Ridge National Laboratory, United States

11:15 AM A2.05.04

An Update on PIONEER, a Single-Crystal Neutron Diffractometer at the Second Target Station Yaohua Liu and Peter Torres; Oak Ridge National Laboratory, United States

11:30 AM A2.05.05

Development of the Multi-Analyzer Neutron Triple Axis (MANTA) Spectrometer at ORNL Travis J. Williams¹, Garrett E. Granroth¹, Adam Aczel¹, Barry Winn¹, Adit Desai², Marcus Daum² and Martin Mourigal²; ¹Oak Ridge National Laboratory, United States; ²Georgia Institute of Technology, United States

11:45 AM A2.05.06

Upgrade of the BT-8 Diffractometer for Stress and Texture Thomas Gnaupel-Herold¹, Justin Milner² and Ed Binkley¹; ¹NIST, United States; ²NASA GRC, United States

12:00 PM A2.05.07

Polychromatic Multiplexing Stress-Strain Diffractometer Sean Fayfar¹, Jay T. Cremer² and Boris Khaykovich¹; ¹Massachusetts Institute of Technology, United States; ²Adelphi Technology, Inc., United States

12:15 PM A2.05.08

Concept for a Hybrid Neutron Diffraction/ Small Angle Scattering Instrument for Nuclear Energy Applications Kenneth C. Littrell and Georg Ehlers; Oak Ridge National Laboratory, United States

Hard Condensed Matter

SESSION B2.04: Frustrated Magnetism
Session Chair: Kemp Plumb
Tuesday Morning, June 7, 2022
UMC East Ballroom 212

10:15 AM *B2.04.01

Neutron Scattering Studies of Rare-earth-based Quantum Spin Liquid Candidates Sara Haravifard; Duke University, United States

10:45 AM B2.04.02

Evolution of Field-Induced and Impurity-Induced Magnetic Order in the Quantum Spin Liquid Candidate NaYbSe₂ Ganesh Pokharel, Soren Bear and Stephen D. Wilson; University of California, Santa Barbara, United States

11:00 AM B2.04.03

Anomalous Crystalline Electric Field Excitation in Triangular Lattice Cerium Materials Mitchell Bordelon^{1,2}, Brenden Ortiz², Pritam Bhattacharyya³, Lorenzo Posthuma², Ganesh Pokharel², Paul Sarte², Thorben Petersen³, Mohamed Eldeeb³, Garrett E. Granroth⁴, Xiaoling Wang², Mark Sherwin², Clarina dela Cruz⁴, Ulrich Roessler³, Liviu Hozoi³, Martin Mourigal⁵, Stuart Calder⁴, Craig M. Brown⁶, Daniel M. Pajerowski⁴, Arnab Banerjee⁴, Douglas L. Abernathy⁴, Eric Bauer¹, Priscila Rosa¹ and Stephen D. Wilson²; ¹Los Alamos National Laboratory, United States; ²University of California, Santa Barbara, United States; ³Institute for Theoretical Solid State Physics, Germany; ⁴Oak Ridge National Laboratory, United States; ⁵Georgia Institute of Technology, United States; ⁶National Institute of Standards and Technology, United States

11:15 AM *B2.04.04

Relaxation Dynamics in Spin Ice Ho₂Ti₂O₇ Yishu Wang¹, Timothy R. Reeder¹, Yoshitomo Karaki², Jonas Kindervater¹, Thomas Halloran¹, Nicholas C. Maliszewskyj³, Yiming Qiu³, Jose A. Rodriguez-Rivera³, Sergiy Gladchenko³, Seyed Koohpayeh¹, Satoru Nakatsuji⁴ and Collin Broholm¹; ¹Johns Hopkins University, United States; ²University of Ryukyus, Japan; ³NIST Center for Neutron Research, United States; ⁴The University of Tokyo, Japan

11:45 AM B2.04.05

Real Space and Time Dynamics of Heisenberg Antiferromagnet KCuF₃ Measured by Neutron Scattering Allen Scheie¹, Pontus Laurell², Bella Lake³, Stephen Nagler¹, Matthew Stone¹, Jean-Sebastian Caux⁴ and Alan Tennant^{2,1}; ¹Oak Ridge National Laboratory, United States; ²The University of Tennessee, Knoxville, United States; ³Helmholtz-Zentrum Berlin, Germany; ⁴University of Amsterdam, Netherlands

12:00 PM B2.04.06

Magnetic Structure of Single Crystalline Barlowite in an Applied Magnetic Field Aaron T. Breidenbach^{1,2}, Rebecca Smaha^{1,2}, Wei He^{1,2}, Adam Aczel³, Jeffrey Lynn^{4,5} and Young Lee^{1,1,2}; ¹Stanford University, United States; ²SLAC National Accelerator Laboratory, United States; ³Oak Ridge National Laboratory, United States; ⁴NIST Center for Neutron Research, United States; ⁵The University of Tennessee, Knoxville, United States

12:15 PM B2.04.07

Dynamical Ground State in the XY Pyrochlore Yb₂Ga₅Bo₇ Adam Aczel¹, Paul Sarte², Joe Paddison¹, Christopher Wiebe³, Brenden Ortiz², K.H. Hong⁴, Mitchell Bordelon², Dalmau Reig-i-Plessis⁵, Matthew Stone¹, Stuart Calder¹, Daniel M. Pajerowski¹, Lucile Mangin-Thro⁶, Yiming Qiu⁷, Paul Attfield⁴, Stephen D. Wilson², Christopher Stock⁴, Haidong Zhou⁸, Alannah Hallas⁵, Eun Sang Choi⁹ and Minseong Lee¹⁰; ¹Oak Ridge National Laboratory, United States; ²University of California, Santa Barbara, United States; ³University of Winnipeg, Canada; ⁴University of Edinburgh, United Kingdom; ⁵University of British Columbia, Canada; ⁶ILL, France; ⁷National Institute of Standards and Technology, United States; ⁸The University of Tennessee, Knoxville, United States; ⁹National High Magnetic Field Laboratory, United States; ¹⁰Los Alamos National Laboratory, United States

Soft Matter

SESSION C2.04: Grafted Polymers and Nanocomposites
Session Chair: John Riley
Tuesday Morning, June 7, 2022
UMC Conference Room 235

10:15 AM *C2.04.01

Molecular Bottlebrushes: Scattering Measurements and Simulations Michael J. Hore and Raj Mukkamala; Case Western Reserve University, United States

10:45 AM C2.04.02

Vanadium Ion Dynamics of Ionomer Nanocomposites Xueting Wang¹, Apoorva Balwani¹, Mayura S. Silva¹, Madhusudan Tyagi², Stephen Creager¹ and Eric M. Davis¹; ¹Clemson University, United States; ²National Institute of Standards and Technology (NIST) Center for Neutron Research (NCNR), United States

11:00 AM C2.04.03

Dynamically Tunable Structural Color from Micrometer-domains Yuyin Xi^{1,2} and Yun Liu^{1,2}; ¹National Institute of Standards and Technology, United States; ²University of Delaware, United States

11:15 AM C2.04.04

The Microscopic Structure and Dynamics of PEO-Silica Nanocomposite: Effect of Nanoparticle Size on Short-Time Polymer Dynamics [Jihyuk Kim](#)¹, Antonio Faraone², Orsolya Czakkel³, Michael Ohl⁴, Stephan Forster⁴ and Norman Wagner¹; ¹University of Delaware, United States; ²National Institute of Standards and Technology, United States; ³Institut Laue-Langevin, France; ⁴Research Center Juelich GmbH, Germany

11:30 AM C2.04.05

The Impact of Graft Type on the Assembly of Nanoscale Organic Hybrid Materials in Solution using Small Angle Neutron Scattering [Md Ashraful Haque](#)¹, Tony G. Feric², Sara T. Hamilton², Ah-Hyung Park² and Mark Dadmun^{1,3}; ¹University of Tennessee, Knoxville, United States; ²Columbia University, United States; ³Oak Ridge National Laboratory, United States

11:45 AM C2.04.06

Study of Interdiffusion of Bilayer Polymer Grafted Nanoparticle Films at Interfaces by Neutron Reflectivity Wenjie Wu¹, Kshitij Sharma¹, John F. Ankner², Jack Douglas³ and [Alamgir Karim](#)¹; ¹University of Houston, United States; ²Oak Ridge National Laboratory, United States; ³National Institute of Standards and Technology, United States

12:00 PM C2.04.07

A New Computational Method (CREASE) to Analyze and Interpret Small Angle Scattering Profiles from Assembled Structure in Polymer Solutions [Ziije Wu](#) and Arthi Jayaraman; University of Delaware, United States

12:15 PM C2.04.08

SESANS and SANS Studies to Understand the Presence of an Initial Opaque Phase in the Self-Assembly of Di-Block Copolymers [Antonia Denkova](#); Delft University of Technology, Netherlands

Emerging Applications of Neutron Scattering in Engineering, Arts and Sciences

SESSION H2.01: Emerging ML Applications—Neutrons and Beyond
Session Chairs: Tyler Martin and Alan Tennant
Tuesday Morning, June 7, 2022
UMC Aspen Room 285, 287, 289

10:15 AM *H2.01.01

Machine Learning: A Data-Driven Spectrometer for Neutron Scattering [Mingda Li](#); Massachusetts Institute of Technology, United States

10:45 AM *H2.01.02

Accelerate Discovery of New Chemical Synthesis Pathways using Autonomous Experiments Combined with AI Agents [Kristin Schmidt](#), Dmitry Zubarev, Sarath swaminathan, Renato Fontoura de Gusmao Cerqueira, Nathaniel Park, Tim Erdmann, Daniel Sanders and Jed Pitera; IBM Research, United States

11:15 AM *H2.01.03

Autonomous Control at X-Ray Sources from Accelerator to Detector [Daniel Ratner](#); SLAC, United States

Soft Matter

SESSION C2.05: Surfactants and Emulsions
Session Chair: John Riley
Tuesday Afternoon, June 7, 2022
UMC Conference Room 235

1:45 PM *C2.05.01

Using Neutrons to Probe the Structure of PFAS Surfactant Micelles [Marina Tsianou](#); University at Buffalo, The State University of New York, United States

2:15 PM C2.05.02

Controllable Nanostructures via a Bicellar Template – Characterized by Contrast-Variation SANS [Chung-Hao Liu](#) and Mu-Ping Nieh; University of Connecticut, United States

2:30 PM C2.05.03

CANCELLED Chemical and Physical Control on the Nanostructures of Ionic Amphiphilic Oligomer Assemblies: Elucidated by Spectroscopy and Neutron Reflectivity [Zening Liu](#), Hanyu Wang, Tianyu Li, Lu Lin, John Katsaras, Kunlun Hong, Jim Browning, Benjamin Doughty and Charles P. Collier; Oak Ridge National Laboratory, United States

2:45 PM C2.05.04

Self-Association in Pluronic®-Cationic Surfactant Mixed System: A Scattering and Molecular Dynamics Approach [Ketan C. Kuperkar](#)¹, German Perez-Sanchez² and Pratap Bahadur¹; ¹Veer Narmad South Gujarat University (VNSGU), Surat, India; ²Campus Universitario de Santiago, Portugal

3:00 PM C2.05.05

Variation of Bicontinuous Microemulsion Surface Structures on Hydrophilic and Amphiphilic Substrates [Luke Heroux](#)^{1,2}, Adam Imel², Brian Barth², Thomas Zawodzinski² and Mark Dadmun^{2,1}; ¹Oak Ridge National Laboratory, United States; ²The University of Tennessee, Knoxville, United States

3:15 PM C2.05.06

Measuring Co-surfactant Demixing Across Internal Nanodroplet Interfaces by SANS [Tanvi Sheth](#), Nairiti Sinha and Matthew Helgeson; University of California, Santa Barbara, United States

Hard Condensed Matter

SESSION B2.05: Spin Glass and Complex Magnetic Structures
Session Chair: Martin Mourigal
Tuesday Afternoon, June 7, 2022
UMC East Ballroom 212

2:00 PM B2.05.01

Highly Tunable Magnetic Phases in Transition Metal Dichalcogenide Fe_{1/3+δ}NbS₂ [Shan Wu](#)^{1,2}, Zhijun Xu³, Shannon Haley^{2,1}, Sophie Weber^{2,1}, Eran Maniv^{2,1}, Yiming Qiu³, Adam Aczel⁴, Jeffrey Neaton^{2,1}, James Analytis^{1,2} and Robert Birgeneau^{1,2}; ¹University of California, Berkeley, United States; ²Lawrence Berkeley National Laboratory, United States; ³NIST Center for Neutron Research, United States; ⁴Oak Ridge National Laboratory, United States

2:30 PM B2.05.02

Inelastic Neutron Scattering Study of the Anisotropic Spin Glass Fe₂TiO₅ Yu Li¹, P. G. LaBarre², Daniel M. Pajerowski³, A. P. Ramirez², Stephan Rosenkranz¹ and Daniel Phelan¹; ¹Argonne National Laboratory, United States; ²Univ. California Santa Cruz, United States; ³Oak Ridge National Laboratory, United States

2:45 PM B2.05.03

Freezing of a Disorder Induced Spin Liquid with Strong Quantum Fluctuations Xiao Hu¹, Daniel M. Pajerowski², Depei Zhang², Andrey Podlesnyak², Yiming Qiu³, Qing Huang⁴, Haidong Zhou⁴, Israel Klich¹, Alexander I. Kolesnikov², Matthew Stone² and Seung-Hun Lee¹; ¹University of Virginia, United States; ²Oak Ridge National Laboratory, United States; ³National Institute of Standards and Technology, United States; ⁴The University of Tennessee, Knoxville, United States

3:00 PM B2.05.05

Competing Magnetic Ground States of NaCo₂(SeO₃)₂(OH): A New Sawtooth Structure with Co²⁺ S = 3/2 Duminda Sanjeeva¹, Ovidiu Garlea² and Keith Taddei²; ¹University of Missouri, United States; ²Oak Ridge National Laboratory, United States

Neutron Physics

SESSION G2.02: Neutron Physics II
Session Chair: Leah Broussard
Tuesday Afternoon, June 7, 2022
UMC Aspen Room 285, 287, 289

2:00 PM *G2.02.01

Fundamentals of Entangled Neutron Beams Gerardo Ortiz^{1,2}; ¹Indiana University, United States; ²Indiana University Quantum Science and Engineering Center, United States

2:30 PM G2.02.02

How Entangled Neutron Beams Unveil Chiral Spin Orders Abu Ashik Md Irfan and Gerardo Ortiz; Indiana University, United States

2:45 PM G2.02.03

Spin-textured Neutron Beams and Orbital Angular Momentum Sam McKay^{1,1,1}, Quan Le Thien^{1,1}, Fankang Li², Abu Irfan^{1,1}, Jiazhou Shen^{1,1,1}, Eric B. Dees^{1,1,1}, Stephen J. Kuhn^{1,1,1}, David V. Baxter^{1,1,1}, Gerardo Ortiz^{1,1} and Roger Pynn^{1,1,1}; ¹Indiana University, United States; ²Oak Ridge National Laboratory, United States

3:00 PM G2.02.04

New Determination of the ³He Neutron Incoherent Scattering Length Δb' Earl Babcock; Juelich Centre for Neutron Science, Germany

Emerging Applications of Neutron Scattering in Engineering, Arts and Sciences

SESSION H2.02: Emerging ML Applications—Diffraction to Dynamics

Session Chair: Alan Tennant
Tuesday Afternoon, June 7, 2022
UMC West Ballroom 208

2:00 PM H2.02.01

Using AI to Determine Space Group from Neutron Powder Diffraction Data William Ratcliff^{1,2}, Haotong Liang², Aaron G. Kusne^{1,2} and Ichiro Takeuchi²; ¹NIST, United States; ²University of Maryland, United States

2:15 PM H2.02.02

Super-resolution Dispersions Measured by Direct Geometry Spectrometers Jiao Lin¹, Gabriele Sala¹, Matthew Stone² and Andrew D. Christianson²; ¹Oak Ridge National Lab, United States; ²Oak Ridge National Laboratory, United States

2:30 PM H2.02.03

A Method for Determining Mid-Range Order in Semi-Crystalline Materials using Inelastic Neutron Scattering and Density Functional Theory Makena Dettmann¹, Lucas S. Cavalcante¹, John Anthony² and Adam Moule¹; ¹University of California, Davis, United States; ²University of Kentucky, United States

2:45 PM H2.02.04

Machine Learning for Sample Alignment in Neutron Scattering Experiments Abdourahmane Diaw¹, Kevin Bruhwiler¹, Chris Hall¹, Jonathan Edelen¹, Stuart Calder² and Christina Hoffmann²; ¹RadiaSoft LLC, United States; ²Oak Ridge National Laboratory, United States

3:00 PM H2.02.05

Autonomous Discovery of the Magnetic Order Parameter with ANDiE, the Autonomous Neutron Diffraction Explorer Austin McDannald¹, Matthias D. Frontzek², Andrei T. Savici², Mathieu Doucet², Efrain E. Rodriguez^{3,4}, Kate Meuse⁵, Jessica Opsahl-Ong⁶, Daniel Samarov¹, Ichiro Takeuchi^{3,4}, William Ratcliff^{1,3} and Aaron G. Kusne^{1,3}; ¹National Institute of Standards and Technology, United States; ²Oak Ridge National Laboratory, United States; ³University of Maryland, United States; ⁴Maryland Quantum Materials Center, United States; ⁵Cornell University, United States; ⁶Rice University, United States

3:15 PM H2.02.06

Modeling Multi-Crystalline and Amorphous INS Spectra: Simulation Methods, Accuracy, and Expence Makena Dettmann¹, Lucas S. Cavalcante¹, Daniel Vong¹, Nir Goldman² and Adam Moule¹; ¹UC Davis, United States; ²Lawrence Livermore National Laboratory, United States

WEDNESDAY ORAL PRESENTATIONS

* Invited Paper

Plenary and Prize Session

SESSION I3.01: Plenary and Prize Session
Session Chairs: Peter Gehring, Young Lee, Katie Weigandt and Stephen Wilson
Wednesday Morning, June 8, 2022
UMC Conference Room 235

8:30 AM *I3.01.01

SUSTAINED RESEARCH PRIZE WINNER: Neutrons, Biological Membranes, and Future Directions John Katsaras; Oak Ridge National Laboratory, United States

9:10 AM *I3.01.02

PLENARY: Neutron Scattering from Exotic Magnetic Ground States Bruce D. Gaulin; McMaster University, Canada

9:45 AM BREAK

Advances in Neutron Facilities, Instrumentation and Software

SESSION A3.06: Instrumentation: Soft Matter and Imaging
Session Chair: John Barker
Wednesday Morning, June 8, 2022
UMC West Ballroom 208

10:15 AM *A3.06.01

Performance Upgrades to the BT-2 Neutron Imaging Facility Jacob M. LaManna¹, Michael Cyrus Daugherty^{1,2}, Youngju Kim^{1,2}, Eli Baltic¹, Daniel S. Hussey¹ and David Jacobson¹; ¹National Institute of Standards and Technology, United States; ²University of Maryland, United States

10:45 AM A3.06.02

INFER: Dark-field Tomography of Hierarchical Structures Daniel S. Hussey¹, Caitlyn M. Wolf¹, Youngju Kim², Sarah M. Robinson¹, Michael Cyrus Daugherty², Ryan P. Murphy¹, Paul A. Kienzle¹, Nikolai N. Klimov¹, Michael G. Huber¹, Peter N. Bajcsy¹, David Jacobson¹, Jacob M. LaManna¹ and Katie M. Weigandt¹; ¹National Institute of Standards and Technology, United States; ²University of Maryland, United States

11:00 AM A3.06.03

Upgrade of the Neutron Spin Echo Spectrometer at the NIST Center for Neutron Research Antonio Faraone¹, Norman Wagner², Michihiro Nagao^{1,3,2}, Christoph Brocker^{1,3}, Nicholas C. Maliszewskyj¹, Michael Monkenbusch⁴, Olaf Holderer⁴, Tadeusz Kozielski⁴ and Dan A. Neumann¹; ¹NIST Center for Neutron Research, United States; ²University of Delaware, United States; ³University of Maryland, United States; ⁴Jülich Centre for Neutron Science, Germany

11:15 AM A3.06.04

The Quite Intense Kinetics Reflectometer (QIKR) at the Spallation Neutron Source (SNS) Second Target Station (STS) John F. Ankner, Danielle Wilson, Rudy Thermer, Scott Dixon and Zeke Salazar; Oak Ridge National Laboratory, United States

11:30 AM A3.06.05

Recent Advances at the Cold Neutron Imaging Instrument at High Flux Isotope Reactor Yuxuan Zhang¹, Hassina Z. Bilheux¹, Erik Stringfellow¹, Jean Bilheux¹, Jonathan Smith¹, Les Butler², Kyungmin Ham², Wieslaw Stryjewski² and Michael Vincent²; ¹Oak Ridge National Laboratory, United States; ²Louisiana State University, United States

11:45 AM A3.06.06

Angle-encoding Radiography with Neutrons Sam McKay^{1,1,1}, Fankang Li², David V. Baxter^{1,1,1} and Roger Pynn^{1,1,1}; ¹Indiana University, United States; ²Oak Ridge National Laboratory, United States

12:00 PM A3.06.07

Dynamic Microfluidic Modulation of Neutrons and x-rays Ryan P. Murphy, Sarah M. Robinson, Jacob M. LaManna, Caitlyn M. Wolf, Youngju Kim, Michael Cyrus Daugherty, Michael G. Huber, Peter N. Bajcsy, David Jacobson, Paul A. Kienzle, Katie M. Weigandt, Daniel S. Hussey and Nikolai N. Klimov; National Institute of Standards and Technology, United States

12:15 PM A3.06.08

The VENUS iMaging Beamline Construction Project at the Spallation Neutron Source Hassina Z. Bilheux, Tommy Thomasson, Aaron Hanks, Amy Byrd, Amy Jones, Harley Skorpenske, Erik Stringfellow, Bill McHargue, Irina Popova, Franz X. Gallmeier, Jean Bilheux, Ryan Mangus, Scott Keener and George Rennich; Oak Ridge National Laboratory, United States

Hard Condensed Matter

SESSION B3.06: Phonons and Lattice Dynamics
Session Chair: Dmitry Reznik
Wednesday Morning, June 8, 2022
UMC East Ballroom 212

10:15 AM B3.06.01

Inelastic Neutron Scattering Measurements of New Spectral Features from Nonlinear Phonon Interactions Brent Fultz¹, Yang Shen¹, Claire N. Saunders¹, Camille Bernal¹, Michael E. Manley² and Vladimir Ladygin¹; ¹California Institute of Technology, United States; ²Oak Ridge National Laboratory, United States

10:30 AM B3.06.02

Structural Fluctuations, Complex Ground-States and Strongly Anharmonic Phonons in Metal Halide Perovskites Olivier Delaire¹, Xing He¹, Tyson L. Lanigan-Atkins¹, Matthew Krogstad², Mayanak K. Gupta¹, Chengjie Mao¹, Daniel M. Pajerowski³, Douglas L. Abernathy³, Feng Ye³, Tao Hong³, Songxue Chi³, Yaohua Liu³, Guangyong Xu⁴, Zhijun Xu⁴, Stephan Rosenkranz² and Raymond Osborn²; ¹Duke University, United States; ²Argonne National Laboratory, United States; ³Oak Ridge National Laboratory, United States; ⁴National Institute of Standards and Technology, United States

10:45 AM B3.06.03

Mutual Spin-Phonon Driving Effects and Phonon Eigenvector Renormalization in NiO Qiyang Sun¹, Bin Wei^{1,2}, Yaokun Su¹, Hillary Smith³, Jiao Lin⁴, Douglas L. Abernathy⁴ and Chen Li^{1,1}; ¹University of California, Riverside, United States; ²Henan Key Laboratory of Materials on Deep-Earth Engineering, School of Materials Science and Engineering, China; ³Swarthmore College, United States; ⁴Oak Ridge National Laboratory, United States

11:00 AM B3.06.04

Role of Anharmonicity in the High-temperature Thermodynamics of Chromium Camille Bernal¹, Hillary Smith², Claire N. Saunders¹, Dennis S. Kim³, Douglas L. Abernathy⁴ and Brent Fultz¹; ¹California Institute of Technology, United States; ²Swarthmore College, United States; ³Massachusetts Institute of Technology, United States; ⁴Oak Ridge National Laboratory, United States

11:15 AM B3.06.05

Flattening of the Acoustic Phonon Branches in the Clathrate Ba₈Ga₁₆Ge₃₀ Susmita Roy¹, Tyler C. Sterling¹, Dan Parshall¹, Eric Toberer², Mogens Christensen³, Devashibhai T. Adroja⁴ and Dmitry Reznik^{1,5}; ¹UNIVERSITY OF COLORADO BOULDER, United States; ²Colorado School of Mines, United States; ³University of Aarhus, Denmark; ⁴ISIS Facility, STFC, Rutherford Appleton Laboratory, United Kingdom; ⁵Center for Experiments on Quantum Materials, University of Colorado Boulder, United States

11:30 AM B3.06.06

Atomic Tunneling in BaTiS₃ Raphael P. Hermann, Michael E. Manley, Duncan H. Moseley, Daniel M. Pajerowski, Barry Winn and Eugene Mamontov; Oak Ridge National Laboratory, United States

11:45 AM B3.06.07

Investigation of the Thermophysical Properties of Cuprite by Inelastic Neutron Scattering and Machine Learning Calculations Claire N. Saunders¹, Vladimir Ladygin¹, Dennis S. Kim¹, Olle Hellman², Hillary Smith³, Camille Bernal¹ and Brent Fultz¹; ¹California Institute of Technology, United States; ²Linköping University, Sweden; ³Swarthmore College, United States

12:00 PM B3.06.08

Phason Dominated Thermal Transport in Fresnoite Michael E. Manley¹, Andrew May¹, Barry Winn¹, Douglas L. Abernathy¹, Raffi Sahul² and Raphael P. Hermann¹; ¹Oak Ridge National Laboratory, United States; ²Amphenol Corporation, United States

Biology, Biophysics and Biotechnology

SESSION D3.02: Insights into Lipid Membrane Properties and Protein-Lipid Interactions

Session Chairs: Roisin Donnelly and Nairiti Sinha
Wednesday Morning, June 8, 2022
UMC Conference Room 235

10:15 AM *D3.02.01

The Orientation of KRAS at the Plasma Membrane Helps Recruit RAF Kinase Andrew Stephen; Frederick National Laboratory for Cancer Research, United States

10:45 AM D3.02.02

Characterization of Structurally Disordered Peripheral Membrane Proteins with Neutron Reflectometry Frank Heinrich^{1,2}; ¹Carnegie Mellon University, United States; ²National Institute of Standards and Technology, United States

11:00 AM D3.02.04

The Transmembrane Helix of pHLIP Slows Down Membrane Thickness Fluctuations and Translational Diffusion Haden L. Scott¹, Violeta Burns-Casamayor², Andrew Dixon³, Robert Standaert⁴, Christopher B. Stanley¹, Laura Stingaciu¹, Jan Michael Carrillo¹, Bobby G. Sumpter¹, John Katsaras¹, Wei Qiang⁵, Frederick Heberle³, Blake Mertz², Rana Ashkar⁶ and Francisco Barrera³; ¹Oak Ridge National Laboratory, United States; ²West Virginia University, United States; ³The University of Tennessee, Knoxville, United States; ⁴East Tennessee State University, United States; ⁵Binghamton University, The State University of New York, United States; ⁶Virginia Tech, United States

11:15 AM D3.02.05

Relationship between Viscosity and Acyl Tail Dynamics in Lipid Bilayers Michihiro Nagao^{1,2,3}, Elizabeth Kelley¹, Antonio Faraone¹, Makina Saito⁴, Yoshitaka Yoda⁵, Masayuki Kurokuzu⁶, Shinichi Takata⁷, Makoto Seto⁶ and Paul D. Butler¹; ¹National Institute of Standards and Technology, United States; ²University of Maryland, United States; ³University of Delaware, United States; ⁴Tohoku University, Japan; ⁵Japan Synchrotron Radiation Research Institute, Japan; ⁶Kyoto University, Japan; ⁷J-PARC, Japan

11:30 AM D3.02.06

The Structural Origins of Lipid Bilayer Dynamic Response James E. Fitzgerald¹, Elizabeth Kelley², Norman Wagner¹, Michihiro Nagao² and Edward Lyman^{1,1}; ¹University of Delaware, United States; ²National Institute of Standards and Technology, United States

11:45 AM D3.02.07

Determination of Sphingomyelin Molecular Structure using SANS, SAXS, NMR, and Molecular Dynamics Jacob J. Kinnun^{1,1}, Milka Doktorova², Norbert Kučerka^{3,4}, Jianjun Pan⁵, Drew Marquardt⁶, Haden L. Scott^{1,1}, Richard Venable⁷, Richard Pastor⁷, Stephen Wassall⁸, Frederick Heberle⁹ and John Katsaras^{1,9,1}; ¹Oak Ridge National Laboratory, United States; ²University of Texas Health Science Center, United States; ³Joint Institute for Nuclear Research, Russian Federation; ⁴Comenius University, Slovakia; ⁵University of South Florida, United States; ⁶University of Windsor, Canada; ⁷National Institutes of Health, United States; ⁸Indiana University-Purdue University Indianapolis, United States; ⁹University of Tennessee, United States

12:00 PM D3.02.08

Structural Studies of mRNA Vaccines using Combined SANS/SAXS and CryoEM Thomas E. Cleveland^{1,2}, Manuel Carrasco³, Lacey Wright³ and Michael Buschmann³; ¹National Institute of Standards and Technology, United States; ²University of Maryland, United States; ³George Mason University, United States

Materials Chemistry and Energy

SESSION E3.02: Materials Chemistry and Energy II

Session Chair: Allyson Fry-Petit
Wednesday Morning, June 8, 2022
UMC Aspen Room 285, 287, 289

10:15 AM *E3.01.01

Search for Broken Symmetries in Kagome Lattice Superconductor CsV₃Sb₅ Graeme Luke^{1,2}, Jonah Gautreau¹, Sudarshan Sharma¹, Mathew Pula¹, Yasutomo Uemura³, Stephen D. Wilson⁴, Brenden Ortiz⁴ and Yuzki Oey⁴; ¹McMaster University, Canada; ²TRIUMF, Canada; ³Columbia University, United States; ⁴University of California, Santa Barbara, United States

10:45 AM E3.01.02

Phonon Dynamics and Thermal Transport in Ti₃VSe₄ Yoel F. Lencina Wendt¹, Qingan Cai¹, Brian Sales², Ayman Said³ and Chen Li^{2,1,1}; ¹University of California, Riverside, United States; ²Oak Ridge National Laboratory, United States; ³Argonne National Laboratory, United States

11:00 AM E3.01.03

High Throughput Operando Neutron Diffraction at the Nanoscale Ordered Materials Diffractometer (NOMAD) Jue Liu, Zhijia Du, Xianyang Wu and Michelle Everett; Oak Ridge National Laboratory, United States

11:15 AM E3.01.04

In Situ Observation of Dynamic Electrode-Electrolyte Interfaces under Li-Mediated Electrochemical N₂ Reduction Conditions Sarah J. Blair^{1,2}, Mathieu Doucet³, Jim Browning³, Adam C. Nielander², Alessandro Gallo² and Thomas F. Jaramillo^{1,2}; ¹Stanford University, United States; ²SLAC National Accelerator Laboratory, United States; ³Oak Ridge National Laboratory, United States

11:30 AM E3.01.05

Lithium-Polymer Batteries—A Microscopic View! Michael Ohl^{1,2}, Juergen Allgaier¹, Marcella Cabrera-Berg¹, Changwoo Do³, Yuya Doi⁴, Rene Halver¹, Eugene Mamontov³, Ridhima Nain³, Naresh C. Osti³, Godehard Sutmann^{1,6}, Hui Wang⁷, Stephan Forster¹ and Takeshi Egami^{3,2}; ¹Forschungszentrum Jülich GmbH, Germany; ²Univ. Tennessee, United States; ³Oak Ridge National Laboratory, United States; ⁴Nagoya University, Japan; ⁵Indian Institute of Technology Delhi, India; ⁶Ruhr-University Bochum, Germany; ⁷Stanford Linear Accelerator Center, United States

11:45 AM E3.01.06

Tuning Chemical Short-Range Order in Complex High-Entropy Oxides Katharine Page^{1,2}, Xin Wang¹ and Bo Jiang²; ¹The University of Tennessee, Knoxville, United States; ²Oak Ridge National Laboratory, United States

Advances in Neutron Facilities, Instrumentation and Software

SESSION A3.07: Instrumentation: Sample Environment
Session Chair: Sergiy Gladchenko
Wednesday Afternoon, June 8, 2022
UMC West Ballroom 208

2:00 PM *A3.07.01

Advances in High-Pressure Neutron Scattering at Oak Ridge National Laboratory Mary-Ellen Donnelly; Oak Ridge National Laboratory, United States

2:30 PM A3.07.02

A Pre-Conceptual Design of a 20 – 25 T Vertical-Field Split Magnet for Neutron Scattering Mark Bird¹, Scott Bole¹, Ken Herwig², Dylan Kolb-Bond¹ and Jack Toth¹; ¹NHMFL - FSU, United States; ²ORNL, United States

2:45 PM A3.07.03

RheoSurfR – Neutron Reflectivity-Rheology Sample Environment for Studying Soft Matter, Biology, and Materials Processing at Air-Liquid and Liquid-Liquid Interfaces Benjamin R. Thompson¹, Mason Keresty², Hannah Nevel², Richard Dombrowski² and Norman Wagner^{1,2}; ¹University of Delaware, United States; ²STF Technologies LLC, United States

3:00 PM A3.07.04

4D Rheo-SANS: A Novel Sample Environment for Measuring Structure-Property Relationships in Soft Matter and Biological Materials Nathan Alexander¹, Jonathan Kopf², Benjamin R. Thompson¹, Richard Dombrowski² and Norman Wagner^{1,2}; ¹University of Delaware, United States; ²STF Technologies LLC, United States

3:15 PM A3.07.05

Rapid and Controllable Cooling of High-Temperature Neutron Furnace Yue Xiao¹, Chien-Hua Chen¹, Patryk Radyjowski¹, Max Demydovych¹, Chad Burkholder¹ and Rebecca A. Mills²; ¹Advanced Cooling Technologies, Inc, United States; ²Oak Ridge National Laboratory, United States

Hard Condensed Matter

SESSION B3.07: Orbital Physics and Beyond Dipolar Magnetism
Session Chair: Benjamin Ueland
Wednesday Afternoon, June 8, 2022
UMC East Ballroom 212

2:00 PM B3.07.01

Anisotropic Spin Wave Excitations in a Multiferroic BiFeO₃ Masaaki Matsuda¹, Depei Zhang¹, Sachith Dissanayake¹, Barry Winn¹, Toshimitsu Ito² and Randy Fishman¹; ¹Oak Ridge National Laboratory, United States; ²AIST, Japan

2:15 PM B3.07.02

Magnetism and Symmetry Lowering in the 5d¹ Double Perovskite Ba₂NaOsO₆ Probed with Polarized Neutron Diffraction and Total Scattering Stuart Calder, Yan Wu, Jue Liu and Jiaqiang Yan; Oak Ridge National Laboratory, United States

2:30 PM B3.07.03

Dual Orbital Degeneracy Lifting in a Strongly Correlated Electron System Emil Bozin¹, Robert J. Koch¹, Ryan Sinclair², Marshall McDonnell³, Runze Yu¹, Milinda Abeykoon¹, Simon Billinge¹, Alexei Tsvelik¹, Matthew Tucker³, Haidong Zhou² and Weiguo Yin¹; ¹Brookhaven National Laboratory, United States; ²The University of Tennessee, Knoxville, United States; ³Oak Ridge National Laboratory, United States

2:45 PM B3.07.04

Lattice and Magnetic Dynamics in YVO₃ Mott Insulator Studied by Neutron Scattering and First-Principles Calculations Yu Tao¹, Douglas L. Abernathy², Tianran Chen³, Taner Yildirim^{3,4}, Jiaqiang Yan^{2,5}, Jianshi Zhou⁶, John Goodenough⁶ and Despina Louca¹; ¹University of Virginia, United States; ²Oak Ridge National Laboratory, United States; ³National Institute of Standards and Technology, United States; ⁴University of Pennsylvania, United States; ⁵The University of Tennessee, Knoxville, United States; ⁶The University of Texas at Austin, United States

3:00 PM B3.07.05

The Detection of Magneto-Electric Multipoles with Spherical Neutron Polarimetry: CuO and LiMnPO₄ Jian Rui Soh^{1,2}, Andrea Urru³, Paola Forino¹, Rasmus Toft-Petersen², NICOLA SPALDIN³ and Henrik M. Ronnow¹; ¹EPFL, Switzerland; ²Technical University of Denmark, Denmark; ³ETH Zurich, Switzerland

Soft Matter

SESSION C3.06: Bio-Inspired Soft Matter
Session Chair: Javen Weston
Wednesday Afternoon, June 8, 2022
UMC Conference Room 235

2:00 PM *C3.06.01

Understanding and Controlling the Solution Self-Assembly of Amphiphilic Polypeptoid Block Copolymers Donghui Zhang; Louisiana State University, United States

2:30 PM C3.06.02

Phase Morphology of Amorphous Solid Dispersions using Small-Angle Neutron Scattering and Neutron Interferometry Caitlyn M. Wolf¹, Youngju Kim^{2,1}, Sarah M. Robinson¹, Michael Cyrus Daugherty^{2,1}, Ryan P. Murphy¹, Nikolai N. Klimov¹, Michael G. Huber¹, Peter N. Bajcsy¹, David Jacobson¹, Jacob M. LaManna¹, Paul A. Kienzle¹, Daniel S. Hussey¹ and Katie M. Weigandt¹; ¹National Institute of Standards and Technology, United States; ²University of Maryland, United States

2:45 PM C3.06.03

Microstructures of Starch Granules as Revealed by Scattering Techniques Yimin Mao^{1,2} and Yong-Cheng Shi³; ¹National Institute of Standards and Technology, United States; ²University of Maryland, United States; ³Kansas State University, United States

3:00 PM C3.06.04

Glucose Induced Self-Assembly and Phase Separation in Hydrophilic Triblock Copolymer Solution and its Governing Mechanism Divya K. Patel¹, Ketan C. Kuperkar¹ and Pratap Bahadur²; ¹Sardar Vallabhbhai National Institute of Technology (SVNIT), India; ²Veer Narmad South Gujarat University (VNSGU), India

3:15 PM C3.06.05

Diffusion Coefficients of Anisotropic Particles Measured by NSE: A Case Study Using Monoclonal Antibody Yanqin Zhai¹, Nicos Martys², William L. George², Joseph E. Curtis², Jannatun Nayem³, Yang Zhang¹ and Yun Liu^{2,3}; ¹University of Illinois at Urbana-Champaign, United States; ²National Institute of Standards and Technology, United States; ³University of Delaware, United States

3:30 PM C3.06.06

Understanding the Microscopic Mechanism Behind the Dielectric Relaxation in Water using Inelastic Neutron Scattering Yadu Krishnan Sarathchandran¹, Yuya Shinohara², Wojciech Dmowski¹, Eugene Mamontov², Daniel M. Pajeroski² and Takeshi Egami^{1,2}; ¹University of Tennessee, Knoxville, United States; ²Oak Ridge National Laboratory, United States

Structural Materials and Engineering

SESSION F3.02: Using Neutrons for Large Scale Engineering Applications

Session Chair: Jeffrey Bunn
Wednesday Afternoon, June 8, 2022
UMC Aspen Room 285, 287, 289

2:00 PM *F1.02.01

Application of Neutron Diffraction for Industrial Materials & Manufacturing Development Shenyang Huang; GE Research, United States

2:30 PM F1.02.02

Effects of Mechanical Deformation on Dislocation Density, Phase Separation and Hydrogen Diffusion in Pipeline Steel Zachary Buck¹, Matthew Connolly¹, May Martin¹, Damian Lauria¹, Peter Bradley¹, Andrew Slifka¹, Ke An², Yan Chen² and Naresh C. Osti²; ¹National Institute of Standards and Technology, United States; ²Oak Ridge National Laboratory, United States

2:45 PM F1.02.03

Damage Modes in Hydrogen-Assisted Fatigue Probed by Neutron and X-Ray Scattering Matthew Connolly¹, Zack Buck¹, May Martin¹, Robert Amaro², Peter Bradley¹, Damian Lauria¹, Jun-Sang Park³ and Andrew Slifka¹; ¹National Institute of Standards and Technology, United States; ²AMTT, United States; ³Argonne National Laboratory, United States

3:00 PM F1.02.04

Elevated Temperature Dislocation Density Reductions in Cold-Worked ASTM A586 High-Strength Steel Wire Jumari A. Robinson, Adrian Brugger and Raimondo Betti; Columbia University, United States

Biology, Biophysics and Biotechnology

SESSION D3.03: New Tools and Methods for Biological Scattering Experiments

Session Chairs: Rachel Ford and Jacob Kinnun
Wednesday Afternoon, June 8, 2022
UMC Conference Room 235

3:45 PM D3.03.01

Time-Resolved In-Situ Reaction SANS Study Details Structural Changes to Noncellulosic Biopolymer in Switchgrass Plant Cell Wall Sai Venkatesh Pingali¹, Zhi Yang², Marcus Foston³, Hugh O'Neill¹, Volker S. Urban¹, Arthur Ragauskas⁴, Barbara Evans¹ and Brian Davison¹; ¹Oak Ridge National Laboratory, United States; ²Massey University, New Zealand; ³Washington University in St. Louis, United States; ⁴The University of Tennessee, Knoxville, United States

4:00 PM D3.03.02

Developing DENSS for Neutron Contrast Variation Data -- DENSS Multiple Shuo Qian; Oak Ridge National Laboratory, United States

4:15 PM D3.03.03

Structure-Based Calculation of Biomolecular Neutron Scattering Contrast Match Points with Explicit Deuteration Alan Hicks¹, Paul Abraham¹, Qiu Zhang¹, Jeremy Smith^{2,1}, Hugh O'Neill¹ and Loukas Petridis¹; ¹Oak Ridge National Laboratory, United States; ²The University of Tennessee, Knoxville, United States

4:30 PM D3.03.04

Applying New Models to Describe Biomembrane Structure and Solvent Partitioning in Living Cell Membranes and Membrane Mimics Luoxi Tan¹, Micholas Smith^{2,3}, Haden L. Scott³, John Katsaras³, Sai Venkatesh Pingali³, Jeremy Smith^{2,3}, Brian Davison³, James Elkins³ and Jonathan Nickels¹; ¹University of Cincinnati, United States; ²The University of Tennessee, Knoxville, United States; ³Oak Ridge National Laboratory, United States

4:45 PM D3.03.05

Low-Background Neutron Reflectometry Measurement Strategies for Solid/Liquid Interfaces David P. Hoogerheide¹, Joe Dura¹, Frank Heinrich^{1,2}, Brian Maranville¹, Paul A. Kienzle¹ and Charles F. Majkrzak¹; ¹National Institute of Standards and Technology, United States; ²Carnegie Mellon University, United States

Materials Chemistry and Energy

SESSION E3.03: Materials Chemistry and Energy III

Session Chair: Hillary Smith
Wednesday Afternoon, June 8, 2022
UMC Aspen Room 285, 287, 289

3:45 PM E3.02.01

The Symmetry Relationship Between Magnetic Order and Toroidal Moments in $\text{LiM}_x\text{Mn}_{1-x}\text{PO}_4$ ($M = \text{Co}, \text{Fe}$) Stephanie Gnewuch and Efrain E. Rodriguez; University of Maryland, United States

4:00 PM E3.02.02

Electronic Conduction Induced Dendrite Formation in Solid Electrolytes [Fudong Han](#); Rensselaer Polytechnic Institute, United States

4:15 PM E3.02.03

Raising the Transition Temperature of Olivines $\text{Li}_{1-x}\text{Fe}_x\text{Mn}_{1-x}\text{PO}_4$ Through Selective Li-Deintercalation [Timothy J. Diethrich](#) and Efrain E. Rodriguez; University of Maryland, College Park, United States

4:30 PM E3.02.04

Van Hove Correlation Function of Magnesium Chloride Molten Salt [Yuya Shinohara](#)¹, Alexander S. Ivanov¹, Garrett E. Granroth¹, Douglas L. Abernathy¹ and Takeshi Egami^{2,1}; ¹Oak Ridge National Laboratory, United States; ²The University of Tennessee, Knoxville, United States

4:45 PM E3.02.05

Mapping the Light Elements in Complex Oxides for High-rate Lithium-ion Batteries [Kent Griffith](#) and Kenneth R. Poeppelmeier; Northwestern University, United States

5:00 PM *E3.02.06

Exploring Oxygen Motion Through Perovskites $\text{La}_{0.9}\text{Sr}_{0.1}\text{Co}_{1-x}\text{Fe}_x\text{O}_{3-\delta}$ with In Situ Diffraction [Allyson M. Fry-Petit](#)¹, Mara Milhander^{1,2} and Jose Gonzalez Jimenez^{1,2}; ¹California State University, Fullerton, United States; ²Rutgers, The State University of New Jersey, United States

Hard Condensed Matter

SESSION B3.08: Unconventional Superconductors and Related Materials

Session Chair: Shan Wu

Wednesday Afternoon, June 8, 2022

UMC East Ballroom 212

4:00 PM *B3.08.01

Carrier Tuning of Stoner Ferromagnetism in $\text{Ca}(\text{Co}_{1-x}\text{Fe}_x)_2\text{As}_2$ [Benjamin G. Ueland](#)^{1,2}, Santanu Pakhira^{1,2}, Bing Li^{1,2}, Aashish Sapkota^{1,2}, N. S. Sangeetha¹, Toby G. Perring³, Yongbin Lee¹, Liqin Ke¹, D. C. Johnston^{1,2} and R. J. McQueeney^{1,2}; ¹Ames Laboratory, United States; ²Iowa State University of Science and Technology, United States; ³STFC Rutherford Appleton Laboratory, United Kingdom

4:30 PM B3.08.02

Understanding Charge Density Wave superlattice structure and potential Quantum Spin Liquid behavior in 1T-TaS₂ and 1T-TaSe₂ [Sharon S. Philip](#) and Despina Louca; University of Virginia, United States

4:45 PM B3.08.03

Structural Correlations in the Hole-Doped Cuprate $\text{HgBa}_2\text{CuO}_{4+\delta}$ [Zachary W. Anderson](#)¹, Damjan Pelc², Matthew Krogstad³, Nikolaos Biniskos⁴, Biqiong Yu¹, Yaohua Liu⁵, Liam Thompson¹, Jack Zwettler¹, Richard Spieker¹, Nina G. Bielinski¹, Feng Ye⁵, Stephan Rosenkranz³, Raymond Osborn³ and Martin Greven¹; ¹University of Minnesota, United States; ²University of Zagreb, Croatia; ³Argonne National Laboratory, United States; ⁴Forschungszentrum Jülich GmbH, Germany; ⁵Oak Ridge National Laboratory, United States

5:00 PM B3.08.04

Magnetic Fluctuations in Superconducting and Non-Superconducting 11 Iron Chalcogenides [Igor Zaliznyak](#)¹, Yangmu Li^{2,1}, Ovidiu Garlea³, Andrei T. Savici³, Zhijun Xu^{4,1}, Gu Genda¹ and John Tranquada¹; ¹Brookhaven National Laboratory, United States; ²Institute of Physics, China; ³Oak Ridge National Laboratory, United States; ⁴National Institute of Standards and Technology, United States

5:15 PM B3.08.05

Nematic Correlation Length in Iron-Based Superconductors Probed by Inelastic X-Ray Scattering [Dmitry Reznik](#); University of Colorado-Boulder, United States

Emerging Applications of Neutron Scattering in Engineering, Arts and Sciences

SESSION H3.03: Emerging ML Applications—Soft Matter and Chemistry

Session Chair: Tyler Martin

Wednesday Afternoon, June 8, 2022

UMC West Ballroom 208

4:00 PM H3.03.01

Machine Learning for Neutron Reflectometry [Mathieu Doucet](#), William Heller and Richard Archibald; Oak Ridge National Laboratory, United States

4:15 PM H3.03.02

Davis Computational Spectroscopy workflow - from structure to spectra [Lucas Samir Ramalho Cavalcante](#), Makena Dettmann, Ambarish Kulkarni and Adam Moule; UC Davis, Brazil

4:30 PM H3.03.03

Machine Learning-Enabled Inverse Analysis of Small Angle Scattering Data Graham W. Roberts, Mu-Ping Nieh, Anson Ma and [Qian Yang](#); University of Connecticut, United States

4:45 PM H3.03.04

Machine Learning Augmented Computational Reverse-Engineering Analysis for Scattering Experiments of Assembled Mixtures of Nanoparticles [Christian Heil](#) and Arthi Jayaraman; University of Delaware, United States

5:00 PM H3.03.05

Designing an Active Learning Agent for Autonomous Small-Angle Scattering [Tyler B. Martin](#), Aaron G. Kusne, Austin McDannald and Peter A. Beaucage; National Institute of Standards and Technology, United States

THURSDAY ORAL PRESENTATIONS

* Invited Paper

Plenary and Prize Session

SESSION I4.01: Plenary and Prize Session
Session Chairs: Peter Gehring, Young Lee, Katie Weigandt and
Stephen Wilson
Thursday Morning, June 9, 2022
UMC Conference Room 235

8:15 AM *I4.01.01

OUTSTANDING STUDENT RESEARCH PRIZE WINNER:
Magnetic Phase Transitions and Spin-Wave Dynamics in $Y_{1-x}La_xTiO_3$ and $Y_{1-x}Ca_xTiO_3$ [Sajna Hameed](#); University of Minnesota
Twin Cities, United States

9:10 AM *I4.01.02

PLENARY: Neutrons for Clean Bioenergy [Jeremy Smith](#);
University of Tennessee/Oak Ridge National Laboratory, United States

9:40 AM POSTER AWARD ANNOUNCEMENT

9:45 AM BREAK

Advances in Neutron Facilities, Instrumentation and Software

SESSION A4.09: Neutron Devices and Ancillary Equipment
Session Chairs: Mary-Ellen Donnelly and Fankang Li
Thursday Morning, June 9, 2022
UMC West Ballroom 208

10:15 AM *A4.09.01

Status of the Second Target Station Project [Ken Herwig](#); Oak Ridge
National Laboratory, United States

10:45 AM A4.09.02

**Correcting Divergent Beam Aberrations in a Neutron Resonance
Spin Echo (NRSE) instrument** [Stephen J. Kuhn](#)¹, Sam McKay¹,
Fankang Li², Eric B. Dees¹, Jiazhou Shen¹ and Roger Pynn^{1,2}; ¹Indiana
University Bloomington, United States; ²Oak Ridge National
Laboratory, United States

11:00 AM A4.09.04

**The Strange Invisibility of Cold Neutrons in Highly Neutron
Absorbing B4C—Towards a Novel Family of Neutron Optics** [Malik
Maaza](#)^{1,2}; ¹University of South Africa, South Africa; ²iThemba LABS-
National Research Foundation of South Africa, South Africa

11:15 AM A4.09.05

Development of an Enhanced Solid-State Neutron Detector [Hank
Thurston](#)^{1,2,3} and Elias Garratt^{1,1}; ¹Michigan State University, United
States; ²Hillsdale College, United States; ³Trinary Capital, LLC, United
States

11:30 AM A4.09.06

**A Superconducting Device for Widening the Effective Angle in
Quasi-Elastic Spin-Echo Neutron Scattering Experiments** [Eric B.
Dees](#)¹, Robert Dalglish², Steven R. Parnell³, Stephen J. Kuhn¹,
Fankang Li⁴, Sam McKay¹, Jiazhou Shen¹ and Roger Pynn^{1,4}; ¹Indiana
University, United States; ²Rutherford Appleton Lab, United
Kingdom; ³TU Delft, Netherlands; ⁴Oak Ridge National Laboratory,
United States

11:45 AM A4.09.07

Low Temperature Goniometer for Neutron Research. [Sergiy
Gladchenko](#); National Institute of Standards and Technology, United
States

12:00 PM A4.09.09

**High Resolution Larmor Diffraction at Oak Ridge National
Laboratory** [Kaleb Burrage](#)¹, Masaaki Matsuda¹, Jaime A. Fernandez-
Baca¹, Chengjie Mao², Olivier Delaire² and Fankang Li¹; ¹Oak Ridge
National Laboratory, United States; ²Duke University, United States

12:15 PM A4.09.10

In-Situ ³He polarization for JCNS instrumentation [Earl Babcock](#);
Juelich Centre for Neutron Science, Germany

Hard Condensed Matter

SESSION B4.10: Spin Textures and Helimagnets
Session Chair: Andrew Christianson
Thursday Morning, June 9, 2022
UMC East Ballroom 212

10:15 AM *B4.10.01

**Skyrmion Lattice Manipulation with Electric and Thermal
Currents** [Morten R. Eskildsen](#); University of Notre Dame, United
States

10:45 AM B4.10.02

**Neutron Diffraction Study of Complex Helical Magnetic Ordering
in Ni-doped $EuCo_2As_2$ Single Crystals** [Tianxiong Han](#)^{1,2}, Simon X.
Riberolles¹, Benjamin G. Ueland¹, R. J. McQueeney^{1,2}, Yan Wu³,
Santanu Pakhira¹ and D. C. Johnston^{1,2}; ¹Ames Laboratory, United
States; ²Iowa State University of Science and Technology, United
States; ³Oak Ridge National Laboratory, United States

11:00 AM B4.10.03

**Three-Dimensional Neutron Tomography of a Bulk Skyrmion
Lattice** [Melissa E. Henderson](#)¹, Benjamin Heacock², Markus Bleuel²,
Colin Heikes², Michael G. Huber², Jeff Krzywon², Olivier Nahman-
Levesque¹, Mathew Pula³, Dusan Sarenac¹, Kirill Zhernenkov⁴, David
Cory¹ and Dmitry Pushin¹; ¹Institute for Quantum Computing,
University of Waterloo, Canada; ²NIST Center for Neutron Research,
United States; ³McMaster University, Canada; ⁴Julich Centre for
Neutron Science, Germany

11:15 AM B4.10.05

Novel Magnetic Structures in $M1/3TaS_2$ [Junjie Yang](#) and Yunpeng
Gao; New Jersey Institute of Technology, United States

11:30 AM B4.10.06

Field-Tunable Toroidal Moment in a Chiral-Lattice Magnet Huibo Cao¹, Lei Ding¹, Xianghan Xu², Harald Jeschke³, Xiaojian Bai¹, Erxi Feng¹, Admasu Alemayehu², Jaewook Kim², Feiting Huang², Qiang Zhang¹, Xiabin Ding⁴, Neil Harrison⁴, Vivian Zapf⁴, Daniel Khomskii⁵, Igor Mazin⁶ and Sang-Wook Cheong²; ¹Oak Ridge National Laboratory, United States; ²Rutgers University, United States; ³Okayama University, Japan; ⁴Los Alamos National Laboratory, United States; ⁵II. Physikalisches Institut, Universität zu Köln, Germany; ⁶George Mason University, United States

11:45 AM B4.10.07

Slow Relaxation with Signature of Glassiness in Non-Centrosymmetric Helimagnet ScFeGe Sunil K. Karna¹, John F. DiTusa², David Young³, Wei Tian⁴ and Adam Aczel⁴; ¹Norfolk State University, United States; ²Indiana University-Purdue University Indianapolis, United States; ³Louisiana State University, United States; ⁴Oak Ridge National Laboratory, United States

12:00 PM B4.10.09

Depth Profiles of Hybrid Magnetic Skyrmions Determined by Neutron Scattering WLNC Liyanage¹, Nan Tang¹, Elizabeth Quigley^{1,2}, Sergio Montoya³, Julie A. Borchers⁴, Alexander Grutter⁴, Sunil Sinha³, Brian Maranville⁴, Eric Fullerton³, Lisa DeBeer-Schmitt⁵ and Dustin A. Gilbert^{1,1}; ¹The University of Tennessee, Knoxville, United States; ²Purdue, United States; ³University of California, San Diego, United States; ⁴National Institute of Standards and Technology, United States; ⁵Oak Ridge National Laboratory, United States

12:15 PM B4.10.10

Revisiting Static and Dynamic Magnetic Correlations in the Chiral Helimagnet Cr1/3NbS2 Lisa DeBeer-Schmitt¹, Lazar Kish², Adam Aczel¹, Travis J. Williams¹, Huibo Cao¹, Timothy Charlton¹, Nirmal Ghimire³, Jacob Ruff⁴, Michael A. McGuire⁵, Stephen J. Kuhn⁶, Morten R. Eskildsen⁷ and David Mandrus⁸; ¹ORNL, United States; ²University of Illinois at Urbana-Champaign, United States; ³George Mason University, United States; ⁴Cornell University, United States; ⁵Oak Ridge National Laboratory, United States; ⁶Indiana University-Bloomington, United States; ⁷University of Notre Dame, United States; ⁸The University of Tennessee, Knoxville, United States

Soft Matter

SESSION C4.07: Nanoparticles, Methods, and General Soft Matter
Session Chair: Javen Weston
Thursday Morning, June 9, 2022
UMC Conference Room 235

10:15 AM *C4.07.01

Frustrated Coulombic and Cation Size Effects on Nanoscale Boehmite Aggregation: A Tumbler Small- and Ultra-Small-Angle Neutron Scattering Study Lawrence M. Anovitz¹, Patricia Huestis², Nikhil Rampal¹, Andrew G. Stack¹, Jay A. LaVerne², Xin Zhang³, Gregory K. Schenter³, Jaehun Chun³, Benjamin A. Legg³, Lili Liu³, Markus Bleuel⁴, Cedric Gagnon⁴ and David F. Mildner⁴; ¹Oak Ridge National Laboratory, United States; ²University of Notre Dame, United States; ³Physical Sciences Division, United States; ⁴National Institute of Standards and Technology, United States

10:45 AM C4.07.02

Investigating the Oxidation of Atmospheric Aerosols using Neutron Reflectometry Rebecca Welbourn¹ and Martin King²; ¹ISIS Neutron & Muon Source, United Kingdom; ²Royal Holloway University of London, United Kingdom

11:00 AM C4.07.03

How Much Crosslinking Causes a Polymer Chain to Become a Nanoparticle? Jacob Fischer¹, Lu Han², Tomonori Saito² and Mark Dadmun^{1,2}; ¹The University of Tennessee, United States; ²Oak Ridge National Laboratory, United States

11:15 AM C4.07.04

Molecular Deformation and Relaxation Dynamics of Ionomers Revealed by Complementary Small-Angle Scattering Techniques Christopher N. Lam, Wei-Ren Chen and Yangyang Wang; Oak Ridge National Laboratory, United States

11:30 AM C4.07.05

Rapid Automated Morphology Identification and Parameter Determination from Small Angle Scattering Data via Machine Learning Graham W. Roberts, Mu-Ping Nieh, Anson Ma and Qian Yang; University of Connecticut, United States

11:45 AM C4.07.06

Automated SANS/SAXS Exploration of Soft Materials with the Autonomous Formulation Laboratory Peter A. Beaucage and Tyler B. Martin; National Institute of Standards and Technology, United States

12:00 PM C4.07.07

Measurement of Time-Resolved Adsorption Profiles in PMMA-Methanol System with Neutron Imaging Martin Wissink¹, Michael Kass¹, Charles E. Finney¹, Jacob M. LaManna², David Jacobson² and Hassina Z. Bilheux¹; ¹Oak Ridge National Laboratory, United States; ²National Institute of Standards and Technology, United States

12:15 PM C4.07.08

Studying Morphology Transitions on Sequential Annealing of Lamellar Block Copolymer Thin Films via Neutron Reflectivity Kshiti Sharma¹, Maninderjeet Singh¹, Sushil K. Satija², John F. Ankner³, Jack Douglas² and Alamgir Karim¹; ¹University of Houston, United States; ²National Institute of Standards and Technology, United States; ³Oak Ridge National Laboratory, United States

12:30 PM C4.07.09

Thermodynamic Interactions in Polydiene/Polyolefin Blends Megan L. Robertson, Jialin Qiu and Ramanan Krishnamoorti; University of Houston, United States

12:45 PM C4.07.10

Specific Salt Effects on Equilibrium and Flow Structure of Wormlike Micelles Javen S. Weston¹, Nour Alawami¹ and Katie M. Weigandt²; ¹The University of Tulsa, United States; ²National Institute of Standards and Technology, United States