Overview

The 8th American Conference on Neutron Scattering (ACNS) was held July 10-14, 2016 in Long Beach California, marking the first time the meeting has been held on the west coast. The meeting was coordinated by the Neutron Scattering Society of America (NSSA), and attracted 285 attendees. The meeting was chaired by NSSA vice president Patrick Woodward (the Ohio State University) assisted by NSSA president Stephan Rosenkranz (Argonne National Laboratory) together with the local organizing chair, Brent Fultz (California Institute of Technology). As in past years he Materials Research Society assisted with planning, logistics and operation of the conference.

The meeting schedule consisted of a morning common session featuring a lecture by a scientist receiving an award from the NSSA, together with a plenary lecture. The remainder of the scientific program consisted of four parallel sessions featuring invited and contributed talks together with poster sessions in the afternoon / evening. The science program was coordinated by program co-chairs Despina Louca (University of Virginia) and Alexi Sokolov (University of Tennessee) and was divided into the following research areas: (a) Sources, Instrumentation, and Software; (b) Hard Condensed Matter; (c) Soft Matter; (d) Biology; (e) Materials Chemistry and Materials for Energy; (f) Engineering and Industrial Applications; and (g) Neutron Physics.

Objectives

The ACNS is a focal point for the North American neutron user community. It is structured to strengthen ties within this diverse interdisciplinary group. The ACNS showcases recent results and provides a forum for scientific discussion of neutron-enabled research in fields as diverse as hard and soft condensed matter, materials chemistry, engineering, crystallography, fundamental physics, and development of neutron instrumentation. This is achieved through a combination of invited oral presentations, contributed oral presentations, and poster sessions.

The ACNS performs an important second function by acting as a type of “super user meeting” for the North American neutron scattering facilities. The facilities are thus provided with a means to exchange information with other facilities and users, update current users, and educate potential users with regard to their capabilities and infrastructure. ACNS is also an ideal forum for users to raise issues that relate to these facilities and their operation.

Finally, the ACNS provides the NSSA with the ideal forum to celebrate and highlight the various successes of neutron scientists. In particular this is achieved via the various Prize and Plenary sessions. Plenary speakers are selected to inform participants about particularly exciting fields both within and outside the traditional neutron community, while the prize sessions are used to confer the NSSA Shull Prize, Sustained Research Prize, Science Prize, and Outstanding Student Research Prize, in addition to student poster prizes.

Presentations

Overall the program consisted of 4 award talks, 4 plenary talks, 33 invited talks, 168 contributed talks, and 65 posters. On the opening day of the meeting, there were two tutorials: “Neutrons in Biology” and “Discovering Diffuse Scattering Signatures – Means to Measure, Process Data and Pathways to Analyzing It.” The award, plenary and invited talks are listed below.

Award Talks

- Charles Majkrzak (National Institute of Standards and Technology) – *Whatever have we learned from all those neutrons?*
- Yun Liu (University of Delaware/NIST) – *Understanding Proteins in Solution – Opportunities and challenges for colloidal science and neutron scattering*
- Pengcheng Dai (Rice University) – *Antiferromagnetic order and spin dynamics in iron-based superconductors*
- P. Douglas Godfrin (University of Delaware) – *Protein interactions and dynamics in concentrated pharmaceutical formulations*

Plenary Talks

- Alan Tenant (Oak Ridge National Laboratory) – *Outlook for neutrons – The next 10 years*
- Julia Kornfield (California Institute of Technology) – *Neutrons get to the heart of soft-matter*
- Takeshi Egami (University of Tennessee) – *Real space analysis of dynamics in liquid and glass*
- Russell Hemsley (Carnegie Institute of Washington) – *Materials in extreme environments – New opportunities for neutron scattering*

Invited Talks

- Jared Allred
- Meigan Aronson
- Rana Ashkar
- Kent Blasie
- Anna Boehmer
- John Budai
- Sang-Wook Cheong
- Xiang-Giang Chu
- Charles Clark
- Ovidiu Garlea
- Bruce Gaulin
- Dustin Gilbert
- Bianca Haberl
- Sara Haravifard
- Christina Hoffmann
- Adam Holley
- Marc Janoschek
- Mark Johnson
- John Katsaras
- Hubert King
- Li Liu
- Jaroslaw Majewski
- Robert McKenna
- Farenc Mezei
- Stephen Nagler
- Edward Payzant
- Gerald Schneider
- Jeremy Smith

- Peter Tieleman
- Terrence Udovic
- Angus Wilkinson
- Taner Ylidrim
- Yang Zhang

Highlights

The two half-day tutorials that took place on the first day of the conference were an excellent opportunity for students and more seasoned scientists to gain an overview of important areas in neutron science. The tutorial entitled "Neutrons in Biology" featured five speakers who highlighted the primary neutron scattering and computational techniques used to study biological and biologically relevant systems. Each talk consisted of 20 minutes of introductory material and 40 minutes of practical analyses. The topics covered included Protein SANS; Membrane Neutron Reflectometry; Membrane Inelastic Scattering (NSE and Backscattering); Protein Crystallography; and Protein/Membrane Simulations. The tutorial entitled "Discovering diffuse scattering signatures – Means to measure, process data, and pathways to analyze it" featured eight speakers. The tutorial covered methods of measuring and analyzing diffuse scattering using neutron single crystal diffraction, the time-of-flight Laue method, analyzing data collected with and without inelastic discrimination, and use of the Mantid program suite.

The Monday morning session started with the presentation of the Clifford G. Shull Prize in Neutron Scattering to Dr. Charles F. "Chuck" Majkrzak (National Institute of Standards and Technology) with the citation "For leadership in the development, application and establishment of neutron reflectometry as an essential measurement tool for nanoscale materials." Chuck's presentation was entitled "Whatever have we learned from all those neutrons?" and started with a history of his career in neutron scattering. He spoke about his efforts to combine neutron and x-ray studies to develop full understanding of magnetic multilayers using both low and high angle scattering. This led Chuck to study coupling of magnetic moments across rare earth interfaces which was explained in terms of the RKKY interactions. Later Dr. Majkrzak moved to his present position at the NIST Center for Neutron Research (NCNR) where he began to build a dedicated neutron reflectometer. Over the years several reflectometers were built to improve and refine the technique leading to the most recent instruments AND/R, used to study biological systems, and CANDAR, using a polarized polychromatic beam and optical imaging. The techniques that Dr. Majkrzak pioneered have enabled advances in many diverse fields, including polymer science, magnetic multilayers, biology, electrochemistry, and photovoltaic materials.

The Shull Prize presentation was followed with a plenary lecture by Dr. Alan Tenant from Oak Ridge National Laboratory who presented his outlook for the next 10 years in neutron scattering in the North America and the world. It is challenging to plan the needs of the future in an environment where everything is evolving so rapidly, from the scientific problems to sources and instrumentation. Dr. Tennant explained the ORNL three-source strategy to address these forefront problems. This consists of optimizing instruments for the strength of the facility: HFIR for applications which take advantage of the highest time-averaged flux, the first target station on SNS to take advantage of the sharp pulses and high brightness beams of thermal to epithermal neutrons, and the proposed second target station to be optimized for high brightness of cold neutrons and a large dynamic range. An additional key component for neutron scattering in the future, particularly in cases of increased complexity, is the integration with high-performance computing, simulation and modeling.

On Tuesday the NSSA Science Prize was presented to Dr. Yun Liu (National Institute of Standards and Technology and University of Delaware) with the citation "For the discovery of dynamic cluster ordering in complex colloidal systems using neutron scattering." In his award lecture, Dr. Liu gave an overview of his work applying neutron scattering to probe the dynamic and complex colloidal structures formed by proteins in relatively concentrated solutions. Understanding these structures is critical to formulating and delivering biopharmaceuticals, as well as describing the behavior of proteins in the cell. Dr. Liu gave a brief history of experimental observations in concentrated protein solutions that pointed to the formation of so-called "dynamic cluster" phases, in which proteins form coherent, collective aggregates with finite size and lifetime over a range of conditions. A collaborative team including Dr. Liu as well as university and industrial partners has been successful in more deeply characterizing the important features of these cluster phases using a combination of small angle neutron scattering and neutron spin echo measurements. The conceptual understanding of protein solutions provided by Dr. Liu's work allows for more rational formulation of protein therapeutics such as monoclonal antibodies, and also provides model colloidal systems in which to study the formation and behavior of complex colloidal structures including clusters, gels and glasses.

Figure 1: NSSA president Stephan Rosenkranz (left) and Vice-president Patrick Woodward (right) present the Shull Prize to Charles Majkrzak (center).

Tuesday's plenary lecture was a lively lecture from Caltech Professor Julia Kornfield on how "Neutrons get to the heart of soft matter." Through four vignettes, Prof. Kornfield demonstrated the crucial scientific information afforded through carefully designed and executed neutron diffraction measurements. The first vignette discussed SANS measurements of flow crystallization in polyethylene that debunked the conventional wisdom that high molecular weight polymer chains are incorporated into the crystals that preferentially nucleate in their presence. In a highly visual demonstration, she described how molecularly designed ultra-high molecular weight supramolecular complexes can suppress misting of fuel and thereby prevent catastrophic explosions of great concern in transportation crashes. Here again, contrast variation SANS experiments afforded critical measurements of molecular nano to mesoscale structures. The third vignette explored the molecular conformation in bottlebrush polymers, a molecular topology of great interest to the field, and provided confirmatory evidence for recent molecular models of this novel class of polymers. Finally, Prof. Kornfield closed by highlighting how kinetic USANS measurements are providing critical insight into the formation mechanism in functional polymer membranes.

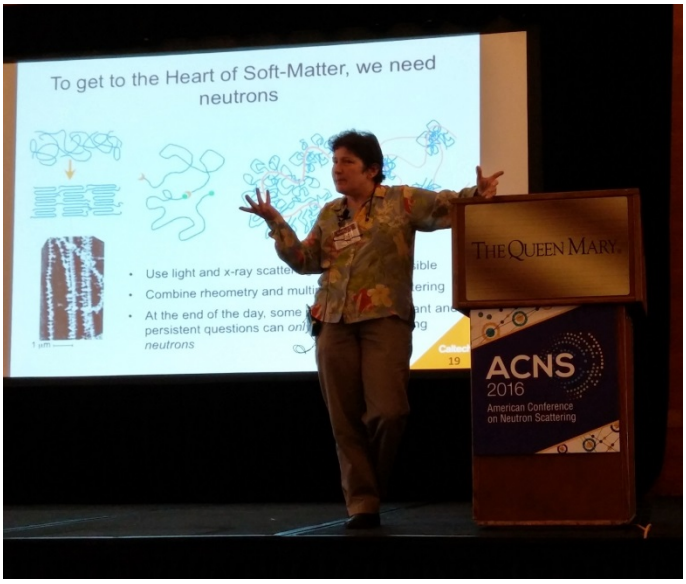

Figure 2: Professor Julia Kornfield presents her plenary lecture, "Neutrons get to the Heart of Soft Matter"

On Wednesday, the NSSA Sustained Research Prize was awarded to Prof. Pengcheng Dai (Rice University) with the citation "For his sustained and foundational contributions which have elucidated the magnetic properties of iron-based superconductors, cuprates, and other correlated electron materials." Pengcheng presented a lecture entitled "Antiferromagnetic Order and Spin Dynamics in Iron-Based Superconductors". He gave an overview of some of the important neutron scattering contributions he has made during his career in high temperature cuprate superconductors, heavy fermion materials, and colossal magnetoresistive oxide systems. He then concentrated on work on iron-based superconductors, which has been the focus of his research efforts since their discovery in 2008. Prof. Dai and his collaborators carried out some of the first measurements of the magnetic and crystal structures as a function of composition, mapped out the electronic phase diagram of several types of these systems, and then followed this work by investigations to elucidate the spin dynamics of the parent, magnetically ordered systems. One of the very interesting aspects is that the iron superconductors exhibit a very strong magnetic resonance that tracks the superconducting order parameter, again similar behavior as seen in cuprates and heavy fermion superconductors, which ties the superconductivity and spin fluctuations directly together. He concluded by presenting very new polarized inelastic neutron measurements demonstrating how itinerant electrons play an important role in the materials, and how strong spin-orbit coupling and anisotropic spin dynamics break the tetragonal symmetry.

The Wednesday plenary lecture was given by Prof. Takeshi Egami, University of Tennessee and was entitled "Real Space Analysis of Dynamics in Liquid and Glass". In this lecture, Prof. Egami discussed the development of Dynamic Pair Distribution Function (PDF) techniques as an approach to gain deeper understanding of the dynamics in liquids and glasses. Key to this approach is the broad range of momentum and energy space now being routinely mapped out in time-of-flight spectrometers. He discussed Dynamic PDF studies of superfluid ^{4}He (data obtained using CNCS at the Spallation Neutron Source (SNS)) where the proper incorporation of the dynamics of the system leads to an alternative explanation of prior measurements of the "static structure factor". He ended by discussing data collected on the ARCS instrument at SNS using the Neutron Electrostatic Levitator on a metallic glass, $Zr_{50}Cu_{50}$ and inelastic x-ray scattering data from water where the van Hove function was obtained. This seminar provided a compelling case that the use of inelastic neutron scattering together with analysis of either Dynamic PDF or the van Hove function can provide unique information which can lead to increased understanding of a diverse range of liquids and glasses.

On Thursday, the Outstanding Student Research Prize which was awarded to P. Douglas Godfrin (University of Delaware) with the citation "For the discovery of dynamic cluster ordering in complex colloidal systems using neutron scattering" Dr. Godfrin highlighted the importance of competing interactions in antibody solutions used in advanced biotherapeutics for oncology and other diseases. His

work, as part of a collaboration with Genentech, utilized small angle neutron scattering and spin echo neutron spectroscopy to map the balance of repulsive and attractive interactions that drive the formation of loosely bound aggregates that form a "clustered fluid". The formation of these clusters dramatically affects the viscosity and rheology of these formulations in ways that can be useful or detrimental to manufacturing and use. That careful balance is highlighted by insights into the work that map the phase space for which cluster fluids are likely to exist. Using these techniques, the team identified the effects of particular types of clustering on the viscosity, providing a roadmap for more effective manufacturing of this important class of therapeutics.

The final plenary talk of the conference was presented by Professor Russell Hemley, Canegie Institute of Washington, and was entitled "Materials in Extreme Environments - New Opportunities for Neutron Scattering". He illustrated this through a series of examples how high pressures can affect the chemistry of even the simplest of materials, including elemental hydrogen. In most cases, extreme pressures of up to a megabar (=100 GPa) and beyond are required. Prof. Hemley gave an overview how these conditions were first achieved in the late 1980s at x-ray synchrotron sources using very small samples in diamond anvil cell devices and small focused beams of x-rays. In more recent years, this capability has also been extended to neutron diffraction. Due to the availability of dedicated instruments such as SNAP at SNS, and the recent development of large volume diamond anvil devices, it is now possible to perform neutron scattering at 1 Mbar. Using these high pressure scattering techniques, a number of new materials have been discovered such as new high Tc-superconductors or diamond nanothreads. This new structure of nanophase carbon, expected to yield ultra-high strength fibers, is formed following compression of benzene through polymerization into fully sp^3-bonded carbon nanothreads. Prof. Hemley then discussed another cosmic example: Recent experiments have demonstrated that biological systems are much more resistance to extreme pressures than previously thought suggesting that it is possible for simple life to exist in the oceans of the Jovian moon Europa.

Figure 3: NSSA president Stephan Rosenkranz (left) and program co-chair Despina Louca (right) present the NSSA Outstanding Student Prize to Douglas Godfrin (center).

In addition to the formal scientific presentations, both the NIST Center for Neutron Research and the Spallation Neutron Source (SNS)/High Flux Isotope Reactor (HIFAR) user groups held their annual user meetings at the conference. There was also a town hall meeting to update the community and seek input on details of the planning behind the second target station at the SNS.

Contribution to discipline

The scientific talks and posters provided attendees the opportunity to learn about cutting edge neutron research across a broad spectrum of scientific disciplines. The user group meetings and the second target station town hall allowed scientists and administrators at neutron scattering facilities to share plans with their users and get vital feedback from the community. Finally over 50 of the attendees were

students, postdocs or early career scientists. The scientific and social activities at the ACNS are an excellent venue for these young scientists to publicize their work and make important connections with other scientists.

Contribution to other disciplines

The mix of scientists from physics, chemistry, biology, materials science, and various engineering disciplines allows for cross cultivation of interdisciplinary science that few meetings can match. In the plenary/award talks alone research that touched on fields as diverse as magnetic data storage, pharmaceuticals, polymers, superconductors, fuel combustion, magnetism, glasses, geoscience, and the possibilities of finding life on other worlds. Many, many more interdisciplinary topics were covered elsewhere in the meeting.

Future direction for this conference

The next ACNS meeting is scheduled to occur in the summer of 2018. The NSSA executive board has decided to hold the next meeting at the University of Maryland. This location was chosen in part because it is relatively close to the NIST Center for Neutron Research. Attendance tends to be higher when the meeting is held in close proximity to a neutron scattering center. On the other hand, there are now only two major neutron user facilities in the United States which tends to limit possible venues. As a reasonable compromise the current plan is to alternate the location of the ACNS between sites that are near neutron sources and sites that are not.

Conference participants supported with DOE funds

Takeshi Egami, Univ of Tennessee
Russell Hemley, Carnegie Inst of Washington
Julia Kornfield, California Inst of Technology
Pencheng Dai, Rice Univ
P. Douglas Godfrin, Univ of Delaware
Yun Liu, Univ of Delaware
Jared Allred, Univ of Alabama
Anna Boehmer, Iowa State Univ
Sang-Wook Cheong, Rutgers Univ
Bruce Gaulin, McMaster Univ
Sara Haravifard, Duke Univ
Adam Holley, Tennessee Technological Univ
Mark Johnson, Institut Laue-Langevin
Li (Emily) Liu, Rensselaer Polytechnic Inst
Robert McKenna, Univ of Florida
Gerald J. Schneider, Louisiana State Univ
Peter Tieleman, Univ of Calgary
Rafael Verduzco, Rice Univ
Angus Wilkinson, Georgia Inst of Technology
Yang Zhang, Univ of Illinois at Urbana-Champaign
Allyson Fry-Petit, California State Univ, Fullerton
Siddarth Gautam, Ohio State Univ

Gong Li, Univ of Tennessee
Wei-Shan Chiang, Univ of Delaware
Hillary Smith, California Inst of Technology
Kevin Whitcomb, Univ of Delaware
Adrian Merritt, Univ of Colorado-Boulder
Joseph Schaeperkoetter, Univ of Missouri
Benjamin Frandsen, Columbia Univ
Cameron Shelton, Univ of Delaware

MONDAY ORAL PRESENTATIONS

* Invited Paper

A: Plenary and Prize Sessions

SESSION A1: Plenary and Prize Session
Session Chairs: Stephan Rosenkranz and Patrick Woodward
Monday Morning, July 11, 2016
"R" Deck Level, Grand Salon

8:00 AM
WELCOME AND INTRODUCTIONS by Patrick Woodward, Ohio State University and ACNS Conference Chair and Stephan Rosenkranz, Argonne National Laboratory and NSSA President

8:15 AM *A1.01
CLIFFORD G. SHULL PRIZE WINNER: What Ever Have We Learned from All Those Neutrons Charles Majkrzak; NCNR, NIST, Gaithersburg, Maryland, United States.

9:10 AM *A1.02
PLENARY: Outlook for Neutrons— The Next 10 Years Alan Tennant; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

B: Sources, Instrumentation and Software

SESSION B1: Analysis and Modeling I
Session Chair: Thomas Proffen
Monday Morning, July 11, 2016
Promenade Deck (Stern) Level, Royal Salon

10:15 AM *B1.01
Elements of ESS Approach to High Efficiency Neutron Beam Generation Ferenc Mezei[2, 1], Konstantin Batkov[2], Esben Klinkby[2, 3], Eric Pitcher[2], Troels Schonfeldt[2, 3], Alan Takibayev[2] and Luca Zanini[2]; [1]HAS Wigner Research Center for Physics, Budapest, Hungary; [2]European Spallation Source ERIC, Lund, Sweden; [3]DTU Risø Campus, Technical University of Denmark, Roskilde, Denmark.

10:45 AM B1.02
Bayesian Library for the Analysis of Neutron Diffraction Data(BLAND) William Ratcliff, Steven Disseler, Joseph Lesniewski and Dylan Quintana; Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

11:00 AM B1.03
Statistical Interpretation for Processing the Time of Flight Neutron Scattering Data Andrei Savici; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:15 AM B1.04
VirtuES—Virtual Experiments in Spectroscopy Stuart Campbell[1], Anibal J. Ramirez-Cuesta[2], Yongqiang Cheng[2], Luke L. Daemen[2], Nathan Grodowitz[3], Michael Galloway[3] and John Quigley[3]; [1]Neutron Data Analysis and Visualization, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Compute and Data Environment for Science, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:30 AM B1.05
Design and Implementation of a Differential Scanning Calorimeter for the Simultaneous Measurement of Small Angle Neutron Scattering Stewart Pullen[1], Norman Booth[1], Scott Olsen[1], Ferdi Franceschini[1], David Mannicke[1], Benjamin Day[2] and Elliot P. Gilbert[1]; [1]Bragg Institute, ANSTO, Kirrawee DC, New South Wales, Australia; [2]Hobsons Instruments Services, Essendon, Victoria, Australia.

11:45 AM B1.06
Evaluation of the Resolution Function of Chopper Spectrometers—Examples from the Spallation Neutron Source Douglas L. Abernathy[1], Matthew Stone[1], Jiao Lin[2] and Jennifer Niedziela[3]; [1]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Neutron Data Analysis and Visualization Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

12:00 PM B1.07
Measurement and Modeling of Polarized Specular Neutron Reflectivity in Large Magnetic Fields Brian Maranville[1], Brian J. Kirby[1], Alexander J. Grutter[1], Paul A. Kienzle[1], Yaohua Liu[2] and Charles Majkrzak[1]; [1]National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

C: Hard Condensed Matter

SESSION C1: Heavy Fermion Systems and F-Electron Materials
Session Chairs: Andy Christianson and William Ratcliff
Monday Morning, July 11, 2016
"R" Deck Level, Grand Salon

10:15 AM *C1.01
Neutron Spectroscopy on the Most Complex Element—Plutonium Marc Janoschek; Condensed Matter and Magnet Science Group, Los Alamos National Laboratory, Los Alamos, New Mexico, United States.

10:45 AM C1.02
Electron Correlations and Hidden Order in URu_2Si_2
Nicholas P. Butch[1, 2], Michael E. Manley[3], Jason Jeffries[4], Marc Janoschek[5], Kevin Huang[6], M B. Maple[6], Ayman Said[7], Bogdan M. Leu[7] and Jeffrey W. Lynn[1]; [1]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]University of Maryland, College Park, Maryland, United States; [3]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States;[4]Lawrence Livermore National Laboratory, Livermore, California, United States; [5]Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [6]University of California, San Diego, La Jolla, California, United States; [7]Argonne National Laboratory, Argonne, Illinois, United States.

11:00 AM C1.03
The Quantum Criticality of $CeCu_{5.8}Ag_{0.2}$ L. Poudel[1, 2], Jon Lawrence[3], Andrew F. May[2], Liusuo Wu[2], George Ehlers[2], Andrey Podlesnyak[2], David Mandrus[1, 2] and Andrew Christianson[2, 1]; [1]University of Tennessee, Knoxville, Tennessee, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]University of California, Irvine, California, United States.

11:15 AM C1.04
Band Excitations in $CePd_3$ Measured by Inelastic Neutron Scattering—A Comparison with DMFT Calculations
Raymond Osborn[1], Eugene A. Goremychkin[2], Hyowon Park[3], Jon Lawrence[4], Andrew Christianson[5], Stephan Rosenkranz[1], John-Paul A. Castellan[6], Victor R. Fanelli[5] and Eric D. Bauer[4]; [1]Argonne National Laboratory, Argonne, Illinois, United States; [2]Frank Laboratory of Neutron Physics, JINR, Dubna, Russian Federation; [3]University of Illinois at Chicago, Chicago, Illinois, United States; [4]Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [5]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [6]Karlsruhe Institute of Technology, Karlsruhe, Germany.

11:30 AM C1.05
Direct Evidence for an Internal Degree of Freedom and Broken Time Reversal Symmetry in the B-Phase of the Heavy- Fermion Superconductor UPt_3 Morten R. Eskildsen[1], Keenan E. Avers[2], William J. Gannon[2, 4, 3] and William P. Halperin[2]; [1]Department of Physics, University of Notre Dame, Notre Dame, Indiana, United States; [2]Northwestern University, Evanston, Illinois, United States; [3]Texas A&M University, College Station, Texas, United States; [4]Stony Brook University, Stony Brook, New York, United States.

11:45 AM C1.06
Magnetic Frustration Induced by Applied Magnetic Field in $CeRhIn_5$ David M. Fobes[1], Shizeng Lin[2], N.J. Ghimire[3], F. Ronning[1], Eric D. Bauer[1], J.D. Thompson[1], C.D. Batista[2], George Ehlers[4], Leland Harriger[5] and Marc Janoschek[1];[1]MPA-CMMS, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [2]T-4, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [3]Argonne National Laboratory, Lemont, Illinois, United States;[4]QCMD, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [5]NIST Center for Neutron Research, Gaithersburg, Maryland, United States.

12:00 PM C1.07
Effects of a Magnetic Field on the Fragile Antiferromagnetism of the Heavy-Fermion YbBiPt Benjamin Ueland[1, 2], S. M. Saunders[1, 2], S. Sauerbrei[1, 2], A. Kreyssig[1, 2], E. D. Mun[6], Leland Harriger[3], Jeffrey W. Lynn[3], Antonio Faraone[3, 4], Karel Prokes[5], R. Toft-Petersen[5], S. L. Bud'ko[1, 2], Rob J. McQueeney[1, 2], P. C. Canfield[1, 2] and Alan Goldman[1, 2]; [1]Division of Materials Sciences and Engineering, Ames Laboratory, Ames, Iowa, United States; [2]Department of Physics and Astronomy, Iowa State University, Ames, Iowa, United States; [3]NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [4]Department of Materials Science and Engineering, University of Maryland, College Park, Maryland, United States; [5]Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany; [6]Department of Physics, Simon Fraser University, Burnaby, British Columbia, Canada.

D: Soft Matter

SESSION D1: Polymer Dynamics and Rheology
Session Chair: Vivek Prabhu
Monday Morning, July 11, 2016
Promenade Deck Level, Queens Salon

10:15 AM *D1.01
Dynamics in Polymer Melts and Nanocomposites and Relationships to Macroscopic Observations Gerald J. Schneider; Chemistry, Louisiana State University, Baton Rouge, Louisiana, United States.

10:45 AM D1.02
Rheology of Multilamellar Vesicle ("Onion") Formation and Instability Luigi Gentile[2], Norman J. Wagner[1] and Ulf Olsson[2]; [1]Chemical and Biomolecular Engineering, University of Delaware, Newark, Delaware, United States; [2]Division of Physical Chemistry, Lund University, Lund, Sweden.

11:00 AM D1.03
Investigation of Branched/Linear Polymer Blends by Rheo-SANS Nino Ruocco[1], Wim Pyckhout-Hintzen[2], Luke Andriano[1], Matthew E. Helgeson[1] and Leslie G. Leal[1]; [1]University of California, Santa Barbara, Goleta, California, United States; [2]Jülich Centre for Neutron Science-1, Forschungszentrum Jülich, Jülich, Germany.

11:15 AM D1.04
µRheoSANS for Probing Structure at High Shear Rates Kathleen M. Weigandt[1], Daniel Seeman[1], Javen Weston[1, 2] and Steve Hudson[1]; [1]NIST, Gaithersburg, Maryland, United States; [2]Georgetown University, Washington, District of Columbia, United States.

11:30 AM D1.05
Measurement of the Change in Conjugated Polymer Dynamics with Doping—A Quasielastic Neutron Scattering Study Jun Li[1], Souleymane Diallo[2], Guangwu Zhang[3], Kunlun Hong[4], Mark Mascal[3], Pieter Stroeve[1] and Adam J. Moule[1]; [1]Department of Chemical Engineering and Materials Science, University of California, Davis, Davis, California, United States; [2]Quantum Condensed Material Division, Oak Ridge National Laboratory, Oak Ridge National Laboratory, Tennessee, United States; [3]Department of Chemistry, University of California, Davis, Davis, California, United States; [4]Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:45 AM D1.06
Viscoelasticity in Colloidal Suspensions—A Mechanistic View Wei-Ren Chen[1], Takuya Iwashita[2], Zhe Wang[1], Yangyang Wang[1], Lionel Porcar[3], Yun Liu[4], William Hamilton[1] and Takeshi Egami[2]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]University of Tennessee, Knoxville, Tennessee, United States; [3]Institut Laue–Langevin, Grenoble, France; [4]National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

12:00 PM D1.07
Molecular Deformation Mechanism of Entangled Polymers in Fast Flow as Revealed by Small-Angle Neutron Scattering Yangyang Wang[1], Wei-Ren Chen[2], Zhe Wang[2], Jianning Liu[3], Panpan Lin[3], Lionel Porcar[4], Shiwang Cheng[5], Kunlun Hong[1], Luis E. Sanchez-Diaz[2] and Yun Liu[6]; [1]Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Biology and Soft Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Department of Polymer Science, University of Akron, Akron, Ohio, United States; [4]Institut Laue-Langevin, Grenoble, France; [5]Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [6]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

F: Materials Chemistry and Materials for Energy

SESSION F1: Porous Materials and Small Angle Neutron Scattering
Session Chairs: Katharine Page and Terrence Udovic
Monday Morning, July 11, 2016
"R" Deck (Mid-Ship) Level, Windsor Salon

10:15 AM F1.01
Time-Resolved Water Sorption/Desorption in Nanoporous Carbon Electrode Materials Jose L. Banuelos[2, 1, 3], Gernot Rother[3], Volker Presser[4, 5] and David Wesolowski[3]; [1]ISIS, STFC Rutherford Appleton Laboratory, Didcot, United Kingdom; [2]Physics, The University of Texas at El Paso, El Paso, Texas, United States; [3]Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]Department of Materials Science and Engineering, Saarland University, Saarbrucken, Germany; [5]INM – Leibniz Institute for New Materials, Saarbrucken, Germany.

10:30 AM F1.02
SANS Studies of Nanoscale Precipitate Evolution in Irradiated Pressure Vessel Steels George R. Odette[1], Nicholas Cunningham[1], Peter Wells[1], Nathan Almirall[1], Takuya Yamamoto[1] and Keith Wilford[2]; [1]Materials, University of California, Santa Barbara, Santa Barbara, California, United States; [2]Rolls Royce UK, Derby, United Kingdom.

10:45 AM F1.03
A New Dielectric RheoSANS Instrument for the Simultaneous Interrogation of Rheology, Microstructure and Electronic Properties of Flow Battery Electrodes
Jeffrey J. Richards[1, 2], Norman J. Wagner[2] and Paul Butler[1]; [1]NCNR, NIST, Gaithersburg, Maryland, United States; [2]Chemical and Biomolecular Engineering, University of Delaware, Newark, Delaware, United States.

11:00 AM F1.04
Adsorption-Induced Pore Expansion in Graphene Oxide Frameworks Joseph Schaeperkoetter[1], Matthew Connolly[2], Helmut Kaiser[3], Haskell Taub[1] and Carlos Wexler[1]; [1]Physics, University of Missouri, Columbia, Missouri, United States; [2]National Institute of Standards and Technology, Boulder, Colorado, United States; [3]MURR, University of Missouri, Columbia, Missouri, United States.

11:15 AM F1.05
Quantifying the Pore Structure Evolution in Sustainable Cements Using In Situ Small-Angle Neutron Scattering Analysis Claire White[4], Daniel Olds[1], Monika A. Hartl[2], Rex Hjelm[3] and Katharine Page[1]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]European Spallation Source, Lund, Sweden; [3]Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [4]Princeton University, Princeton, New Jersey, United States.

11:30 AM *F1.06
Pore Architecture and Dense Methane in Gas Shale by Neutron Scattering Hubert E. King; Corporate Strategic Research, ExxonMobil Research & Eng. Co., Annandale, New Jersey, United States.

12:00 PM F1.07
Gas Adsorption Induced Linker Reorientations in Porous Metal-Organic Framework Materials—A Combined First-Principles and Neutron Scattering Study Wei Zhou; NIST Center for Neutron Research, National Institute of Standards & Technology, Gaithersburg, Maryland, United States.

C: Hard Condensed Matter

SESSION C2: Itinerant Magnetism
Session Chairs: Adam Aczel and David Fobes
Monday Afternoon, July 11, 2016
"R" Deck Level, Grand Salon

1:45 PM *C2.01
Realization of Ground-State Artificial Skyrmion Lattices at Room Temperature Dustin A. Gilbert[1], Brian Maranville[1], Andrew Balk[2], Brian J. Kirby[1], Peter Fischer[3], Daniel T. Pierce[2], John Unguris[2], Julie A. Borchers[1] and Kai Liu[4];[1]NIST Center for Neutron Research, NIST, Germantown, Maryland, United States; [2]Center for Nanoscale Science and Technology, NIST, Gaithersburg, Maryland, United States; [3]Lawrence Berkeley National Laboratory, Berkeley, California, United States; [4]Physics Department, University of California, Davis, California, United States.

2:15 PM C2.02
Extended Magnetic Exchange Interactions in the High-Temperature Ferromagnet MnBi Travis J. Williams[1], Alice Taylor[1], Andrew Christianson[1], Steven E. Hahn[2], Randy S. Fishman[3], David Parker[3], Michael McGuire[3], Brian Sales[3]and Mark D. Lumsden[1]; [1]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Neutron Data Analysis and Visualization Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

2:30 PM C2.03
Collinear Antiferromagnetism in Trigonal $SrMn_2As_2$ Revealed by Single Crystal Neutron Diffraction Pinaki Das[1, 2], N. S. Sangeetha[1, 2], Z. A. Benson[2], Tom Heitmann[3], D.C. Johnston[1, 2], Alan Goldman[1, 2] and A. Kreyssig[1, 2]; [1]Ames Laboratory, Iowa State University, Ames, Iowa, United States; [2]Department of Physics, Iowa State University, Ames, Iowa, United States; [3]The Missouri Research Reactor, University of Missouri, Columbia, Missouri, United States.

2:45 PM C2.04
Pressure Dependence of the Magnetic Ground States in MnP Sachith Dissanayake[1], Masaaki Matsuda[1], Feng Ye[1], J.G. Cheng[2], Songxue Chi[1], Jie Ma[3], Haidong Zhou[3], Jiaqiang Yan[4, 6], S. Kasamatsu[5], O. Sugino[5], T. Kato[5], K. Matsubayashi[5], T. Okada[5] and Y. Uwatoko[5]; [1]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Beijing National Laboratory for Condensed Matter Physics and Institute of Physics, Chinese Academy of Sciences, Beijing, China; [3]Department of Physics and Astronomy, University of Tennessee, Knoxville, Tennessee, United States; [4]Material Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [5]Institute for Solid State Physics, University of Tokyo, Kashiwa, Chiba, Japan; [6]Department of Materials Science and Engineering, University of Tennessee, Knoxville, Tennessee, United States.

3:00 PM C2.05
Nanoscale Magnetic Inhomogeneity in Off-Stoichiometric Martensitic Heusler Alloys Sami El-Khatib[1, 2, 3], Kanwal Bhatti[2], Shaojie Yuan[4], Philip Kuhns[4], Arneil Reyes[4], Michael Hoch[4], Vijay Srivastava[2], Daniel Phelan[2, 5], Richard James[2] and Chris Leighton[2]; [1]American University of Sharjah, Sharjah, United Arab Emirates; [2]University of Minnesota, Minneapolis, Minnesota, United States; [3]National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [4]National High Magnetic Field Lab, Florida State University, Tallahassee, Florida, United States; [5]Argonne National Lab, Argonne, Illinois, United States.

3:15 PM C2.06
Structure and Magnetic Properties of *Ln*MnSbO (*Ln* = La and Ce) David Vaknin[1], Qiang Zhang[1], Alan Goldman[1], Wei Tian[2] and C. M. Naveen Kumar[2]; [1]Ames Laboratory, Ames, Iowa, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

3:30 PM BREAK

E: Biology

SESSION E1: Macromolecular Complexes
Session Chair: Loukas Petridis
Monday Afternoon, July 11, 2016
Promenade Deck Level, Queens Salon

1:45 PM *E1.01
Nanoscopic Lipid Domains in Model and Bacterial Membranes Jonathan D. Nickels[2, 3], Sneha Chatterjee[1], Frederick A. Heberle[2, 4], Dean Myles[1], Robert F. Standaert[5, 2], James G. Elkins[5] and John Katsaras[1, 2, 3]; [1]Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Joint Institute for Neutron Sciences, Oak Ridge, Tennessee, United States; [3]Physics and Astronomy, University of Tennessee, Knoxville, Tennessee, United States; [4]The Bredesen Center, University of Tennessee, Knoxville, Tennessee, United States; [5]Energy and Environmental Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

2:15 PM E1.02
Exploring New Methods to Probe the Microstructure and Stability of Solid-State Monoclonal Antibody Therapeutics Stijn H. Koshari[1], Yun Liu[2, 1], Abraham M. Lenhoff[1] and Norman J. Wagner[1]; [1]Chemical & Biomolecular Engineering, University of Delaware, Claymont, Delaware, United States; [2]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

2:30 PM E1.03
In Situ SANS Investigation of Plant Biopolymer Nano-Structural Changes during Different Thermochemical Pretreatments Sai V. Pingali[1], Hugh M. O'Neill[1], Barbara R. Evans[2], Riddhi Shah[3], Daisuke Sawada[1], Seema Singh[4, 5], Paul Langan[6], Volker Urban[1] and Brian H. Davison[7]; [1]Biology and Soft Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Bredesen Center for Interdisciplinary Research, University of Tennessee, Knoxville, Tennessee, United States; [4]Deconstruction Division, Joint BioEnergy Institute, Emeryville, California, United States; [5]Biomass Science and Conversion Technology Department, Sandia National Laboratories, Livermore, California, United States; [6]Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [7]Biosciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

2:45 PM E1.04
Toward a System to Detect Lateral Organization within Lipid Membranes In Vivo Using SANS Sneha Chatterjee, Jonathan D. Nickels, Robert Standaert, Frederick A. Heberle, Dean Myles, John Katsaras and James G. Elkins; Oak Ridge National Laboratory, Knoxville, Tennessee, United States.

3:00 PM E1.05
Orientation of Dimeric Tubulin on Lipid Membranes Studied Using Neutron Reflectometry David P. Hoogerheide[1], Sergei Noskov[2], Tatiana K. Rostovtseva[3], Sergey M. Bezrukov[3] and Hirsh Nanda[1, 4]; [1]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]Biochemistry, University of Calgary, Calgary, Alberta, Canada; [3]Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, Maryland, United States; [4]Physics, Carnegie Mellon University, Pittsburgh, Pennsylvania, United States.

3:15 PM E1.06
Conformation of Polysaccharides in Primary Plant Cell Walls Malgorzata Kowalik[1], Shih-Chun Chuang[1], Young B. Park[2], Daniel J. Cosgrove[2] and Janna K. Maranas[1]; [1]Chemical Engineering, The Pennsylvania State University, University Park, Pennsylvania, United States; [2]Biology, Pennsylvania State University, University Park, Pennsylvania, United States.

3:30 PM BREAK

F: Materials Chemistry and Materials for Energy

SESSION F2: Lattice Dynamics of Energy Materials with Neutron Spectroscopy
Session Chairs: Luke Daemen and Olivier Delaire
Monday Afternoon, July 11, 2016
"R" Deck (Mid-Ship) Level, Windsor Salon

1:45 PM F2.01
Orbitally-Driven Giant Phonon Anharmonicity in SnSe Chen W. Li[1, 2], Jiawang Hong[2], Andrew F. May[2], Dipanshu Bansal[2], Songxue Chi[2], Tao Hong[2], Jie Ma[2], George Ehlers[2] and Olivier Delaire[2, 3]; [1]Carnegie Institution for Science, Washington, District of Columbia, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Duke University, Durham, North Carolina, United States.

2:00 PM F2.02
Using Normal Mode Analysis and Dynamic Pair Distribution Function Analysis to Visualize Atomic Motions Allyson M. Fry-Petit; Chemistry and Biochemistry, California State University, Fullerton, Fullerton, California, United States.

2:15 PM *F2.03
Combined Neutron and X-Ray Scattering Studies of the Impact of Lattice Dynamics on Phase Stability in Rutile Oxides John D. Budai[1], Jiawang Hong[1], Olivier Delaire[1], Michael E. Manley[1], Raphael Hermann[1], Chen W. Li[1], Douglas L. Abernathy[2], Ayman Said[3], Jon Tischler[3], Paul J. Stonaha[1], Rob J. McQueeney[2], Lynn Boatner[1] and Eliot Specht[1]; [1]Materials Science & Technology, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Neutron Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Advanced Photon Source, Argonne National Lab, Argonne, Illinois, United States.

2:45 PM F2.04
Lattice Dynamics in Pyrochlore and Defect Fluorite Rare-Earth Zirconates Raphael Hermann; Materials Science and Technology, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

3:00 PM F2.05
Simultaneous Neutron Vibrational Spectroscopy and Raman Spectroscopy at the SNS R. C. Gillis[1], Yongqiang Cheng[1], Luke L. Daemen[1], Monika A. Hartl[2], Thomas Huegle[1], Erik B. Iverson[1] and Anibal J. Ramirez-Cuesta[1]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]European Spallation Source, Lund, Sweden.

3:15 PM F2.06
Identifying Structural Motifs in Organic Electronics Using Inelastic Neutron Spectroscopy Thomas Harrelson[1], Yongqiang Cheng[2], Jun Li[1], Anibal J. Ramirez-Cuesta[2], Roland Faller[1] and Adam J. Moule[1]; [1]Chemical Engineering, University of California, Davis, Davis, California, United States; [2]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

3:30 PM BREAK

H: Neutron Physics

SESSION H1: Beta Decay and Instrumentation
Session Chairs: M. Scott Dewey and Dmitry Pushin
Monday Afternoon, July 11, 2016
Promenade Deck (Stern) Level, Royal Salon

1:45 PM *H1.01
Fundamental Physics with Ultracold Neutrons
Adam T. Holley; Physics, Tennessee Technological University, Cookeville, Tennessee, United States.

2:15 PM H1.02
Precision Measurement of Radiative Neutron Decay
Jeffrey S. Nico[1, 2]; [1]Physical Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]RDK II Collaboration, Gaithersburg, Maryland, United States.

2:30 PM H1.03
A Measurement of the Electron-Antineutrino Correlation in Free Neutron Beta Decay Alexander Komives[1, 2]; [1]DePauw University, Greencastle, Indiana, United States; [2]aCORN Collaboration, Greencastle, Indiana, United States.

2:45 PM H1.04
Development of a Large Volume Thermal Neutron Detector Chandra B. Shahi[1], Robert Vest[2], Alan K. Thompson[2], Michael A. Coplan[1] and Charles W. Clark[1, 2]; [1]Joint Quantum Institute, University of Maryland, Gaithersburg, Maryland, United States; [2]National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

3:00 PM H1.05
Ultracold Neutron Source at Los Alamos National Lab Zhaowen Tang; P-25, Los Alamos National Lab, Los Alamos, New Mexico, United States.

3:15 PM H1.06
Current Status of CG-1D Imaging Beamline at Oak Ridge National Laboratory High Flux Isotope Reactor and Addition of New Capabilities to the Beam Line Indu Dhiman[1], Hassina Bilheux[1], Louis J. Santodonato[1], Jeffrey Warren[2], Xing T. Tong[1], Chenyang Jiang[1], Lowell Crow[1], Nikolay Kardjilov[3] and Wolfgang Treimer[3]; [1]NsCD, Oak Ridge National Laboratory, Oak ridge, Tennessee, United States; [2]Environmental Sciences Division and Climate Change Science Institute, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Institute Applied Materials, Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany.

3:30 PM BREAK

C: Hard Condensed Matter

SESSION C3: 4D and 5D Transition Metal Oxides
Session Chairs: Bruce Gaulin and Stephen Wilson
Monday Afternoon, July 11, 2016
"R" Deck Level, Grand Salon

4:00 PM *C3.01
Neutron Scattering Studies of the Kitaev Quantum Spin Liquid Candidate α-$RuCl_3$ Stephen Nagler; Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

4:30 PM C3.02
Anomalous Spin Gaps in Sr_2TMOsO_6 (TM=Sc, Cr,Fe) Double Perovskites Alice Taylor[1], Ryan Morrow[2], Randy S. Fishman[3], Stuart Calder[1], David J. Singh[4], Alexander I. Kolesnikov[5], Mark D. Lumsden[1], Patrick Woodward[2] and Andrew Christianson[1, 6]; [1]Quantum Condensed Matter, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Department of Chemistry, The Ohio State University, Columbus, Ohio, United States; [3]Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]Department of Physics and Astronomy, University of Missouri, Columbia, Missouri, United States; [5]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [6]Department of Physics and Astronomy, University of Tennessee, Knoxville, Tennessee, United States.

4:45 PM C3.03
Anisotropic In-Plane Magnetic Correlation Length and Structure-Magnetism Correlation in Bilayered Perovskite $Sr_3(Ru_{1-x}Mn_x)_2O_7$ Qiang Zhang[1, 2], Feng Ye[2], Wei Tian[2], Songxue Chi[2], Dalgis Mesa[3], Rongying Jin[3], Ward Plummer[3]and Jiandi Zhang[3]; [1]Department of Physics and Astronomy, Louisiana State University, Oak Ridge, Tennessee, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Louisiana State University, Baton Rouge, Louisiana, United States.

5:00 PM C3.04
Exploring the Spin-Orbit Driven Magnetic Structure and Excitations in Analogous 4d and 5d Oxides Stuart Calder[1], Satoshi Okamoto[1], Ling Li[1], Mark D. Lumsden[1], Alice Taylor[1], Kazunari Yamaura[2], Andrew Christianson[1], David Mandrus[1] and Daniel Haskel[3]; [1]Oak Ridge National Laboratory, Knoxville, Tennessee, United States; [2]National Institute for Materials Science, Tsukuba, Japan; [3]APS, Argonne, Illinois, United States.

5:15 PM C3.05
Gapped Singlet State in Frustrated Double Perovskite La_2LiReO_6 Jeremy P. Carlo[1], John Greedan[2], Adam Aczel[3], J. R. Pollichemi[1], M. E. Evans[1], Matthew Stone[3] and Bruce Gaulin[4]; [1]Department of Physics, Villanova University, Villanova, Pennsylvania, United States; [2]Department of Chemistry, McMaster University, Hamilton, Ontario, Canada; [3]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]Department of Physics, McMaster University, Hamilton, Ontario, Canada.

G: Engineering and Industrial Applications

SESSION G1: Engineering Materials I
Session Chair: Sean Agnew
Monday Afternoon, July 11, 2016
"R" Deck (Mid-Ship) Level, Windsor Salon

4:00 PM *G1.01
Neutron Scattering at Oak Ridge National Laboratory in Support of Materials Science and Engineering Research Edward A. Payzant, Ke An, Hassina Bilheux and Kenneth Littrell; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

4:30 PM G1.02
Devices for In Situ Multi-Axial Deformation in Neutron Diffraction Thomas Gnaeupel-Herold and Justin Milner; Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

4:45 PM G1.03
Experimental and Computational Investigation of High Entropy Alloys for Elevated-Temperature Applications Haoyan Diao[1], Chuan Zhang[2], Joerg C. Joerg[3] and Peter K. Liaw[1]; [1]Materials Science and Engineering, University of Tennessee, Knoxville, Tennessee, United States; [2]Computherm LLC, Madison, Wisconsin, United States; [3]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

5:00 PM G1.04
Neutron Transmission Bragg Edge Measurements of Crack Tip Strain Fields from Fatigue of High Strength Pipeline Steel in a Hydrogen Environment Matthew Connolly, Daniel S. Hussey, Andrew Slifka and Elizabeth Drexler; National Institute of Standards and Technology, Boulder, Colorado, United States.

MONDAY

POSTER PRESENTATIONS

SESSION BP2: Poster Session: Sources, Instrumentation and Software I
B: Sources, Instrumentation and Software
Monday Afternoon, July 11, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

BP2.01
Development and Experimental Evaluation of Scintillating Microfiber Lithium Glass Array for High Spatial Resolution Neutron Imaging at Neutron Scattering Facilities Michael E. Moore, Xiaodong Zhang, Jinglong Zhang and Jason P. Hayward; Nuclear Engineering, University of Tennessee, Knoxville, Tennessee, United States.

BP2.02
MACS II—The Multi-Axis Crystal Spectrometer at the NIST Center for Neutron Research Jose A. Rodriguez-Rivera[1, 2], Yiming Qiu[2] and Collin Broholm[3, 2]; [1]University of Maryland, College, Maryland, United States; [2]NIST Center for Neutron Research, Gaithersburg, Maryland, United States; [3]Department of Physics and Astronomy, Johns Hopkins University, Baltimore, Maryland, United States.

BP2.03
Experimental Setup for Investigation on Magnetic Thin Layers by In Situ Neutron Reflectometry Jingfan Ye[1], Wolfgang Kreuzpaintner[1], Birgit Wiedemann[1], Sina Mayr[1], Andreas Schmehl[2], Thomas Mairoser[2], Alexander Herrnberger[2], Jean-Francois Moulin[3], Jochen Stahn[4], Panagiotis Korelis[4], Martin Haese-Seiller[3], Matthias Pomm[3], Amitesh Paul[1], Peter Boeni[1] and Jochen Mannhart[5]; [1]Physik-Department E21, Technische Universität München, Garching, Germany;[2]Experimentalphysik IV, Institut für Physik, Universität Augsburg, Augsburg, Germany; [3]Instrument REFSANS, Helmholtz Zentrum Geesthacht, Garching, Germany; [4]Laboratory for Neutron Scattering and Imaging, Paul-Scherrer-Institut, Villigen, Switzerland; [5]Max Planck Institut für Festkörperforschung, Stuttgart, Germany.

BP2.05
A New Multi-MHz Detection System Operational at KWS-2 High-Intensity SANS Diffractometer of the JCNS at MLZ Aurel Radulescu[1], Georg Brandl[1], Matthias Drochner[1], Guenter Kemmerling[1], Vladimir Ossovyi[1], Simon Staringer[1], Guido Vehres[1], Alexander Ioffe[1], Kevin McKinny[2], Daniel McCormick[2] and Mike Delong[2]; [1]Forschungszentrum Jülich GmbH, Garching, Germany; [2]GE Reuter Stokes, Twinsburg, Ohio, United States.

BP2.06
An Open-Source Software for Experiment Planning, Visualization and Analysis of Triple-Axis Data Tobias Weber[1, 2], Robert Georgii[1, 2] and Peter Boeni[1]; [1]Physikdepartment E21, Technische Universitaet München, Garching, Germany;[2]Maier-Leibnitz-Zentrum, Technische Universität München, Garching, Germany.

BP2.07
Mantid Data Reduction and Visualization Stuart Campbell[1], Raquel Alvarez Banos[3], Owen Arnold[4], Jean-Christophe Bilheux[1], Jose Borreguero Calvo[1], Mathieu Doucet[1], Nick Draper[4], Ricardo Ferraz Leal[1], Martyn Gigg[4], Garrett E. Granroth[1], Steven E. Hahn[1], Simon Heybrock[5], Jiao Lin[1], Vickie Lynch[1], Anders Markvarsden[3], Federico Montesino Pouzols[3], Peter G. Parker[2], Peter F. Peterson[1], Anton Piccardo-Selg[3], Andrei Savici[1], Jon Taylor[5], Roman Tolchenov[4], Michael Wedel[5], Ross E. Whitfield[1] and Wenduo Zhou[1]; [1]Neutron Data Analysis and Visualization, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Neutron Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]ISIS Facility, Rutherford Appleton Laboratory, Didcot, United Kingdom; [4]Tessella, Abingdon, United Kingdom; [5]European Spallation Source, Lund, Sweden.

BP2.08
Recent Data Processing Progress at the Liquids Reflectometer at the SNS Mathieu Doucet, James F. Browning, John F. Ankner and Jean-Christophe Bilheux; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

SESSION CP4: Poster Session: Hard Condensed Matter I
C: Hard Condensed Matter
Monday Afternoon, July 11, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

CP4.01
Field Evolution of Magnetism in Multiferroic $(ND_4)_2[FeCl_5(D_2O)]$ Wei Tian, Huibo Cao, Jiaqiang Yan, Brian Sales and Jaime A. Fernandez-Baca; Oak Ridge National Laboratory, Knoxville, Tennessee, United States.

CP4.02
Bismuth Manganite Thin-Film Daniel Pajerowski; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

CP4.04
Spin Gaps in the Ordered States of La_2LiXO_6 (X= Ru, Os) and Their Relation to Distortion of the Cubic Double Perovskite Pyrochlore Structure in 4 and 5d^3 Magnets Dalini Maharaj[1], Gabriele Sala[1], Corey Thompson[4], Casey Marjerrison[1], Matthew Stone[5], John Greedan[4] and Bruce Gaulin[1, 2, 3]; [1]Physics, McMaster University, Hamilton, Ontario, Canada; [2]Brockhouse Institute for Materials Research, Hamilton, Ontario, Canada; [3]Canadian Institute for Advanced Research, Toronto, Ontario, Canada; [4]Chemistry, McMaster University, Hamilton, Ontario, Canada; [5]Quantum Condensed Matter Division, SNS, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

CP4.06
Phase Sensitive Small Angle Neutron Scattering Erik Brok[1, 2], Kathryn Krycka[1] and Charles Majkrzak[1]; [1]NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]Materials Science and Engineering Department, University of Maryland, College Park, Maryland, United States.

CP4.07
Single-Phase fcc CoCrFeNi High Entropy Alloy Solidification in Containerless Processing Gong Li; The University of Tennessee, Knoxville, Tennessee, United States.

CP4.08
Complex Magnetism and Metal-Insulator Transitions in Hollandite Transition Metal Oxides Amber Larson[1], Pouya Moetakef[1], Jeffrey W. Lynn[2] and Efrain E. Rodriguez[1]; [1]Department of Chemistry and Biochemistry, University of Maryland, College Park, Maryland, United States; [2]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

CP4.09
Band Structure of Helimagnons in MnSi Resolved by Inelastic Neutron Scattering Maximilian F. Kugler; Physik-Department E21, TUM / MLZ, Garching, Germany.

SESSION DP2: Poster Session: Soft Matters I
D: Soft Matter
Monday Afternoon, July 11, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

DP2.01
Dynamics and Structure of Amorphous Poly(3-alkylthiophene)s for Semiconductor Application Pengfei Zhan, Janna K. Maranas and Enrique Gomez; Chemical Engineering, Pennsylvania State University, University Park, Pennsylvania, United States.

DP2.02
The Role of Hydrodynamic Interactions in Shear-Induced Clustering of Nanoparticle Suspensions in Polymer Solutions Juntae Kim and Matthew E. Helgeson; Chemical Engineering, University of California, Santa Barbara, California, United States.

DP2.03
A Multi-Technique 'Neutron Approach' to Characterize Branching in Worm-Like Micelles (WLMs) Michelle Calabrese[1], Simon A. Rogers[3], Lionel Porcar[2] and Norman J. Wagner[1]; [1]Chemical and Biomolecular Engineering, University of Delaware, Newark, Delaware, United States; [2]Large Scale Structures, Institut Laue-Langevin, Grenoble, France; [3]Chemical and Biomolecular Engineering, University of Illinois Urbana-Champaign, Urbana, Illinois, United States.

DP2.04
Tunable Rheology, Microstructure and Flow Properties of Thermo-reversible Micellar Crystals in the Protic Ionic Liquid Ethylammonium Nitrate Ru Chen[1], Carlos R. Lopez-Barron[2] and Norman J. Wagner[1]; [1]Chemical and Biomolecular Engineering, University of Delaware, Newark, Delaware, United States; [2]Advanced Characterization Department, ExxonMobil Chemical Company, Baytown, Texas, United States.

DP2.05
USANS as a Tool for Kinetic Analysis— Polymeric Particle Growth in Mixed Matrix Membranes Joey D. Kim[1], Rachel Ford[2], Mamadou Diallo[4, 3] and Julia Kornfield[1]; [1]Chemical Engineering, California Institute of Technology, Aliso Viejo, California, United States; [2]Chemistry, California Institute of Technology, Pasadena, California, United States; [3]Energy, Environment, Water, and Sustainability, Korea Advanced Institute of Science and Technology, Daejeon, Korea (the Republic of); [4]Division of Engineering and Applied Science, California Institute of Technology, Pasadena, California, United States.

DP2.06
Segmental Chain Dynamics of ABA Triblock Copolymer Micelles in Aqueous Solution Vivek Prabhu[1], Michihiro Nagao[4], Guangmin Wei[1], Shrinivas Venkataraman[3], Yi Yan Yang[3] and James Hedrick[2]; [1]Materials Science and Engineering Division, NIST, Gaithersburg, Maryland, United States; [2]IBM Almaden, San Jose, California, United States; [3]Institute of Bioengineering and Nanotechnology, The Nanos, Singapore; [4]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

DP2.07
A New General Method of Size Selective Purification of Nanoparticles Hongyu Guo[1, 2], Yun Liu[1, 2] and Gheorghe Stan[3]; [1]Department of Chemical Engineering, University of Delaware, Gaithersburg, Maryland, United States; [2]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [3]Materials Measurement Science Division, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

SESSION EP2: Poster Session: Biology I
E: Biology
Monday Afternoon, July 11, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

EP2.01
***Pichia Pastoris* as a Source of Biomolecules for Neutron Scattering Experiments** William B. O'Dell[1, 2], Annette M. Bodenheimer[1, 2], Robert F. Standaert[2, 3], Kevin L. Weiss[2] and Flora Meilleur[1, 2]; [1]Department of Molecular and Structural Biochemistry, North Carolina State University, Raleigh, North Carolina, United States; [2]Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Energy and Environmental Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

EP2.03
Structural Changes of Lignocellulosic Biopolymer and Assemblies Caused by Tension Stress Sai V. Pingali[1], Daisuke Sawada[1], Udaya Kalluri[2], Hugh M. O'Neill[1], Volker Urban[1], Paul Langan[3] and Brian H. Davison[2]; [1]Biology and Soft Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Biosciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

SESSION FP3: Poster Session: Materials Chemistry and Materials for Energy I
F: Materials Chemistry and Materials for Energy
Monday Afternoon, July 11, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

FP3.01
Structural and Low-Dimensional Magnetic Properties of the Fluoride β-FeF3(H2O)2*H2O Gwilherm Nenert and Scott A. Speakman; PANalytical, Valley Glen, California, United States.

FP3.02
Investigating Ni/Mn Ordering in the Ordered and Disordered High Voltage Spinel ($LiNi_{0.5}Mn_{1.5}O_4$) Cathode Material Jue Liu, Katharine Page and Ashfia Huq; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

FP3.03
Density Functional Theory for Neutron Scattering—Water Mobility in Uranyl Fluoride Marie Kirkegaard[1, 2] and Andrew Miskowiec[1]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]University of Tennessee, Knoxville, Oak Ridge, Tennessee, United States.

FP3.04
Probing Molecular Magnetism with Neutron Scattering Shelby E. Stavretis[1], Andrey Podlesnyak[2], Souleymane Diallo[3], Duncan Moseley[1], Lei Chen[4], Xue-Tai Chen[4] and Zi-ling Xue[1]; [1]Chemistry, University of Tennessee, Knoxville, Tennessee, United States; [2]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]School of Chemistry and Chemical Engineering, Nanjing University, Nanjing, China.

FP3.05
Dynamics of Propane Confined in Mesoporous Silica Siddharth S. Gautam[1], Thu Le[2], Alberto Striolo[2] and David Cole[1]; [1]School of Earth Sciences, Ohio State University, Columbus, Ohio, United States; [2]Department of Chemical Engineering, University College London, London, United Kingdom.

FP3.06
Li-Ion Diffusion in Lithium Phosphate Glasses Studied by Backscattering Spectroscopy Tom Heitmann[1], Gavin Hester[2], Souleymane Diallo[3] and Saibal Mitra[2]; [1]University of Missouri Research Reactor, Columbia, Missouri, United States; [2]Missouri State University, Springfield, Missouri, United States; [3]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

FP3.07
High Pressure Inelastic Neutron Scattering with Diamond Anvil Cell Luke L. Daemen, Bianca Haberl, Reinhard Boehler, Yongqiang Cheng and Anibal J. Ramirez-Cuesta; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

SESSION GP2: Poster Session: Engineering and Industrial Applications I
G: Engineering and Industrial Applications
Monday Afternoon, July 11, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

GP2.01
Amorphous Topology in Semicrystalline Polyolefins from Vapor-Flow SANS Amanda G. McDermott[1], Chad R. Snyder[1], Paul J. DesLauriers[2] and Ronald L. Jones[1]; [1]Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]Chevron Phillips Chemical Co., Bartlesville, Oklahoma, United States.

GP2.02
Deformation Behaviors of a Nanostructured Ferritic Alloy Studied by Neutron Diffraction Alexandru Stoica and Dong Ma; Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

GP2.03
Advances in High Temperature at Neutron Facilities at Oak Ridge National Laboratory Rebecca A. Mills, Doug Armitage, Christopher M. Redmon and Gary Lynn; Instrument and Source Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

SESSION HP2: Poster Session: Neutron Physics
H: Neutron Physics
Monday Afternoon, July 11, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

HP2.01
Ultra-Narrow Line Diode Laser Systems for Optical Pumping of K, Rb, Cs, and Ar Gases Aleksandr Ryasnyanskiy[1], Lawrence Chase[1], Travis Wood[1], Oleksiy Mokhun[1], Vadim Smirnov[1], Alexei Glebov[1] and Leon Glebov[2]; [1]OptiGrate Corp., Oviedo, Florida, United States; [2]CREOL / The College of Optics and Photonics, University of Central Florida, Orlando, Florida, United States.

HP2.02
Spin Excitations in the Thiospinel $FeCr_2S_4$ Ganesh Pokharel[1, 2], Huibo Cao[2], Alice Taylor[2], George Ehlers[2], David Mandrus[1, 3, 4] and Andrew Christianson[2, 1]; [1]Dept. of Physics and Astronomy, The Univ. of Tennessee, Knoxville, Tennessee, United States; [2]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Material Science and Engineering, The Univ. of Tennessee, Knoxville, Tennessee, United States; [4]Material Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

HP2.03
Localized Modes of Neutrons in Periodic Condensed Media and High Monochromatization of Thermal Neutrons Vladimir A. Belyakov; Russian Academy of Sciences, Landau Institute for Theoretical Physics, Moscow, Russian Federation.

HP2.04
Exploring the Origin of a Weak Ring in SANS Pattern of Highly-Ordered Pyrolytic Graphite Lilin He, William Hamilton and Nidia Gallego; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

TUESDAY ORAL PRESENTATIONS

* Invited Paper

A: Plenary and Prize Sessions

SESSION A1: Plenary and Prize Session
Session Chairs: Stephan Rosenkranz and Alexei Sokolov
Tuesday Morning, July 12, 2016
"R" Deck Level, Grand Salon

8:15 AM
FELLOWS ANNOUNCEMENT by Stephan Rosenkranz, Argonne National Laboratory and NSSA President

8:30 AM *A2.01
SCIENCE PRIZE WINNER: Understanding Proteins in Solution— Opportunities and Challenges for Colloidal Science and Neutron Scattering Yun Liu[1, 2]; [1]NIST Center for Neutron Research, Gaithersburg, Maryland, United States;[2]Chemical and Biomolecular Engineering, University of Delaware, Newark, Delaware, United States.

9:10 AM *A2.02
PLENARY: Neutrons Get to the Heart of Soft-Matter Julia Kornfield; Chemical Engineering, California Institute of Technology, Pasadena, California, United States.

B: Sources, Instrumentation and Software

B3: Instrumentation and Sources I
Session Chair: Ken Herwig
Tuesday Morning, July 12, 2016
Promenade Deck (Stern) Level, Royal Salon

10:15 AM *B3.01
Recent Advances in In Situ High Pressure Neutron Diffraction on Disordered Materials Bianca Haberl[2], Jamie J. Molaison[2], Joerg C. Neuefeind[2] and Reinhard Boehler[1]; [1]Geophysical Laboratory, Carnegie Institution of Washington, Washington, District of Columbia, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

10:45 AM B3.02
Clamp Pressure Cells at SNS—What Can We Learn From *Not-So-High* Pressure Physics Andrey Podlesnyak, Liusuo Wu and Mark D. Lumsden; Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:00 AM B3.03
Scattering Studies of Metallic Liquids Using the Neutron ElectroStatic Levitator (NESL) at the Spallation Neutron Source (SNS) Adam J. Vogt; Instrument and Source Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:15 AM B3.04
In Situ Neutron Reflectometry during Thin-Film Growth by Sputter Deposition Wolfgang Kreuzpaintner[1], Sina Mayr[1], Jingfan Ye[1], Jochen Stahn[2], Jean-Francois Moulin[3], Amitesh Paul[1], Martin Haese-Seiller[3], Matthias Pomm[3], Andreas Schmehl[6], Birgit Wiedemann[1], Thomas Mairoser[6], Alexander Herrnberger[6], Panagiotis Korelis[2], Bjorgvin Hjorvarsson[4], Peter Boeni[1] and Jochen Mannhart[5]; [1]Physik-Department E21, Technische Universität München, Garching, Germany;[2]Laboratory for Neutron Scattering, Paul Scherrer Institut, Villigen PSI, Switzerland; [3]Helmholtz-Zentrum-Geesthacht Zentrum für Material- und Küstenforschung GmbH, Geesthacht, Germany; [4]Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; [5]Max-Planck-Institut für Festkörperforschung, Stuttgart, Germany; [6]Institut für Physik, Experimentalphysik VI - Elektronische Korrelationen und Magnetismus, Universität Augsburg, Augsburg, Germany.

11:30 AM B3.05
Neutron Focusing and Guiding Using Multilayer-Coated Nickel Mirrors—Demonstrations and Opportunities Boris Khaykovich[1] and Suzanne Romaine[2]; [1]Nuclear Reactor Laboratory, Massachusetts Institute of Technology, Cambridge, Massachusetts, United States; [2]Smithsonian Astrophysical Observatory, Cambridge, Massachusetts, United States.

11:45 AM B3.06
Variation in Neutronic Performance of Spallation Neutron Source Beamlines Erik B. Iverson[1], Franz X. Gallmeier[1], Thomas Huegle[1], Wei Lu[1] and Tucker C. McClanahan[2, 1]; [1]Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Nuclear Engineering, University of Tennessee, Knoxville, Knoxville, Tennessee, United States.

12:00 PM B3.07
Short-Pulse Laser-Driven Moderated Neutron Source Andrea Favalli[1], Sven C. Vogel[1], Martyn Swinhoe[1], Daniela Henzlova[1], Kiril Ianakiev[1], Metodi Iliev[1], Katrina Koehler[1], Donald C. Gautier[1], Randall Johnson[1], Tsutomo Shimada[1], Sasikumar Palaniyappan[1], Russ Mortensen[1], Juan Fernandez[1], Adrian S. Losko[1, 2], Kelly Knickerbocker[1], Jason Gochanour[1], Vincent Yuan[1], Anton S. Tremsin[2], Annika Kleinschmidt[3], Oliver Deppert[3], Gabriel Schaumann[3] and Markus Roth[3]; [1]Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [2]University of California, Berkeley, Berkeley, California, United States; [3]Technical University Darmstadt, Darmstadt, Germany.

C: Hard Condensed Matter

SESSION C5: Fe-Based High-Tc
Session Chairs: Dmitry Reznik and Matthew Stone
Tuesday Morning, July 12, 2016
"R" Deck Level, Grand Salon

10:15 AM *C5.01
Universal Interplay of Structure, Magnetism and Superconductivity in Iron-Based Materials Anna E. Boehmer[1,2]; [1]Ames Laboratory, Iowa State University, Ames, Iowa, United States; [2]Institut für Festkörperphysik, Karlsruhe Institute of Technology, Karlsruhe, Germany.

10:45 AM C5.02
Structural Parameters and the Varied Manifestations of the Magnetic C_4 Phase in the 122 Iron-Based Superconductors Keith M. Taddei[1,2], Jared M. Allred[2,3], Dan Bugaris[4], Saul H. Lapidus[4], Matthew J. Krogstad[1,2], Ryan Stadel[1,2], Helmut Claus[4], Duck Young Chung[4], Mercouri G. Kanatzidis[4,5], Stephan Rosenkranz[2], Raymond Osborn[2] and Omar Chmaissem[1,2]; [1]Northern Illinois University, Dekalb, Illinois, United States; [2]Materials Science Division, Argonne National Laboratory, Lemont, Illinois, United States; [3]University of Alabama, Tuscaloosa, Alabama, United States; [4]Argonne National Laboratory, Lemont, Illinois, United States; [5]Chemistry, Northwestern University, Evanston, Illinois, United States.

11:00 AM C5.03
Spin-Flip and Non-Spin Flip Magnetic Scattering in an Iron Chalcoogenide Superconductor Igor Zaliznyak[1], John Schneeloch[1], Zhijun Xu[2], Guangyong Xu[1], Genda Gu[1], John Tranquada[1], Andrei Savici[3] and Ovidiu Garlea[3];[1]CMPMSD, Brookhaven National Laboratory, Upton, New York, United States; [2]Physics Department, University of California, Berkeley, Berkeley, California, United States; [3]QCMD, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:15 AM C5.04
Enhancement of Finite Wavevector Nematic Fluctuations in the Superconducting State of Fe-Based Superconductor $BaFe_{2-x}Co_xAs_2$ Dmitry Reznik[1], John-Paul A. Castellan[2], Lothar Pintschovius[2], Daniel Parshall[3], Thomas Wolf[2] and Frank Weber[2]; [1]University of Colorado, Boulder, Boulder, Colorado, United States; [2]Karlsruhe Institute of Technology, Karlsruhe, Germany; [3]National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

11:30 AM C5.05
Neutron Diffraction Studies on $Ca(Co_{1-x}Fe_x)_2As_2$ ($x \leq 0.24$) Single Crystals Wageesha T. Jayasekara[1], Benjamin Ueland[1], Aashish Sapkota[1], K. Kothapalli[1], N.S. Sangeetha[1], Abhishek Pandey[1], V.K. Anand[2], Wei Tian[3], D.C. Johnston[1], A. Kreyssig[1], Rob J. McQueeney[1] and Alan Goldman[1]; [1]Ames Laboratory and Department of Physics and Astronomy, Iowa State University, Ames, Iowa, United States; [2]Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Hahn-Meitner Platz 1, D-14109 Berlin, Germany, Berlin, Germany; [3]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA, Oak Ridge, Tennessee, United States.

11:45 AM C5.06
Neutron Scattering Studies on the $Rb_xFe_ySe_{2-z}S_z$ System Wang Meng; Physics, University of California, Berkeley, Berkeley, California, United States.

12:00 PM C5.07
Wall-Like Spin Excitations in A-Type Antiferromagnetic $CaCo_{1.86}As_2$ Aashish Sapkota[1,2], Benjamin Ueland[1,2], V.K. Anand[3], Jennifer Niedziela[5], Douglas L. Abernathy[4], Matthew Stone[4], D.C. Johnston[1,2], A. Kreyssig[1,2], Alan Goldman[1,2] and Rob J. McQueeney[1,2]; [1]Division of Materials Science and Engineering, Ames Laboratory, Ames, Iowa, United States; [2]Department of Physics and Astronomy, Iowa State University, Ames, Iowa, United States; [3]Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany; [4]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [5]Instrument and Source Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

D: Soft Matter

SESSION D3: Self-Assembly and Conjugated Polymer Fundamentals
Session Chair: Matthew Helgeson
Tuesday Morning, July 12, 2016
Promenade Deck Level, Queens Salon

10:15 AM *D3.01
Structure and Conformation of Bottlebrush Polymers and Assemblies Determined by Small-Angle Neutron Scattering Rafael Verduzco, Stacy L. Pesek and Xianyu Li; Chemical and Biomolecular Engineering, Rice University, Houston, Texas, United States.

10:45 AM D3.02
Influencing the Structure of Block Copolymer Micelles with Small Molecule Additives Megan L. Robertson[1], Tyler J. Cooksey[1], Bryce E. Kidd[2], Avantika Singh[1], Shu Wang[1] and Louis A. Madsen[2]; [1]Chemical & Biomolecular Engineering, University of Houston, Houston, Texas, United States; [2]Virginia Tech, Blacksburg, Virginia, United States.

11:00 AM D3.03
Microstructure and Dynamics of Polymeric Wormlike Micelles in Ionic Liquids Ru Chen[1], Carlos R. Lopez-Barron[2] and Norman J. Wagner[1]; [1]Chemical and Biomolecular Engineering, University of Delaware, Newark, Delaware, United States; [2]ExxonMobil Chemical Company, Baytown, Texas, United States.

11:15 AM D3.04
A Simple Model for Understanding Shear-Induced Microstructure and Rheology of Linear and Branched Wormlike Micelles Gregory S. Smith[1], Michael Weaver[2], Kathleen M. Weigandt[3] and Jason Rich[1,4]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]P&G Analytical Services, Mason, Ohio, United States; [3]NIST, Gaithersburg, Maryland, United States; [4]Sovay Corp, Alpharetta, Georgia, United States.

11:30 AM D3.05
Elucidating the Secondary Structures of Poly(5-alkylthiophenes) by Scattering Techniques Honghai Zhang[1], Changwoo Do[2], Jong Keum[1,2], Peter V. Bonnesen[1] and Kunlun Hong[1]; [1]The Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Spallation Neutron Source, Oak Ridge, Tennessee, United States.

11:45 AM D3.06
Investigation of Thermo-Responsive Properties of Soft Matter Self-Assemblies with Conjugated Polymers Youngkyu Han[1], Jan-Michael . Carrillo[2, 3], Jiahua Zhu[2], Zhe Zhang[1, 4], Yunchao Li[5], Kunlun Hong[2], Bobby G. Sumpter[2, 3], Michael Ohl[4], Mariappan P. Paranthaman[5], Ilia N. Ivanov[2], Gregory S. Smith[1] and Changwoo Do[1]; [1]Biology and Soft Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Computer Science and Mathematics Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]Forschungszentrum Jülich, Jülich Center for Neutron Science, Jülich, Germany; [5]Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

12:00 PM D3.07
Improving Molecular Modeling of Conjugated Polymers with Neutron Scattering Lilo D. Pozzo, Kiran Kanekal and Yeneneh Yimer; Chemical Engineering, University of Washington, Seattle, Washington, United States.

F: Materials Chemistry and Materials for Energy

SESSION F4: Neutron Diffraction and Total Scattering of Complex Materials Chemistry
Session Chairs: Allyson Fry-Petit and Angus Wilkinson
Tuesday Morning, July 12, 2016
"R" Deck (Mid-Ship) Level, Windsor Salon

10:15 AM F4.01
Universality of the C_4 Phase in Ternary Phase Diagrams of the Hole-Doped Pnictide Superconductors Omar Chmaissem[1, 2], Ryan Stadel[1, 2], Keith M. Taddei[1, 2], Dan Bugaris[2], Saul H. Lapidus[2], Helmut Claus[2], Duck Young Chung[2], Mercouri G. Kanatzidis[3, 2], Raymond Osborn[2] and Stephan Rosenkranz[2]; [1]Physics, Northern Illinois University, DeKalb, Illinois, United States; [2]Materials Science Division, Argonne National Laboratory, Argonne, Illinois, United States;[3]Chemistry Department, Northwestern University, Evanston, Illinois, United States.

10:30 AM F4.02
Incommensurate Crystal Supercell and Polarization Flop Observed in the Magnetoelectric Ilmenite $MnTiO_3$ Harlyn Silverstein[1, 2], Elizabeth Skoropata[2], Paul Sarte[2], Cole Mauws[3], Adam Aczel[4], Huibo Cao[4], Eun Sang Choi[5], Johan van Lierop[2], Christopher Wiebe[2, 3] and Haidong Zhou[6]; [1]Stanford University, Stanford, California, United States; [2]University of Manitoba, Winnipeg, Manitoba, Canada; [3]University of Winnipeg, Winnipeg, Manitoba, Canada; [4]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [5]National High Magnetic Field Laboratory, Tallahassee, Florida, United States; [6]University of Tennessee-Knoxville, Knoxville, Tennessee, United States.

10:45 AM *F4.03
Topological Defects and Topological Charge Conservation in Complex Materials Sang-Wook Cheong; Physics and Astronomy, Rutgers University, Piscataway, New Jersey, United States.

11:15 AM F4.04
Understanding Octahedral Tilting in n=2 Ruddlesden-Popper Phases Andrew Sharits[1], Patrick Woodward[1] and Nicole Benedek[2]; [1]Chemistry, Ohio State University, Columbus, Ohio, United States; [2]Material Science and Engineering, Cornell University, Ithaca, New York, United States.

11:30 AM F4.05
Understanding the Rapid Reversible Phase Transformation between Nanophase Bixbyite (Mn_2O_3) and Hausmannite (Mn_3O_4) Triggered by Surface Water Using Neutron Total Scattering Jue Liu and Katharine Page; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:45 AM F4.06
Structure and Incorporation Studies in a Glass Network—Lanthanides and Uranium Surroundings by Neutron- and X-Ray Diffraction Margit Fabian[1] and Csaba Araczki[2]; [1]Centre for Energy Research, Budapest, Hungary; [2]Budapest University of Technology and Economics, Budapest, Hungary.

12:00 PM F4.07
An In Situ Gas Flow Cell for Stroboscopic Studies of Local Atomic Structure in Catalytic Materials Daniel Olds[1], Arnold Paecklar[2], Peter F. Peterson[1], James Neilson[2] and Katharine Page[1]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Colorado State University, Fort Collins, Colorado, United States.

B: Sources, Instrumentation and Software

SESSION B4: Software at Neutron Sources
Session Chair: Raymond Osborn
Tuesday Afternoon, July 12, 2016
Promenade Deck (Stern) Level, Royal Salon

1:45 PM *B4.01
Software Shaping the Future of Neutron Scattering Mark Johnson; Institute Laue Langevin, La Tronche, France.

2:15 PM B4.02
MCViNE-Assisted Data Analysis of Direct-Geometry TOF Spectrometers at SNS Jiao Lin[1], Hillary Smith[2], Garrett E. Granroth[1], Brent Fultz[2], Douglas L. Abernathy[1], Yuen Yiu[1], Adam Aczel[1], Mark D. Lumsden[1], Souleymane Omar Diallo[1], Jon Leiner[1], Barry L. Winn[1] and Dennis S. Kim[2]; [1]Neutron Sciences Directorate, Oak Ridge National Lab, Oak Ridge, Tennessee, United States; [2]Division of Engineering and Applied Science, California Institute of Technology, Pasadena, California, United States.

2:30 PM B4.03
Experiment Simulations in a High-Temperature Sample Environment Hillary Smith[1], Jiao Lin[2], Douglas L. Abernathy[2], Garrett E. Granroth[2] and Brent Fultz[1]; [1]California Institute of Technology, Pasadena, California, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

2:45 PM B4.04
Workflows for Modeling Experimental Data Vickie Lynch, Jose Borreguero Calvo, Andrei Savici and Stuart Campbell; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

3:00 PM B4.05
Update on Reduction and Analysis Software for ORNL Neutron Beamlines Garrett E. Granroth, Jean-Christophe Bilheux, Stuart Campbell, Mathieu Doucet, Steven E. Hahn, Jiao Lin, Peter F. Peterson and Andrei Savici; Neutron Data Analysis and Visualization Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

3:15 PM B4.06
DISCUS, A Program for Diffuse Scattering and Defect Structure Simulations Ross E. Whitfield[1], Thomas Proffen[1] and Reinhard Neder[2]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Universität Erlangen, Erlangen, Germany.

C: Hard Condensed Matter

SESSION C6: Strongly Correlated Electron Systems and Multiferroics
Session Chairs: Stephen Nagler and Igor Zaliznyak
Tuesday Afternoon, July 12, 2016
"R" Deck Level, Grand Salon

1:45 PM *C6.01
Orbital Exchange and Fractional Quantum Number Excitations in Yb2Pt2Pb Meigan Aronson; Texas A&M University, College Station, Texas, United States.

2:15 PM C6.02
Crystal Fields as a Probe of the Valence Transition in Pr-Based Cobaltites Daniel Phelan[1, 2, 3], Stephan Rosenkranz[1], Daniel Pajerowski[3, 4] and Chris Leighton[2]; [1]Argonne National Laboratory, Lemont, Illinois, United States; [2]University of Minnesota, Minneapolis, Minnesota, United States; [3]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

2:30 PM C6.03
Non Percolative Nature of the Metal-Insulator Transition and Persistence of Local Jahn-Teller Distortions in the Rhombohedral Regime of $La_{1-x}Ca_xMnO$ Emil Bozin[1], Mouath Shatnawi[2], John F. Mitchell[3] and Simon J. Billinge[4, 1];[1]Condensed Matter Physics and Materials Science, Brookhaven National Laboratory, Upton, New York, United States; [2]Physics, The Hashemite University, Zarqa, Jordan; [3]Materials Science Division, Argonne National Laboratory, Argonne, Illinois, United States; [4]Applied Physics and Applied Mathematics, Columbia University, New York, New York, United States.

2:45 PM C6.04
Local Magnetic Correlations in MnO Investigated with Magnetic Pair Distribution Function Analysis and Ab Initio Theory Benjamin Frandsen[1], Katharine Page[4], Michela Brunelli[5], Yasutomo Uemura[1], Julie Staunton[6] and Simon J. Billinge[2, 3]; [1]Department of Physics, Columbia University, New York, New York, United States; [2]Applied Physics and Applied Mathematics, Columbia University, New York, New York, United States; [3]Condensed Matter Physics and Materials Science, Brookhaven National Laboratory, Upton, New York, United States; [4]Oak Ridge National Laboratory Spallation Neutron Source, Oak Ridge, Tennessee, United States; [5]European Synchrotron Radiation Facility Swiss Norwegian Beamlinse, Grenoble, France; [6]Physics, University of Warwick, Warwick, United Kingdom.

3:00 PM C6.05
Hybrid Magnon-Phonons in the Paraelectric Antiferromagnet EuTiO3 Huibo Cao[1], Olivier A. Delaire[2], Jiawang Hong[1], Steven E. Hahn[1], Songxue Chi[1], George Ehlers[1], Douglas L. Abernathy[1], Christianson D. Andrew[1], Jaime A. Fernandez-Baca[1], Bryan C. Chakoumakos[1], Jiaqiang Yan[1] and Brian Sales[1]; [1]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Duke University, Durham, North Carolina, United States.

3:15 PM C6.06
Nanoscale Exchange Coupling within $MnFe_2O_4$ Nanoparticles Kathryn Krycka[1], James J. Rhyne[2], Samuel D. Oberdick[3], Ahmed Abdelgawad[3], Jeffrey W. Lynn[1], Julie A. Borchers[1], Yumi Ijiri[4], Daniel Parshall[1], Nicholas P. Butch[1] and Sara A. Majetich[3]; [1]NIST Center for Neutron Research, Gaithersburg, Maryland, United States; [2]Physics Department, University of Missouri, Columbia, Missouri, United States; [3]Physics Department, Carnegie Mellon University, Pittsburgh, Pennsylvania, United States; [4]Physics Department, Oberlin College, Oberlin, Ohio, United States.

E: Biology

SESSION E3: Protein Structure and Dynamics
Session Chair: Maikel Rheinstadter
Tuesday Afternoon, July 12, 2016
Promenade Deck Level, Queens Salon

1:45 PM *E3.01
Rhodopsin Photoactivation Mechanism Studied by Neutron Scattering Xiang-Qiang Chu[1], Utsab R. Shrestha[1], Debsindhu Bhowmik[1], Suchithranga M. Perera[2], Udeep Chawla[2], Eugene Mamontov[3], Shuo Qian[3], William Heller[3] and Michael Brown[2, 4]; [1]Physics and Astronomy, Wayne State University, Detroit, Michigan, United States; [2]Chemistry and Biochemistry, University of Arizona, Tucson, Arizona, United States; [3]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]Physics, University of Arizona, Tucson, Arizona, United States.

2:15 PM E3.02
Quasielastic Neutron Scattering Reveals the Effects of Pressure on Dynamics of Hyperthermophilic Protein from Deep-Sea Utsab R. Shrestha[1], Debsindhu Bhowmik[1], John R. Copley[2], Madhusudan Tyagi[2, 3], Juscelino B. Leao[2] and Xiang-Qiang Chu[1]; [1]Department of Physics and Astronomy, Wayne State University, Detroit, Michigan, United States; [2]NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [3]Department of Materials Science and Engineering, University of Maryland, College Park, Maryland, United States.

2:30 PM E3.03
Hydration Dynamics of a Self-Healing Structural Protein by Quasielatic Neutron Scattering (QENS)
Abdon Pena-Francesch[1], Huihun Jung[1], Madhusudan Tyagi[2] and Melik Demirel[1, 3, 4]; [1]Engineering Science and Mechanics, Pennsylvania State University, University Park, Pennsylvania, United States; [2]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [3]Materials Research Institute, Pennsylvania State University, University Park, Pennsylvania, United States; [4]Huck Institute of Life Sciences, Pennsylvania State University, University Park, Pennsylvania, United States.

2:45 PM E3.04
Dynamic Visualization of an Enzyme Hydrolyzing Cellulose Hugh M. O'Neill, Sai V. Pingali, Loukas Petridis, Xiaolin Cheng, Volker Urban, Jeremy Smith, Brian H. Davison and Paul Langan; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

3:00 PM E3.05
Protein-Protein Interactions in Solution at pH below and above Isoelectric Point in Presence of Mono-, Di- and Tri-Valent Ions—A Small Angle Neutron Scattering Study Kaushik Das[1], Sarathi Kundu[1] and Vinod K. Aswal[2]; [1]Physical Sciences Division, Institute of Advanced Study in Science and Technology, Guwahati, India; [2]Solid State Physics Division, Bhabha Atomic Research Centre, Mumbai, India.

3:15 PM E3.06
Investigating Internal Motions of Monoclonal Antibody via Neutron Spin Echo Jannatun Nayem[1], Norman J. Wagner[1] and Yun Liu[1, 2]; [1]Chemical Engineering, University of Delaware, Newark, Delaware, United States; [2]National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

WEDNESDAY ORAL PRESENTATIONS

* Invited Paper

A: Plenary and Prize Sessions

SESSION A3: Plenary and Prize Session
Session Chairs: Despina Louca and Patrick Woodward
Wednesday Morning, July 13, 2016
"R" Deck Level, Grand Salon

8:30 AM *A3.01
SUSTAINED RESEARCH PRIZE WINNER: Antiferromagnetic Order and Spin Dynamics in Iron-Based Superconductors Pengcheng Dai; Rice University, Houston, Texas, United States.

9:10 AM *A3.02
PLENARY: Real Space Analysis of Dynamics in Liquid and Glass Takeshi Egami[1, 2]; [1]Materials Science/Physics, University of Tennessee, Knoxville, Tennessee, United States; [2]Materials Science and Technology, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

B: Sources, Instrumentation and Software

SESSION B5: Instrumentation and Sources II
Session Chair: Hillary Smith
Wednesday Morning, July 13, 2016
Promenade Deck (Stern) Level, Royal Salon

10:15 AM *B5.01
Exploring Diffuse Scattering Through 3-D Volumetric Space Mapping Christina Hoffmann; CEMD, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

10:45 AM B5.02
The Backscattering and Time-of-Flight Spectrometer (BATS) Option for IN16B at ILL Markus Appel[1, 2], Bernhard Frick[2] and Andreas Magerl[1]; [1]FAU Erlangen-Nürnberg, Erlangen, Germany; [2]Institut Laue-Langevin, Grenoble, France.

11:00 AM B5.03
The Wide Angle Neutron Diffractometer (WAND) at HFIR—Possibilities and Future Matthias D. Frontzek, Jaime A. Fernandez-Baca and Bryan C. Chakoumakos; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:15 AM B5.04
ξDFI—A Novel Spatially Resolved Ultra-Small-Angle Neutron Scattering and Imaging Technique Ralph P. Harti[1, 3], Benedikt Betz[1, 4], Markus Strobl[2, 5] and Christian Gruenzweig[1]; [1]Laboratory for Neutron Scattering and Imaging (LNS), Paul-Scherrer-Institut, Villigen PSI, Switzerland; [2]European Spallation Source, Lund, Sweden; [3]University of Geneva, Geneva, Switzerland; [4]EPFL Lausanne, Lausanne, Switzerland; [5]University of Copenhagen, Copenhagen, Denmark.

11:30 AM B5.05
A White Beam Far-Field Neutron Interferometer Daniel S. Hussey[1], Houxun Miao[2], Michael Huber[1], David Jacobson[1], Jacob LaManna[1], Dmitry Pushin[3], Dusan Seranac[3] and Han Wen[2]; [1]Physical Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]National Heart, Lung, Blood Institute, National Institute of Health, Bethesda, Maryland, United States; [3]Institute for Quantum Computing, University of Waterloo, Waterloo, Ontario, Canada.

11:45 AM B5.06
Recent Results from the Elastic Diffuse Scattering Spectrometer CORELLI at Spallation Neutron Source Feng Ye, Yaohua Liu, John W. Carruth, Luke Heroux and George Rennich; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

12:00 PM B5.07
Measurement of the Cold Neutron Scattering Cross Section on Liquid Parahydrogen Kyle Grammer; University of Tennessee, Frederick, Maryland, United States.

C: Hard Condensed Matter

SESSION C7: Geometric Frustration and Model Spin Systems
Session Chairs: Meigan Aronson and Ovidiu Garlea
Wednesday Morning, July 13, 2016
"R" Deck Level, Grand Salon

10:15 AM C7.01
Atomic and Magnetic Orderings in $Na_2Ni_2TeO_6$ Sunil K. Karna[1], Yang Zhao[4], Raman Sankar[1], Maxim Avdeev[2], Kit Matan[3] and Fang C. Chou[1]; [1]Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; [2]Australian Nuclear Science and Technology Organization, Sydney, New South Wales, Australia; [3]Mahidol University, Department of Physics, Bangkok, Thailand; [4]NIST Center for Neutron Research, Gaithersburg, Maryland, United States.

10:30 AM C7.02
$Ba_3Yb_2Zn_5O_{11}$— A Model System for Anisotropic Exchange on the Pyrochlore Lattice J. G. Rau[1], Liusuo Wu[2], Andrew F. May[3], L. Poudel[4, 2], Barry L. Winn[2], Ovidiu Garlea[2], Ashfia Huq[5], P. Whitfield[5], Alice Taylor[2], Mark D. Lumsden[2], M.J. P. Gingras[1, 6, 7] and Andrew Christianson[2, 4]; [1]Department of Physics and Astronomy, University of Waterloo, Waterloo, Ontario, Canada; [2]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]Department of Physics and Astronomy, University of Tennessee, Knoxville, Tennessee, United States; [5]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Knoxville, Tennessee, United States; [6]Perimeter Institute for Theoretical Physics, Waterloo, Ontario, Canada; [7]Canadian Institute for Advanced Research, Toronto, Ontario, Canada.

10:45 AM *C7.03
Ground State Selection Via Order-By-Disorder in the XY Pyrochlore Magnet $Er_{(2-x)}Y_{(x)}Ti_2O_7$ Bruce Gaulin; Physics and Astronomy, McMaster University, Hamilton, Ontario, Canada.

11:15 AM C7.04
Static and Dynamic XY -Like Short-Range Order in a Frustrated Magnet with Exchange Disorder Kate Ross[1, 2, 4], Jason Krizan[3], Jose A. Rodriguez-Rivera[4], Robert J. Cava[3] and Collin L. Broholm[2]; [1]Physics, Colorado State University, Fort Collins, Colorado, United States; [2]Physics and Astronomy, Johns Hopkins University, Baltimore, Maryland, United States; [3]Chemistry, Princeton University, Princeton, New Jersey, United States; [4]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

11:30 AM C7.05
Nature of the Spin Excitations in the Pyrochlore Lattice Heisenberg Antiferromagnet MgCr2O4 Martin Mourigal; Physics, Georgia Institute of Technology, Atlanta, Georgia, United States.

11:45 AM C7.06
Structural Transition and Orbital Glass Physics in Near-Itinerant CoV2O4 Gregory MacDougall[1], Dalmau Reig-I-Plessis [1], D. Casavant[1], Ovidiu Garlea[2], Adam Aczel[2], M. Feygenson [2], Joerg C. Neuefeind[2], Haidong Zhou[3, 5] and Stephen Nagler[2, 4]; [1]Physics, University of Illinois at Urbana-Champaign, Urbana, Illinois, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Physics, University of Tennessee, Knoxville, Tennessee, United States; [4]Bredesen Center, University of Tennessee, Knoxville, Tennessee, United States; [5]National High Magnetic Field Laboratory, Tallahassee, Florida, United States.

12:00 PM C7.07
Exploring the Spin Properties of a Correlated Electron Cathode Material Stephen Wilson; Materials Department, University of California, Santa Barbara, Santa Barbara, California, United States.

D: Soft Matter

SESSION D4: Multicomponent and Confined Systems
Session Chair: Janna Maranas
Wednesday Morning, July 13, 2016
Promenade Deck Level, Queens Salon

10:15 AM D4.01
Dynamic and Structure of Polymer-Cellulose Composite Electrolyte for Li-Ion Battery Pengfei Zhan and Janna K. Maranas; Chemical Engineering, Pennsylvania State University, University Park, Pennsylvania, United States.

10:30 AM D4.02
Experimental Evidence for Hydrated Channels and Connected Water Clusters in Proton Conductive Membranes Based on Sulfonated Syndiotactic Polystyrene Aurel Radulescu and Maria Maddalena Schiavone; Forschungszentrum Jülich GmbH, Garching, Germany.

10:45 AM D4.03
Small-Angle Neutron Scattering Investigation of 3D-Printed Polymer Composites Tae Hui Kang[1], Brett G. Compton[3], William Heller[1], Shuo Qian[1], Gregory S. Smith[1], Volker Urban[1], Chad E. Duty[2] and Changwoo Do[1]; [1]Biology and Soft Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Mechanical, Aerospace and Biomedical Engineering, University of Tennessee, Knoxville, Tennessee, United States.

11:00 AM D4.04
Surfactant Induced Nanostructure Evolution in Supramolecular Hydrogels Probed by In Situ Small Angle Neutron Scattering Chao Wang, Bryan Vogt and Robert A. Weiss; Polymer Engineering, University of Akron, Akron, Ohio, United States.

11:15 AM *D4.05
Interfacial Properties in Polymer Nanocomposites—Their Significance and the Role of Neutron Scattering in Resolving Them Rana Ashkar; Biology and Soft Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:45 AM D4.06
Dynamic Phase Diagram of Soft Nanocolloids— Nanoscopic Structure Defining Macroscopic Properties
Sudipta Gupta[1, 3, 2], Jorg Stellbrink[2], Emanuela Zaccarelli[4], Christos Likos[5] and Dieter Richter[2]; [1]Department of Chemistry, Louisiana State University, Baton Rouge, Louisiana, United States; [2]JCNS, Forschungszentrum Jülich GmbH, Jülich, Germany; [3]Biology and Soft Matter Division, Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]University of Rome, Rome, Italy; [5]University of Vienna, Vienna, Austria.

12:00 PM D4.07
Formation of Multi-Nanoemulsions for Colloidal Synthesis Paula Malo de Molina, Mengwen Zhang and Matthew E. Helgeson; Department of Chemical Engineering, University of California, Santa Barbara, Santa Barbara, California, United States.

F: Materials Chemistry and Materials for Energy

SESSION F5: Neutron Imaging and Dynamics of Materials Chemistry
Session Chairs: Omar Chmaissem and Claire White
Wednesday Morning, July 13, 2016
"R" Deck (Mid-Ship) Level, Windsor Salon

10:15 AM F5.01
Characterization of Nuclear Fuels by Neutron Diffraction and Energy-Resolved Neutron Imaging Sven C. Vogel[1], Adrian S. Losko[1, 3], Anton S. Tremsin[2], Mark A. Bourke[4], Stewart L. Voit[1] and Kenneth J. McClellan[1]; [1]MST-8, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [2]Space Science Laboratory, University of California, Berkeley, Berkeley, California, United States; [3]Nuclear Engineering, University of California, Berkeley, Berkeley, California, United States; [4]P-DO, Los Alamos National Laboratory, Los Alamos, New Mexico, United States.

10:30 AM F5.02
In Situ Neutron Reflectometry Depth Profiling for Analysis of Transport Limitations in PEMFC Catalyst Layers
Steven C. DeCaluwe[1] and Joseph A. Dura[2]; [1]Mechanical Engineering at the Colorado School of Mines, Denver, Colorado, United States; [2]NIST Center for Neutron Research, Gaithersburg, Maryland, United States.

10:45 AM F5.03
Characterization of Additive Manufacturing Components Using Wavelength-Resolved Neutron Radiography at the Spallation Neutron Source
Hassina Bilheux[1, 4], Jean-Christophe Bilheux[1, 7], Ke An[1, 4], Gian Song[1, 4], Alexandru Stoica[1, 4], Ryan Dehoff[2, 3], Michael Kirka[2, 3] and Louis J. Santodonato[5, 6]; [1]Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Manufacturing Demonstration Facility, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [5]Instrumentation and Source Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [6]High Flux Isotope Reactor, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [7]Neutron Data Analysis and Visualization, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:00 AM F5.04
In Situ Diagnostics of Melting/Solidification and Segregation during Crystal Growth Provided by Energy Resolved Neutron Imaging
Anton S. Tremsin[2], Didier Perrodin[4], Adrian S. Losko[1, 3], Sven C. Vogel[1], Mark A. Bourke[5], Gregory Bizarri[4] and Edith Bourret-Courchesne[4]; [1]MST-8, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [2]Space Science Laboratory, University of California, Berkeley, Berkeley, California, United States; [3]Nuclear Engineering, University of California, Berkeley, Berkeley, California, United States; [4]Lawrence Berkeley National Laboratory, Berkeley, California, United States; [5]P-DO, Los Alamos National Laboratory, Los Alamos, New Mexico, United States.

11:15 AM F5.05
Phonons near Lattice Instabilities in Thermoelectrics SnSe, SnTe, and PbTe
Olivier Delaire; Duke University, Durham, North Carolina, United States.

11:30 AM F5.06
Dynamics of Water under Ultra-Confinement
Alexander I. Kolesnikov[1], Lawrence M. Anovitz[2], Timothy R. Prisk[2], Eugene Mamontov[1], Andrey Podlesnyak[3], George F. Reiter[4], George Ehlers[3] and Andrew Seel[5, 6]; [1]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]Physics Department, University of Houston, Houston, Texas, United States; [5]ISIS Facility, Rutherford Appleton Laboratory, Chilton, Didcot, United Kingdom; [6]Inorganic Chemistry Department, University of Oxford, Oxford, United Kingdom.

11:45 AM *F5.07
Pertinence of Structural and Anion Dynamical Behavior to Super-Cationic Conductivity in the Hydro-*Closo*-Borate Salts of Sodium and Lithium Studied via Neutron Scattering Methods
Terrence J. Udovic[1], Wan Si Tang[1, 2], Vitalie Stavila[3], Hui Wu[1], Wei Zhou[1], John J. Rush[1] and Alexander V. Skripov[4]; [1]NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]Materials Science and Engineering, University of Maryland, College Park, Maryland, United States; [3]Energy Nanomaterials, Sandia National Laboratories, Livermore, California, United States; [4]Ural Division of the Russian Academy of Sciences, Institute of Metal Physics, Ekaterinburg, Russian Federation.

C: Hard Condensed Matter

SESSION C8: Thin Films and Skyrmions
Session Chair: Marc Janoschek
Wednesday Afternoon, July 13, 2016
"R" Deck Level, Grand Salon

1:45 PM *C8.01
Combined Methods for Uncovering the Double-Q Magnetic State in Hole-Doped Iron Arsenide Superconductors
Jared M. Allred[1, 2], Keith M. Taddei[2, 3], Dan Bugaris[2], Matthew J. Krogstad[2, 3], Saul H. Lapidus[2], Duck Young Chung[2], Dennis E. Brown[2, 3], Mercouri G. Kanatzidis[2, 6], Jian Kang[4], Rafael Fernandes[4], Ilya Eremin[5], Stephan Rosenkranz[2], Omar Chmaissem[2, 3] and Raymond Osborn[2]; [1]Department of Chemistry, University of Alabama, Tuscaloosa, Alabama, United States; [2]Argonne National Lab, Romeoville, Illinois, United States; [3]Department of Physics, Northern Illinois University, DeKalb, Illinois, United States; [4]School of Physics and Astronomy, University of Minnesota, Minneapolis, Minnesota, United States; [5]Institut für Theoretische Physik III, Ruhr-Universität Bochum, Bochum, Germany; [6]Department of Chemistry, Northwestern University, Evanston, Illinois, United States.

2:15 PM C8.02
Low-Energy Magnon Dispersion in the Skyrmion Multiferroic Host Cu_2OSeO_3
Jonas Kindervater[1], Guy G. Marcus[1], Benjamin Trump[1], Matthew Stone[2, 3], Tyrel M. McQueen[1, 3] and Collin L. Broholm[1]; [1]Institute for Quantum Matter and Department of Physics and Astronomy, Johns Hopkins University, Baltimore, Maryland, United States; [2]Quantum Condensed Matter Division, Oak Ridge National Laboratories, Oak Ridge, Tennessee, United States; [3]Department of Chemistry, Johns Hopkins University, Baltimore, Maryland, United States.

2:30 PM C8.03
Fe Layer Induced Ferromagnetism in Pd—An In Situ Polarized Neutron Reflectometry Study
Sina Mayr[1], Wolfgang Kreuzpaintner[1], Jingfan Ye[1], Jochen Stahn[3], Andreas Schmehl[2], Thomas Mairoser[2], Alexander Herrnberger[2], Jean-Francois Moulin[4], Martin Haese-Seiller[4], Matthias Pomm[4], Amitesh Paul[1], Bjorgvin Hjorvarsson[5], Jochen Mannhart[6] and Peter Boeni[1]; [1]E21, Technische Universität München, Garching, Germany; [2]Lehrstuhl für Experimentalphysik VI, Universität Augsburg, Augsburg, Germany; [3]Laboratory for Neutron Scattering, Paul Scherrer Institut, Villigen, Switzerland; [4]Instrument REFSANS, Helmholtz Zentrum Geesthacht, Garching, Germany; [5]Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; [6]Max Planck Institute for Solid State Research, Stuttgart, Germany.

2:45 PM C8.04
Polarized Neutron Reflectivity Study of Perpendicular Magnetic Anisotropy in MgO/CoFeB/W(Mo) Thin-Films Haile Ambaye[1], Tao Zhu[2], XiaoZhi Zhan[2], Shu Li[2], Xing T. Tong[1] and Valeria Lauter[1]; [1]ORNL, Oak Ridge, Tennessee, United States; [2]Institute of Physics, Chinese Academy of Sciences, Beijing, China.

3:00 PM C8.05
Interfacial Magnetism in La0.7Sr0.3MnO3/BaTiO3 Synthetic Multiferroics Studied Using Polarized Neutron Reflectometry Qiang Wang[1], Yaohua Liu[2, 1], Haile Ambaye[2], Valeria Lauter[2], Michael Fitzsimmons[2], Mariona Cabero[3], Jacobo Santamaria[3] and Suzanne G. te Velthuis[1]; [1]Argonne National Laboratory, Argonne, Illinois, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Complutense University of Madrid, Madrid, Spain.

3:15 PM C8.06
Spatial Evolution of the Ferromagnetic Phase Transition in Exchange Graded Films Brian J. Kirby[1], H. F. Belliveau[2], D. D. Belyea[2], Paul A. Kienzle[1], Alexander J. Grutter[1], Andrew Balk[4], P. Riego[3], L. Fallarino[3], M. Pancaldi[3], A. Berger[3] and C. W. Miller[5]; [1]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]University of South Florida, Tampa, Florida, United States; [3]CIC NanoGune, San Sebastian, Spain; [4]National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [5]Rochester Institute of Technology, Rochester, New York, United States.

3:30 PM BREAK

D: Soft Matter

SESSION D5: Structural Relaxation and Glassy Dynamics
Session Chair: Yun Liu
Wednesday Afternoon, July 13, 2016
"R" Deck (Mid-Ship) Level, Windsor Salon

1:45 PM *D5.01
Energy Landscape Statistics and Coarsening in Liquids and Soft Matter—A Relaxation-Excitation Mode Analysis (REMA) Yang Zhang; Nuclear, Plasma, and Radiological Engineering, Materials Science and Engineering, Computational Science and Engineering, University of Illinois at Urbana, Champaign, Urbana, Illinois, United States.

2:15 PM D5.02
Collective Dynamics in Hydrogen Bonding Liquids Antonio Faraone; Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

2:30 PM D5.03
Homogenous Nucleation and Crystal Growth in a Model Liquid from Direct Energy Landscape Sampling Simulation Nathan Walter and Yang Zhang; Department of Nuclear, Radiological, and Plasma Engineering, University of Illinois at Champaign-Urbana, Champaign, Illinois, United States.

2:45 PM D5.04
Onset of Cooperative Dynamics in Equilibrium Glass-Forming Metallic Liquids Abhishek Jaiswal and Yang Zhang; University of Illinois at Urbana-Champaign, Urbana, Illinois, United States.

3:00 PM D5.05
Neutron Scattering Experimental Characterization of Energy Landscape Statistics—A Relaxation-Excitation Mode Analysis Zhikun Cai and Yang Zhang; Nuclear, Plasma, and Radiological Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois, United States.

3:15 PM D5.06
Supercooled Water in Supramolecular Hydrogels Clinton Wiener, Bryan Vogt and Robert A. Weiss; Polymer Engineering, University of Akron, Akron, Ohio, United States.

3:30 PM BREAK

E: Biology

SESSION E4: BioMembranes—Structure and Dynamics
Session Chair: Maikel Rheinstadter
Wednesday Afternoon, July 13, 2016
Promenade Deck Level, Queens Salon

1:45 PM E4.01
Mechanical Properties of Nanoscopic Lipid Domains Jonathan D. Nickels[1] and John Katsaras[2]; [1]Joint Institute for Neutron Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

2:00 PM E4.02
Aspirin Inhibits Formation of Cholesterol Rafts in Fluid Lipid Membranes Richard Alsop and Maikel Rheinstadter; Physics and Astronomy, McMaster University, Hamilton, Ontario, Canada.

2:15 PM E4.03
Studies of Multicomponent Lipid Bilayers by Small-Angle Neutron Scattering William Heller, Shuo Qian and Durgesh K. Rai; Biology and Soft Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

2:30 PM E4.04
The Role of Charge in Tuning Lipid Membrane Dynamics—Insights from Scattering Elizabeth Kelley[1], Michihiro Nagao[1, 2], Robert Bradbury[1, 2] and Paul Butler[1, 3]; [1]National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]Indiana University, Bloomington, Indiana, United States; [3]University of Delaware, Newark, Delaware, United States.

2:45 PM *E4.05
Large-Scale Computer Simulations of Complex Membrane Models Peter Tieleman; University of Calgary, Calgary, Alberta, Canada.

3:15 PM E4.06
Neutron Spin-Echo Reveals the Dynamics of Thylakoid Membranes in Living Cyanobacterial Cells Volker Urban[1], Laura-Roxana Stingaciu[2], Hugh M. O'Neill[3], Michelle Liberton[3], Himadri B. Pakrasi[3] and Michael Ohl[2]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Spallation Neutron Source, Oak Ridge, Tennessee, United States; [3]Washington University at St. Louis, St. Louis, Missouri, United States.

3:30 PM BREAK

H: Neutron Physics

SESSION H3: Interferometry and Quantum Physics
Session Chairs: Adam Holley and Alexander Komives
Wednesday Afternoon, July 13, 2016
Promenade Deck (Stern) Level, Royal Salon

1:45 PM *H3.01
Twisting Neutron Wavefunctions Charles W. Clark; Joint Quantum Institute, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

2:15 PM H3.02
Spin Orbit States of Neutron Wavepackets Dusan Sarenac[1, 2], Joachim Nsofini[1, 2], Chris Wood[1, 2], David Cory[2, 3, 4], Muhammad Arif[5], Charles W. Clark[6], Michael Huber[5] and Dmitry Pushin[1, 2]; [1]Physics and Astronomy, University of Waterloo, Waterloo, Ontario, Canada; [2]Institute for Quantum Computing, Waterloo, Ontario, Canada; [3]Chemistry, University of Waterloo, Waterloo, Ontario, Canada; [4]Perimeter Institute for Theoretical Physics, Waterloo, Ontario, Canada;[5]National Institute for Standards and Technology, Gaithersburg, Maryland, United States; [6]Joint Quantum Institute, National Institute of Standards and Technology and University of Maryland, Gaithersburg, Maryland, United States.

2:30 PM H3.03
Phase-Grating Interferometer for Thermal and Cold Neutrons Dmitry Pushin[1], Michael Huber[2], Daniel S. Hussey[2], David Jacobson[2], Jacob LaManna[2], Houxun Miao[3], Dusan Sarenac[1] and Han Wen[3]; [1]Department of Physics and Astronomy, Institute for Quantum Computing, University of Waterloo, Waterloo, Ontario, Canada; [2]National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [3]Biophysics and Biochemistry Center, National Heart, Lung and Blood Institute, National Institute of Health, Bethesda, Maryland, United States.

2:45 PM H3.04
New Neutron Limit on the Possibility of Chameleon Fields Using Neutron Interferometry Techniques Michael Huber[1], Ke Li[2, 11], Muhammad Arif[1], David Cory[3, 4, 5], Robert Haun[6], Benjamin Heacock[7, 8], Joachim Nsofini[9, 10], Dmitry Pushin[9, 10], Parminder Saggu[3], Dusan Sarenac[9, 10], Chandra B. Shahi[6], Vladimir Skavysh[7], William M. Snow[2, 11] and Albert R. Young[7, 8]; [1]National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]Physics, Indiana University, Bloomington, Illinois, United States; [3]Chemistry, University of Waterloo, Waterloo, Ontario, Canada; [4]Perimeter Institute for Theoretical Physics, Waterloo, Ontario, Canada; [5]Canadian Institute for Advanced Research, Toronto, Ontario, Canada; [6]Physics, Tulane University, New Orleans, Louisiana, United States; [7]Physics, North Carolina State University, Raleigh, North Carolina, United States; [8]Triangle Universities Nuclear Laboratory, Durham, North Carolina, United States; [9]Institute for Quantum Computing, Waterloo, Ontario, Canada; [10]Physics and Astronomy, University of Waterloo, Waterloo, Ontario, Canada; [11]Center for Exploration of Energy and Matter, Bloomington, Illinois, United States.

3:00 PM H3.05
Phase Stabilization with In-Vacuum Neutron Interferometry Taisiya Mineeva[1, 2] and The INDEX Collaboration[2, 3, 1]; [1]University of Waterloo, Institute for Quantum Computing, Waterloo, Ontario, Canada; [2]National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [3]Canadian Institute for Advanced Research, Waterloo, Ontario, Canada.

3:15 PM H3.06
Bragg-Plane Misalignments and Gravitationally-Induced Quantum Interference Measurements
Benjamin Heacock[1, 2]; [1]Physics, North Carolina State University, Raleigh, North Carolina, United States; [2]INDEX Collaboration, Gaithersburg, Maryland, United States.

3:30 PM BREAK

B: Sources, Instrumentation and Software

SESSION B6: Analysis and Modeling II
Session Chair: Christina Hoffmann
Wednesday Afternoon, July 13, 2016
Promenade Deck (Stern) Level, Royal Salon

4:00 PM *B6.01
Neutron Scattering in Drug Discovery Jeremy Smith[1, 2]; [1]University of Tennessee, Oak Ridge, Tennessee, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

4:30 PM B6.02
Modeling of Time-of-Light INS Intensity and Lattice Dynamics of Phonons in Single-Crystals Dipanshu Bansal[1], Jennifer Niedziela[1], Jiawang Hong[1], Chen W. Li[1], Iyad Al-Qasir[1], Vickie Lynch[1], Douglas L. Abernathy[1] and Olivier Delaire[1, 2]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Department of Mechanical Engineering and Materials Science, Duke University, Durham, North Carolina, United States.

4:45 PM B6.03
Momentum and Energy Dependent Resolution Function of the ARCS Neutron Chopper Spectrometer—Comparing Simulation and Experiment Souleymane Diallo[1], Jiao Lin[1], Douglas L. Abernathy[1] and Richard Azuah[2, 3]; [1]Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]NIST Center for Neutron Research, Gaithersburg, Maryland, United States; [3]Department of Materials Science and Engineering, University of Maryland, College Park, Maryland, United States.

C: Hard Condensed Matter

SESSION C9: Model Systems
Session Chairs: Martin Mourigal and Kate Ross
Wednesday Afternoon, July 13, 2016
"R" Deck Level, Grand Salon

4:00 PM *C9.01
Emergent Critical Phenomena and Crystallisation of Bosonic Spin Superstructures with Pressure and Field in Sheets of Magnetic Dimers Sara Haravifard; Physics, Duke University, Durham, North Carolina, United States.

4:30 PM C9.02
Critical Behavior of the Bose-Einstein Condensate in Superfluid Helium Timothy R. Prisk[1], Massimo Boninsegni[2], Matthew Bryan[3], Garrett E. Granroth[4] and Paul Sokol[3]; [1]National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]Department of Physics, University of Alberta, Edmonton, Alberta, Canada; [3]Department of Physics, Indiana University, Bloomington, Indiana, United States; [4]Neutron Data Analysis and Visualization Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

4:45 PM C9.03
Excitations and Long Range Order in a Crystalline Dilute Ferromagnetic Semiconductor Matthew Stone[1], Ovidiu Garlea[1], Andrew Christianson[1], Mark D. Lumsden[1], Stephen Nagler[1], Brian Sales[2] and David Mandrus[3]; [1]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Department of Materials Science and Engineering, University of Tennessee, Knoxville, Knoxville, Tennessee, United States.

5:00 PM C9.04
Inelastic Neutron Scattering Help Elucidate the Driving Force Behind the Anomalous Thermal Expansion in Silicon Dennis S. Kim[1], Olle Hellman[1], Hillary Smith[1], Jiao Lin[3], Jennifer Niedziela[3], Chen W. Li[2], Douglas L. Abernathy[3]and Brent Fultz[1]; [1]Applied Physics and Materials Science, Caltech, Pasadena, California, United States; [2]EFree, Carnegie Institution for Science, Washington, District of Columbia, United States; [3]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

5:15 PM C9.05
Assessing the Role of Vibrational Entropy in Glasses Hillary Smith[1], Chen W. Li[2], Tabitha Swan-Wood[3], Andrew Hoff[1], Chae-Reem Yang[1], Dennis S. Kim[1], Sarah Randolph[3], Matthew Stone[4], Douglas L. Abernathy[4], Marios Demetriou[1]and Brent Fultz[1]; [1]Caltech, Pasadena, California, United States; [2]Carnegie Institution, Washington, District of Columbia, United States; [3]California State University at Channel Islands, Camarillo, California, United States; [4]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

E: Biology

SESSION E5: Biochemical Reactions/Active Site Protonation—Neutron Crystallography
Session Chair: Loukas Petridis
Wednesday Afternoon, July 13, 2016
Promenade Deck Level, Queens Salon

4:00 PM *E5.01
Single-Crystal Neutron Structural Studies of Carbonic Anhydrase—Elucidating Enzyme Mechanism and Drug Design Robert McKenna[1], Zoe Fisher[3], Mayank Aggarwal[2] and Andrey Kovalevsky[2]; [1]Biochemistry, University of Florida, Gainesville, Florida, United States; [2]Division of Biology and Soft Matter, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Scientific Activities Division, European Spallation Source, Lund, Sweden.

4:30 PM E5.02
EWALD—A Macromolecular Diffractometer for the Second Target Station at the Spallation Neutron Source Leighton Coates; Biology and Soft Matter, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

4:45 PM E5.03
Studying Carbonic Anhydrase Catalysis and Inhibition Using Neutron Diffraction and Molecular Dynamics Mayank Aggarwal[1] and Robert McKenna[2]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]University of Florida, Gainesville, Florida, United States.

5:00 PM *E5.04
Investigating the Mechanism of Electromechanical Coupling in Voltage-Gated Ion Channels by Time-Resolved X-Ray and Neutron Interferometry J. Kent Blasie[1, 2]; [1]Department of Chemistry, University of Pennsylvania, Philadelphia, Pennsylvania, United States; [2]Department of Chemistry, University of California, Irvine, Irvine, California, United States.

G: Engineering and Industrial Applications

SESSION G3: Engineering Materials II
Session Chair: Ronald Jones
Wednesday Afternoon, July 13, 2016
"R" Deck (Mid-Ship) Level, Windsor Salon

4:00 PM *G3.01
Key Experimental Improvements of the Thermal Scattering Data Li E. Liu, Yaron Danon, Kemal Ramic and Carl Wendorff; Mechanical, Aerospace, and Nuclear Engineering, Rensselaer Polytechnic Institute, Troy, New York, United States.

4:30 PM G3.02
An Explicit Solution of a Simplified Stationary Monodimensional Thermalhydraulics-Neutronics Coupling Model Olivier Lafitte[1, 2] and Stephane Dellacherie[3, 4]; [1]Mathematiques, Universite Paris 13, Sorbonne Paris Cite, Villetaneuse, France; [2]DEN/DM2S/DIR, Commissariat à l'énergie Atomique, Gif sur Yvette Cedex, France; [3]DEN/DM2S/STMF, Commissariat à l'énergie atomique, Gif sur Yvette Cedex, France; [4]Ecole Polytechnique de Montréal, Montréal, Quebec, Canada.

4:45 PM G3.03
Pore Size Effect on Methane Adsorption in Model Porous Materials Wei-Shan Chiang[1, 2] and Yun Liu[1, 2]; [1]NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States;[2]Department of Chemical Engineering, University of Delaware, Newark, Delaware, United States.

5:00 PM G3.04
Neutron Scattering to Access Pore Characteristics in Geological Materials and Their Effects on Fluid Behavior Rex Hjelm[1], Mei Ding[6], Erik B. Watkins[2], Mark A. Taylor[3], Hong Xu[6], Aviva J. Sussmen[4], Rajesh Pawar[5], Marilyn E. Hawley[7] and Luke Frash[6]; [1]Materials Dynamics at Extremes/Lujan Neutron Scattering Center, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [2]MPA-11, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [3]ES-LFO, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [4]ESS-17, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [5]EES-16, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [6]EES-14, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [7]retired, Los Alamos National Laboratory, Los Alamos, New Mexico, United States.

5:15 PM G3.05
α-Phase Transformation Kinetics of U - 8 wt% Mo Established by In Situ Neutron Diffraction S. Agnew; Material Science and Engineering, University of Virginia, Charlottesville, Virginia, United States.

WEDNESDAY

POSTER PRESENTATIONS

SESSION BP7: Poster Session: Sources, Instrumentation and Software II
B: Sources, Instrumentation and Software
Wednesday Afternoon, July 13, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

BP7.01
Introduction of the Reactor Source Spectrometers and Recent Research Progress in China Academy of Engineering Physics Jian Gong; Key Laboratory of Neutron Physics, Institute of Nuclear Physics and Chemistry, Mianyang, China.

BP7.02
Pushing the Limits of Neutron Backscattering—A GaAs Option for IN16B at ILL Kristijan Kuhlmann[1, 2], Markus Appel[1, 2], Bernhard Frick[2] and Andreas Magerl[1]; [1]Friedrich-Alexander University Erlangen-Nürnberg, Erlangen, Germany;[2]Institut Laue-Langevin, Grenoble, France.

BP7.03
A Test Platform for Polarized Neutron Instrumentation Wangchun Chen[1, 2], Shannon Watson[2] and Ross Erwin[2]; [1]University of Maryland, College Park, Maryland, United States; [2]National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

BP7.04
Advancements in Sample Environments at the Spallation Neutron Source Christopher M. Redmon; Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

BP7.05
Super Compact In Situ ^{3}He Spin Filters at Oak Ridge National Laboratory Makayla S. Edwards, Chenyang Jiang, Xing T. Tong, Dan Brown, Adam J. Wonder and Lee Robertson; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

BP7.06
The Spallation Neutron Source Second Target Station Moderator Performance Characteristics Franz X. Gallmeier, Igor Remec, Wei Lu, Erik B. Iverson, Mark J. Rennich and Kenneth Herwig; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

BP7.07
New Capabilities at the Oak Ridge National Laboratory Center for Structural Molecular Biology Ryan C. Oliver, Volker Urban, Sai V. Pingali, Shuo Qian, Hugh M. O'Neill, Kevin L. Weiss, Qiu Zhang and Paul Langan; Oak Ridge National Laboratory, Knoxville, Tennessee, United States.

BP7.08
Advanced Visualization Capabilities for Neutron Scattering Data Garrett E. Granroth[1], Steven E. Hahn[1], Andrei Savici[1], Peter F. Peterson[1], Jean-Christophe Bilheux[1], Owen Arnold[2], Nick Draper[2], Roman Tolchenov[2], F. M. Pouzols[2], A. P. Selg[2] and U. Ayachit[3]; [1]Neutron Data Analysis and Visualization Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Rutherford Appleton Laboratory, Didcot, United Kingdom; [3]Kitware, Inc., Clifton Park, New York, United States.

BP7.09
Lorentz-Correction and Mathematical Proof of Wavelength-Dispersive Single Crystal Neutron Diffraction Tara Michels-Clark[1], Andrei Savici[2], Vickie Lynch[2], Xiaoping Wang[2] and Christina Hoffmann[2]; [1]Lawrence Berkeley National Laboratory, Berkeley, California, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

SESSION CP10: Poster Session: Hard Condensed Matter II
C: Hard Condensed Matter
Wednesday Afternoon, July 13, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

CP10.02
Domain Wall Order and Motion in Mn_3O_4 Alexander Thaler[2, 1], Alexander Zakjevski[1], Brian Nguyen[1], Yewon Gim[1], Adam Aczel[2], Lisa Debeer-Schmitt[2], S. L. Cooper[1] and Gregory MacDougall[1]; [1]Physics, University of Illinois, Urbana, Illinois, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

CP10.03
Low Energy Vibrational Dynamics in Vitreous Silica and Its Binary Mix Ling Cai; Corning Incorporated, Corning, New York, United States.

CP10.04
Magnetic Order and Multiferroicity in $NdCrTiO_5$ Naveen K. Chogondahalli Muniraju[1, 2], Yinguo Xiao[3], Haidong Zhou[4] and Michael Ohl[1, 5, 6]; [1]Juelich Centre for Neutron Science (JCNS), Out station at SNS, Forschungszentrum Juelich GmbH, Jülich, Germany; [2]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Juelich Centre for Neutron Science (JCNS) and Peter Gruenberg Institute (PGI), Forschungszentrum Juelich GmbH, Juelich, Germany; [4]Department of Physics and Astronomy, University of Tennessee, Knoxville, Tennessee, United States; [5]Biology and Soft Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [6]Department of Material Science and Engineering, University of Tennessee, Oak Ridge, Tennessee, United States.

CP10.05
Electric Field Effect on the Magnetic Order in Multiferroic $LuMnO_3$ Chunruo Duan[1], Junjie Yang[1], Leland Harriger[2] and Despina Louca[1]; [1]Physics, University of Virginia, Charlottesville, Virginia, United States; [2]NCNR, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

CP10.07
Ferro-Lattice-Distortions and Stacking Polytypism in BiS_2 Superconductors Anushika Athauda[1], Christina Hoffmann[2], Y. Ren[3] and Despina Louca[1]; [1]University of Virginia, Charlottesville, Virginia, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Argonne National Laboratory, Lemont, Illinois, United States.

CP10.08
Thermally-Driven Electronic Topological Transition in FeTi Fred C. Yang[1], Jorge A. Munoz[2], Olle Hellman[1], Lisa Mauger[1], Matthew S. Lucas[3, 1], Sally J. Tracy[1], Matthew Stone[4], Douglas L. Abernathy[4], Yuming Xiao[5] and Brent Fultz[1];[1]Applied Physics and Materials Science, California Institute of Technology, Pasadena, California, United States; [2]The Datum Institute, Beaverton, Oregon, United States; [3]Air Force Research Laboratory, Wright-Patterson AFB, Ohio, United States; [4]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [5]HPCAT, Geophysical Laboratory, Carnegie Institution of Washington, Argonne, Illinois, United States.

CP10.09
Magnetic Properties of the S = ½ Molecular Quantum Magnets $Ba_3BRu_2O_9$ (B = Y, In, Lu) Adam Aczel[1], J. A. Quilliam[2], Travis J. Williams[1], Matthew Stone[1] and Haidong Zhou[3]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]University of Sherbrooke, Sherbrooke, Quebec, Canada; [3]University of Tennessee, Knoxville, Tennessee, United States.

CP10.10
Single Crystal Diffuse Scattering Study of Relaxor (1-x) $PbMg_{1/3}Nb_{2/3}O_3$-xPbTiO3 Matthew J. Krogstad[1, 2], Stephan Rosenkranz[2], Raymond Osborn[2], Peter Gehring[3], Jacob Ruff[4], Feng Ye[5], Zuo-Guang Ye[6] and Daniel Phelan[2]; [1]Physics, Northern Illinois University, Orland Park, Illinois, United States; [2]Materials Science Division, Argonne National Laboratory, Argonne, Illinois, United States; [3]National Center for Neutron Research, National Institutes of Standards and Technology, Gaithersburg, Maryland, United States; [4]Cornell High Energy Synchotron Source, Ithaca, New York, United States; [5]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States;[6]Department of Chemistry, Simon Fraser University, Burnaby, British Columbia, Canada.

SESSION DP6: Poster Session: Soft Matter II
D: Soft Matter
Session Chair: Vivek Prabhu
Wednesday Afternoon, July 13, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

DP6.01
Micelle Structure Formed by Oligocarbonate-Fluorene Functionalized ABA Block Copolymer Guangmin Wei[1, 2], Vivek Prabhu[2], Shrinivas Venkataraman[3], Yi Yan Yang[3] and James Hedrick[4]; [1]Institute of Chemistry, CAS., Gaithersburg, Maryland, United States; [2]Material Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [3]Institute of Bioengineering and Nanotechnology, Singapore, Singapore; [4]IBM Almaden Research Center, San Jose, California, United States.

DP6.02
Rheo-SANS Measurements of Discontinuous Shear Thickening Fluid Kevin Whitcomb and Norman J. Wagner; Chemical Engineering, University of Delaware, Newark, Delaware, United States.

DP6.03
Ordered Porous Aluminum Oxide as a Template to Study Confined Colloidal Systems Using Neutron Scattering Hao Shen[1, 2], Charles Majkrzak[1] and Yun Liu[2]; [1]National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [2]Materials Science and Engineering, University of Maryland, College Park, Maryland, United States.

DP6.04
Using Spatiotemporal Small Angle Neutron Scattering to Determine the Effect of Micellar Branching on Non-Linear Shear Flow Phenomena and Instabilities Michelle Calabrese[1], Simon A. Rogers[3], Lionel Porcar[2], Peng Cheng[4], Matthew E. Helgeson[4] and Norman J. Wagner[1]; [1]Chemical and Biomolecular Engineering, University of Delaware, Newark, Delaware, United States; [2]Large Scale Structures, Institut Laue-Langevin, Grenoble, France; [3]Chemical and Biomolecular Engineering, University of Illinois Urbana-Champaign, Urbana, Illinois, United States; [4]Chemical and Biomolecular Engineering, University of California, Santa Barbara, Santa Barbara, California, United States.

DP6.05
Stress Relaxation in Supramolecular Hydrogels—Crosslink Relaxation Outpaces Segmental Relaxations as Probed by Contrast Variation SANS Clinton Wiener, Bryan Vogt and Robert A. Weiss; Polymer Engineering, University of Akron, Akron, Ohio, United States.

DP6.06
Structure Formation in P3HT Nanofibers Due to the Presence of Molecular Dopants Jun Li, Tucker Murrey, Pieter Stroeve and Adam J. Moule; Department of Chemical Engineering and Materials Science, University of California, Davis, Davis, California, United States.

DP6.08
Protein Entrapment in Polymeric Mesh—Diffusion in Crowded Environment with Fast Process on Short Scales Sudipta Gupta[1, 2, 3], Ralf Biehl[4], Michael Ohl[3, 2] and Dieter Richter[4]; [1]Department of Chemistry, Louisiana State University, Baton Rouge, Louisiana, United States; [2]Biology and Soft Matter Division, Neutron Sciences Directorate,, Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee, United States; [3]JCNS, Juelich Centre for Neutron Science (JCNS), outstation at SNS, Forschungszentrum Juelich, Juelich, Germany; [4]JCNS, Forschungszentrum Jülich GmbH, Jülich, Germany.

DP6.09
Using Time-of-Flight Measurements at High Resolution to Obtain Optimal Small Angle Diffraction Patterns Christopher Garvey[1], Guang Wang[2], Lingxue Kong[2], Thomas Hauss[3], Ben Kent[3], Markus Strobl[4], Anna Sokolova[1] and Liliana De Campo[1]; [1]Australian Nuclear Science and Technology Organisation, Kirrawee DC, New South Wales, Australia; [2]Institute for Frontier Materials, Deakin University, Geelong, Victoria, Australia; [3]Soft Matter and Functional Materials, Helmholtz Zentrum Berlin, Berlin, Germany; [4]ESS, Lund, Sweden.

SESSION EP6: Poster Session: Biology II
E: Biology
Wednesday Afternoon, July 13, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

EP6.03
Structural Determination of Neq DNA Polymerase Complex Using Segmental Labelling and Small-Angle Scattering Techniques Qiu Zhang, Ryan C. Oliver, Sai V. Pingali, Leighton Coates, Hugh M. O'Neill and Volker Urban; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

SESSION FP6: Poster Session: Materials Chemistry and Materials for Energy II
F: Materials Chemistry and Materials for Energy
Wednesday Afternoon, July 13, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

FP6.01
Weathering of Polyethylene (PE) Film in Sub- Saharan Climatic Conditions Asma Abdelhafidi; Chemistry, University of Laghouat, Laghouat, Algeria.

FP6.02
High-Throughput Inelastic Neutron Scattering—From Fiction to Reality Luke L. Daemen, Alexander I. Kolesnikov, Stuart Campbell, Yongqiang Cheng and Anibal J. Ramirez-Cuesta; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

FP6.03
Settling a Scientific Debate by Investigating the Structure-Property Relationships of Disordered Aurivillius Phases Todd W. Surta[1], Eric K. Qain[1], Alicia Manjon-Sanz[1], T. T. Tran[2], Pranab Mandal[3], P. S. Halasyamani[2] and Michelle R. Dolgos[1]; [1]Chemistry, Oregon State University, Corvallis, Oregon, United States; [2]Chemistry, University of Houston, Houston, Texas, United States; [3]Chemistry, University of Liverpool, Liverpool, United Kingdom.

FP6.04
Mapping of the Tetragonal Magnetic C_4 Phase in Iron-Pnictide Superconductors Ryan Stadel[2, 1], Keith M. Taddei[2, 1], Dan Bugaris[1], Saul H. Lapidus[3], Helmut Claus[1], Duck Young Chung[1], Mercouri G. Kanatzidis[1], Raymond Osborn[1], Stephan Rosenkranz[1] and Omar Chmaissem[1]; [1]Material Science, Argonne National Lab, Dekalb, Illinois, United States; [2]Physics, Northern Illinois University, DeKalb, Illinois, United States; [3]X-Ray Science, Argonne National Lab, Lemont, Illinois, United States.

FP6.07
Study of Solid-Electrolyte Interphase Composition Using Neutron Reflectivity Mathieu Doucet, James F. Browning and Gabriel M. Veith; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

SESSION GP4: Poster Session: Engineering and Industrial Applications II
G: Engineering and Industrial Applications
Wednesday Afternoon, July 13, 2016
5:30 PM
Main Deck (Stern) Level, Britannia Salon & Deck

GP4.02
Neutron Scattering Study of the Freezing of Water near a Cupric Oxide Surface [1] James Torres[1], Zachary Buck[1], Tom Zhang[2], Robert Winholtz[2], Helmut Kaiser[4], Hongbin Ma[2], Haskell Taub[1, 4] and Madhusudan Tyagi[3]; [1]Department of Physics and Astronomy, University of Missouri-Columbia, Columbia, Missouri, United States; [2]Department of Mechanical and Aerospace Engineering, University of Missouri-Columbia, Columbia, Missouri, United States; [3]NIST Center for Neutron Research, Gaithersburg, Maryland, United States; [4]University of Missouri Research Reactor, Columbia, Missouri, United States.

GP4.03
Small Angle Neutron Scattering Characterization of Highly Irradiated Reactor Pressure Vessel Steels Mikhail A. Sokolov[1], Nicholas Cunningham[2], George R. Odette[2], Peter Wells[2], Randy Nanstad[1], Kenneth Littrell[1] and William Server[3]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]University of California, Santa Barbara, Santa Barbara, California, United States; [3]ATI Consulting, Black Mountain, North Carolina, United States.

THURSDAY ORAL PRESENTATION

* Invited Paper

A: Plenary and Prize Sessions

SESSION A4: Plenary and Prize Session
Chairs: Despina Louca and Stephan Rosenkranz
Thursday Morning, July 14, 2016
"R" Deck Level, Grand Salon

8:15 AM *A4.01
PRIZE for OUTSTANDING STUDENT RESEARCH WINNER: Protein Interactions and Dynamics in Concentrated Pharmaceutical Formulations P. Douglas Godfrin; Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, United States.

8:55 AM *A4.02
PLENARY: Materials in Extreme Environments— New Opportunities for Neutron Scattering
Russell J. Hemley[1, 2]; [1]Geophysical Laboratory, Carnegie Institution of Washington, Washington, District of Columbia, United States;[2]Lawrence Livermore National Laboratory, Livermore, California, United States.

9:30 AM POSTER AWARD ANNOUNCEMENT by Patrick Woodward, Ohio State University and ACNS Conference Chair

B: Sources, Instrumentation and Software

SESSION B8: Polarization and Magnetism
Chair: Garrett Granroth
Thursday Morning, July 14, 2016
Promenade Deck (Stern) Level, Royal Salon

10:15 AM *B8.01
The First Results from the HYSPEC 3D Polarization Analysis Capability Ovidiu Garlea[1], Melissa Graves-Brook[2] and Barry L. Winn[1]; [1]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Instrument and Source Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

10:45 AM B8.02
A High Intensity Polarized Instrument for Wide-Angle Polarization Analysis Wangchun Chen[1, 2], Thomas Gentile[2], Qiang Ye[1, 2], Aaron Kirchhoff[2], Shannon Watson[2], Yiming Qiu[2], Jose A. Rodriguez-Rivera[1, 2] and Collin L. Broholm[3, 2];[1]University of Maryland, College Park, Maryland, United States; [2]National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [3]Johns Hopkins University, Baltimore, Maryland, United States.

11:00 AM B8.03
Beamlines for Polarized Neutron Development at the High Flux Isotope Reactor Lowell Crow, Lee Robertson, William Hamilton and Jinkui Zhao; Instrument and Source Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:15 AM B8.04
Development and Optimization of Polarized ^{3}He Neutron Spin Filters at Oak Ridge National Laboratory Chenyang Jiang, Xing T. Tong, Dan Brown, Makayla S. Edwards, Adam J. Wonder and Lee Robertson; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:30 AM B8.05
Larmor Labeling of Neutron Spin Using Superconducting Wollaston Prisms Fankang Li[1], Hao Feng[1], Wencao Yang[1], Alexander Thaler[2], Steven R. Parnell[3], William Hamilton[2], Lowell Crow[2], David Baxter[1], Jaime A. Fernandez-Baca[2], Jay T. Cremer[4] and Roger Pynn[1, 2]; [1]Physics, Indiana University, Bloomington, Indiana, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Delft University of Technology, Delft, Netherlands; [4]Adelphi Technology Inc., Redwood City, California, United States.

11:45 AM B8.06
Investigation of Multilayered Magnetic Nanostructure Fe/Co and a New Version of the Neutron Polarization Analysis Kyaw Z. Lin; Physics, Saint Petersburg State University, Peterhoft, Russian Federation.

12:00 PM B8.07
A New High Magnetic Field Facility for Neutron Scattering Providing Fields up to 26T at the Helmholtz-Zentrum Berlin Peter Smeibidl[1], Oleksandr Prokhnenko[1], Mark Bird[2], Maciej Bartkowiak[1], Wolf-Dieter Stein[1], Norbert Stuesser[1], Robert Wahle[1], Sebastian Gerischer[1], Stephan Kempfer[1], Jochen Heinrich[1], Matthias Hoffmann[1], Hartmut Ehmler[1], Iain Dixon[2], Jack Toth[2], Scott Bole[2], Greg Boebinger[2], Klaus Kiefer[1], Hans-Juergen Bleif[1], Karel Prokes[1] and Bella Lake[1];[1]Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany; [2]National High Magnetic Field Laboratory, Tallahassee, Florida, United States.

C: Hard Condensed Matter

SESSION C11: Lattice Dynamics and Electron-Phonon Coupling
Chairs: Simon Billinge and Emil Bozin
Thursday Morning, July 14, 2016
"R" Deck Level, Grand Salon

10:15 AM C11.01
Low Energy Phonon Modes in the Layered Cuprates Adrian Merritt[1], Dmitry Reznik[1], Daniel Parshall[2], Genda Gu[3], Thomas Wolf[4], Martin Greven[5] and Yang Tang[5]; [1]Physics, University of Colorado at Boulder, Boulder, Colorado, United States; [2]NIST Center for Neutron Research, Gaithersburg, Maryland, United States; [3]Condensed Matter Physics & Materials Science, Brookhaven National Laboratory, Upton, New York, United States; [4]Physical Chemistry, Karlsruhe Institute of Technology, Karlsruhe, Germany; [5]Physics, University of Minnesota, Minneapolis, Minnesota, United States.

10:30 AM C11.02
Phonon Quarticity in Rutile TiO_2 Caused by Phonon-Tracked Hybridization Brent Fultz[1], Tian Lan[1], Chen W. Li[2], Olle Hellman[1], Dennis S. Kim[1], Hillary Smith[1], Jorge A. Munoz[1] and Douglas L. Abernathy[3]; [1]Applied Physics and Materials Science, California Institute of Technology, Pasadena, California, United States; [2]Geophysical Laboratory, Carnegie Institution, Washington, District of Columbia, United States; [3]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

10:45 AM *C11.03
The Quest for New High-Tc Superconductors—A First-Principles Finite Displacement Approach Taner Yildirim; Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

11:15 AM C11.04
Phonon Localization and Patterns of 3-Mode Coupling in a Relaxor Ferroelectric Michael E. Manley[1], Douglas L. Abernathy[2], Raffi Sahul[3], Paul J. Stonaha[1] and John D. Budai[1]; [1]Materials Science and Technology, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]TRS Technologies, State College, Pennsylvania, United States.

11:30 AM C11.05
The Impact of Static and Dynamic Disorder on Phonon Lifetimes in Thermoelectric Materials Jennifer Niedziela[1], Dipanshu Bansal[1], Chen W. Li[1], Andrew F. May[1], Douglas L. Abernathy[2], George Ehlers[2], Ashfia Huq[3], Daniel Parshall[4], Jeffrey W. Lynn[4] and Olivier Delaire[1, 5]; [1]Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]NIST Center for Neutron Scattering, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [5]Department of Mechanical Engineering and Materials Science, Duke University, Durham, North Carolina, United States.

11:45 AM C11.06
Phonon Anomalies in the Spinel Vanadate MgV_2O_4 Tobias Weber[1, 6], Chris Stock[2], Bertrand Roessli[3], Thomas Keller[4, 6], Karin Schmalzl[5] and Peter Boni[1]; [1]Physikdepartment E21, Technische Universität München (TUM), Garching, Germany; [2]School of Physics and Astronomy, University of Edinburgh, Edinburgh, United Kingdom; [3]Laboratory for Neutron Scattering and Imaging, Paul Scherrer Institut, Villigen PSI, Switzerland; [4]Max-Planck-Institut für Festkörperforschung, Stuttgart, Germany; [5]Outstation at Institute Laue-Langevin, Jülich Centre for Neutron Science, Grenoble, France; [6]Maier-Leibnitz-Zentrum (MLZ), Technische Universität München (TUM), Garching, Germany.

12:00 PM C11.07
Spin-Phonon Coupling in Multiferroic $CuCrO_2$ Dipanshu Bansal[1], Jennifer Niedziela[1], Douglas L. Abernathy[1], George Ehlers[1], Ayman Said[2], Haidong Zhou[3] and Olivier Delaire[1, 4]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Advanced Photon Source, Argonne National Laboratory, Argonne, Illinois, United States; [3]Department of Physics and Astronomy, University of Tennessee, Knoxville, Tennessee, United States; [4]Department of Mechanical Engineering and Materials Science, Duke University, Durham, North Carolina, United States.

D: Soft Matter

SESSION D7: Membranes and Thin Films
Chair: Ronald Jones
Thursday Morning, July 14, 2016
Promenade Deck Level, Queens Salon

10:15 AM D7.01
Charge Effects on Surfactant Membrane Thickness Fluctuations Robert Bradbury[1, 2] and Michihiro Nagao[1, 2]; [1]Center for Exploration of Energy and Matter, Indiana University, Gaithersburg, Maryland, United States; [2]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

10:30 AM D7.02
Interaction of Water with Melittin Deposited on a Single-Supported Zwitterionic Lipid Bilayer Zachary Buck[1], Mengjun Bai[1], James Torres[1], Andrew Miskowiec[2], Helmut Kaiser[3, 1], Haskell Taub[1, 3], Flemming Y. Hansen[4], Madhusudan Tyagi[5], Eugene Mamontov[2] and Souleymane Diallo[2]; [1]Department of Physics and Astronomy, University of Missouri, Columbia, Missouri, United States; [2]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]University of Missouri Research Reactor, University of Missouri, Columbia, Missouri, United States; [4]Department of Chemistry, Technical University of Denmark, Lyngby, Denmark; [5]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

10:45 AM D7.03
Reversible CO_2 Capture from an Amidine Functionalized Polymer Thin-Film Brad Lokitz[1], Balaka Barkakaty[1] and James F. Browning[2]; [1]Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:00 AM D7.04
Self Assembly and Structural Properties of Magnetic Nanoparticles on Silicon Surfaces Katharina Theis-Brohl[1], Philipp Gutfreund[2], Max Wolff[3], Apurve Saini[3], Alexei Vorobiev[3, 2], Erik Brok[4, 7], Kathryn Krycka[4], Joseph A. Dura[4], Julie A. Borchers[4], Erika C. Vreeland[5, 6] and Dale Huber[5]; [1]University of Applied Sciences, Bremerhaven, Germany; [2]Institut Laue-Langevin, Grenoble, France; [3]Division for Materials Physics, Uppsala University, Uppsala, Sweden; [4]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [5]Sandia National Laboratories, Albuquerque, New Mexico, United States; [6]Senior Scientific LLC, Albuquerque, New Mexico, United States; [7]Department of Materials Science and Engineering, University of Maryland, College Park, Maryland, United States.

11:15 AM *D7.05
Addressing Dynamic Changes in Thin Soft-Matter Layers with Neutron Reflectometry— From Polyelectrolyte Surface Coatings to Living Cell Adhesion Jaroslaw Majewski[1, 2], Saurabh Singh[3], Erik B. Watkins[4], Ann Junghans[5], Luka Pocivavsek[6] and Ryan Toomey[7]; [1]Materials Physics and Applications, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [2]Chemical Engineering, University of California, Davis, Davis, California, United States; [3]Intel, Portland, Oregon, United States; [5]Materials Science and Technology, Los Alamos National Laboratory, Los Alamos, New Mexico, United States; [6]University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, United States; [7]University of South Florida, Tampa, Florida, United States.

11:45 AM D7.06
Tracking Solvent Distribution in Block Polymer Thin-Films with In Situ Neutron Scattering during Solvent Vapor Annealing Cameron K. Shelton[1], Ronald L. Jones[3], Joseph A. Dura[4] and Thomas H. Epps[1, 2]; [1]Chemical and Biomolecular Engineering, University of Delaware, Newark, Delaware, United States; [2]Materials Science and Engineering, University of Delaware, Newark, Delaware, United States; [3]Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, Maryland, United States; [4]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

12:00 PM D7.07
The Molecular Mechanisms Underlying the Phase Behaviour of Anionic Phospholipids and Membrane Fusion
Yi-Fan Chen, Kuan-Yi Tsang, Zih-An Fan and Wen-Fang Chang; Chemical and Materials Engineering, National Central University, Taoyuan, Taiwan.

F: Materials Chemistry and Materials for Energy

SESSION F7: Materials Structure and Chemical Dynamics
Chairs: Hubert King and Sven Vogel
Thursday Morning, July 14, 2016
"R" Deck (Mid-Ship) Level, Windsor Salon

10:15 AM F7.01
Following the Precipitation and Transformation of Calcium Carbonates In Situ Katharine Page, Hsiu-Wen Wang, Luke L. Daemen and Andrew Stack; Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

10:30 AM F7.02
Structural and Neutron Vibrational Studies of Complex Hydride Materials for Energy Storage Hui Wu; NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States.

10:45 AM F7.03
Effect of Water on the Dynamics of Propane Confined in Nanoporous MCM-41-S Siddharth S. Gautam[1], Gernot Rother[2], Niina Jalarvo[3, 4], Tingting Liu[1], Eugene Mamontov[4], Sheng Dai[2], Zhenan Qiao[2] and David Cole[1]; [1]School of Earth Sciences, Ohio State University, Columbus, Ohio, United States; [2]Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [3]JCNS Outstation at Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]Neutron Science Directorate, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States.

11:00 AM F7.04
Influence of Water on Performance of Energy Storing Materials Naresh C. Osti[1], Boris Dyatkin[2], Pengfei Zhang[3], Sheng Dai[3], Madhusudan Tyagi[4, 5], Yury Gogotsi[2], David Wesolowski[3] and Eugene Mamontov[1]; [1]Chemical & Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]A.J. Drexel Nanomaterials Institute and the Department of Materials Science and Engineering, Drexel University, Philadelphia, Pennsylvania, United States; [3]Chemical Science Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [4]NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland, United States;[5]Department of Materials Science, University of Maryland, College Park, Maryland, United States.

11:15 AM F7.05
In Situ Neutron Reflectometry Reveals Dye...TiO_2 Interfacial Structure of Dye-Sensitised Solar Cell Working Electrodes Buried under a Solution of I^-/I_3^- Redox Electrolyte Jacqueline M. Cole[1, 2, 3]; [1]Physics, University of Cambridge, Cambridge, United Kingdom; [2]Materials Science Division, Argonne National Laboratory, Lemont, Illinois, United States; [3]ISIS Neutron and Muon Source, Rutherford Appleton Laboratory, Harwell, Didcot, United Kingdom.

11:30 AM F7.06
Quasielastic Neutron Scattering with In Situ Humidity Control Andrew Miskowiec[1], Kenneth Herwig[1], Eugene Mamontov[1] and Marie Kirkegaard[1, 2]; [1]Oak Ridge National Laboratory, Oak Ridge, Tennessee, United States; [2]University of Tennessee at Knoxville, Knoxville, Tennessee, United States.

11:45 AM *F7.07
Negative Thermal Expansion and Other Anomalous Properties in Metal Fluorides with Structures Related to That of ReO_3 Angus P. Wilkinson[1, 2]; [1]School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, Georgia, United States; [2]School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, Georgia, United States.