



Structure and Dynamics of Materials on Many Length and Time Scales

August 6 - 11, 2017

Chair

Bruce D. Gaulin

Vice Chair

Masatoshi Arai

The Hong Kong University of Science and Technology

Clear Water Bay, Kowloon

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Hong Kong Advisory Board:

Tony F. Chan, Kathryn Song Eng Cheah, Fanny M.C. Cheung, Arthur B. Ellis, Barry Halliwell, Nancy Ip, Jian Lu, Peter Mathieson, Alfonso Ngan, Paul Tam, Benjamin Wah, Henry Wong, Vivian Wing-Wah Yam, Kenneth Young, Albert Cheung-Hoi Yu

Conference Description

With major new investments in infrastructure for neutron science in the US, Europe, Asia, and Australia either completed or in advanced planning, our capabilities for understanding new materials using neutron scattering are evolving rapidly. This GRC will be a forum for discussing how new neutron instrumentation is advancing our understanding of new materials - the materials that will help us address significant challenges and societal needs through the 21st century.

Neutron science impacts a broad range of materials and the GRC sessions will focus on these, including magnetic and superconducting materials, topological materials, polymeric and biological materials, as well as energy-related and engineering materials. Attention will focus on current and cutting edge research problems and how new neutron instrumentation can solve important problems. The Neutron Scattering GRC will also feature an associated GRS to address the needs of a large cohort of young neutron scientists.

Related Meeting



This GRC will be held in conjunction with the "Neutron Scattering (GRS)" Gordon Research Seminar (GRS). Those interested in attending both meetings must submit an application for the GRS in addition to an application for the GRC. Refer to the [associated GRS program page](#) for more information.

Conference Program

Sunday	
2:00 pm - 8:00 pm	Arrival and Check-in
6:00 pm - 7:00 pm	Dinner
7:30 pm - 7:40 pm	Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
7:40 pm - 9:30 pm	Keynote Session: New Materials and Neutron Sciences Facilities: Past, Present and Future Discussion Leader: Masatoshi Arai (European Spallation Source, Sweden)
7:40 pm - 7:50 pm	Opening Remarks
7:50 pm - 8:25 pm	Robert McGreevy (Rutherford Appleton Laboratory, STFC, United Kingdom) "Materials Matter - Do Neutrons?"
8:25 pm - 8:35 pm	Discussion
8:35 pm - 9:10 pm	Hesheng Chen (Chinese Academy of Sciences, China) "Recent Progress at the China Spallation Neutron Source"
9:10 pm - 9:20 pm	Discussion
9:20 pm - 9:30 pm	General Discussion
Monday	
7:30 am - 8:30 am	Breakfast

9:00 am - 12:30 pm	New Magnetic Materials Discussion Leaders: Stephen Nagler (Oak Ridge National Laboratory, USA) and Jun Zhao (Fudan University, China)
9:00 am - 9:30 am	Lucy Clark (University of Liverpool, United Kingdom) "New Realizations of Frustrated Spin Systems"
9:30 am - 9:40 am	Discussion
9:40 am - 10:10 am	Taku Sato (Tohoku University, Japan) "Magnons in Noncentrosymmetric Magnets"
10:10 am - 10:20 am	Discussion
10:20 am - 10:50 am	Group Photo / Coffee Break
10:50 am - 11:20 am	Kirily Rule (Australian Nuclear Science and Technology Organisation, Australia) "Neutron Scattering as a Tool for Investigating Low Dimensional Quantum Magnets"
11:20 am - 11:30 am	Discussion
11:30 am - 12:00 pm	Christian Pfleiderer (Technical University of Munich, Germany) "Stability of Skyrmion Lattices in Chiral Magnets"
12:00 pm - 12:10 pm	Discussion
12:10 pm - 12:25 pm	Laura Chaix (Laboratoire Leon Brillouin, CEA Saclay, France) "Helical Bunching and Symmetry Lowering Inducing Multiferroicity in Fe Langasites"
12:25 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner

7:30 pm - 9:30 pm	Soft and Polymeric Materials Discussion Leader: Victoria Garcia Sakai (ISIS Pulsed Neutron and Muon Source, STFC, United Kingdom)
7:30 pm - 8:00 pm	Elliot Gilbert (Australian Nuclear Science and Technology Organisation, Australia) "QUOKKA's Guide to Food (and Non-Food) Structure"
8:00 pm - 8:10 pm	Discussion
8:10 pm - 8:40 pm	Sung-Min Choi (KAIST, South Korea) "Soft Matter Guided Formation of Hierarchical Nanoparticle Superlattices: Small Angle Scattering Studies"
8:40 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	Mitsuhiro Shibayama (University of Tokyo, Japan) "Neutron Scattering of Model Polymer Networks"
9:20 pm - 9:30 pm	Discussion
Tuesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Thermoelectric and New Energy Materials Discussion Leaders: Katharina Fritsch (Helmholtz-Zentrum Berlin, Germany) and Evy Kartini (National Nuclear Energy Agency (BATAN), Indonesia)
9:00 am - 9:30 am	Olivier Delaire (Duke University, USA) "Neutron Scattering and Simulations of Phonons in Thermoelectrics: Thermal Transport, Strong Anharmonicity, and Emergent Quasiparticles"
9:30 am - 9:40 am	Discussion
9:40 am - 10:10 am	Andrew Goodwin (University of Oxford, United Kingdom) "Crafting Phonons with Correlated Disorder"
10:10 am - 10:20 am	Discussion
10:20 am - 10:50 am	Coffee Break

10:50 am - 11:20 am	Craig Brown (NIST Center for Neutron Research, USA) "Probing Small Molecule Adsorption in Microporous Materials Using Neutron Scattering"
11:20 am - 11:30 am	Discussion
11:30 am - 12:00 pm	Jie Ma (Shanghai Jiao Tong University, China) "Neutron Scattering Study of the Phonon Scattering Mechanism in the IV-VI Rocksalt Alloys and Complicated Oxides"
12:00 pm - 12:10 pm	Discussion
12:10 pm - 12:25 pm	Si Lan (Nanjing University of Science and Technology / City University of Hong Kong, China) "Time-Resolved Neutron Diffraction Study of the Transition of Nucleation Mode in Zr-Based Bulk Metallic Glasses and Its Correlation to Glass-Forming Ability"
12:25 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
2:00 pm - 4:00 pm	Poster Session
4:00 pm - 6:00 pm	Disordered and Engineering Materials Discussion Leader: Yuntao Liu (China Institute of Atomic Energy, China)
4:00 pm - 4:30 pm	Claire White (Princeton University, USA) "Uncovering the Atomic Structure and Mesoscale Morphology of Amorphous Materials by Combining Multiscale Simulations and Neutron Scattering"
4:30 pm - 4:40 pm	Discussion
4:40 pm - 5:10 pm	Xun-Li Wang (City University of Hong Kong, Hong Kong SAR China) "Beyond Dislocations – <i>In-Situ</i> Study of Low-Temperature Deformation Mechanisms in High Entropy Alloys"
5:10 pm - 5:20 pm	Discussion

5:20 pm - 5:50 pm	Ronald Rogge (Canadian Nuclear Laboratories, Canada) "Seeing the Unseen: Using Neutrons to Solve Problems and Mysteries"
5:50 pm - 6:00 pm	Discussion
6:00 pm - 7:00 pm	Dinner
Wednesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Superconducting and Topological Materials Discussion Leaders: Raymond Osborn (Argonne National Laboratory, USA) and Wei Bao (Renmin University of China, China)
9:00 am - 9:30 am	Collin Broholm (Johns Hopkins University, USA) "The Continuing Story of Simple Cubic SmB ₆ "
9:30 am - 9:40 am	Discussion
9:40 am - 10:10 am	Pengcheng Dai (Rice University, USA) "Spin, Lattice, and Orbital Coupling in Iron Pnictides"
10:10 am - 10:20 am	Discussion
10:20 am - 10:50 am	Coffee Break
10:50 am - 11:20 am	Taka-Hisa Arima (University of Tokyo, Japan) "How to Observe Magnetic Skyrmions"
11:20 am - 11:30 am	Discussion
11:30 am - 12:00 pm	Philippe Bourges (CEA Saclay, France) "Loop Currents in Superconducting Cuprates and Iridates"
12:00 pm - 12:10 pm	Discussion
12:10 pm - 12:25 pm	Alistair Overy (University of Oxford, United Kingdom) "Influence of Strongly-Correlated Disorder on the Emergence of Band Gaps"
12:25 pm - 12:30 pm	Discussion

12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:00 pm - 7:30 pm	Business Meeting <i>Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair</i>
7:30 pm - 9:30 pm	Biological Materials Discussion Leader: Dean Myles (Oak Ridge National Laboratory, USA)
7:30 pm - 8:00 pm	John Katsaras (Oak Ridge National Laboratory, USA) "The <i>In Vivo</i> Structure of a Biological Membrane"
8:00 pm - 8:10 pm	Discussion
8:10 pm - 8:40 pm	Antonio Benedetto (Paul Scherrer Institut, Switzerland / University College Dublin, Ireland) "Biomolecules, Water, and Room-Temperature Ionic Liquids: Challenges and Opportunities in Basic Science and Applications"
8:40 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	Yun Liu (University of Delaware / National Institute of Standards and Technology, USA) "Emerging Opportunities of Using Neutron Scattering to Study Protein Structures in Solutions"
9:20 pm - 9:30 pm	Discussion
Thursday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	The Role of Neutron Scattering in Materials Synthesis and Discovery Discussion Leader: Bruce Gaulin (McMaster University, Canada)

9:00 am - 9:30 am	Hiroshi Kageyama (Kyoto University, Japan) "How to Use Neutron Sources to Explore Mixed-Anion Compounds"
9:30 am - 9:35 am	Discussion
9:35 am - 10:05 am	Tyrel McQueen (Johns Hopkins University, USA) "A Synthetic Chemists Exploration of the Utility of Neutron Scattering"
10:05 am - 10:10 am	Discussion
10:10 am - 10:40 am	Coffee Break
10:40 am - 11:10 am	John Mitchell (Argonne National Laboratory, USA) "Highly Reduced Nickelates: Using Neutrons and X-Rays to Explore Spin and Charge States"
11:10 am - 11:15 am	Discussion
11:15 am - 11:45 am	Raymond Osborn (Argonne National Laboratory, USA) "Three Dimensional PDF Analysis of Diffuse Scattering"
11:45 am - 11:50 am	Discussion
11:50 am - 12:25 pm	Paul Langan (Oak Ridge National Laboratory, USA) "Innovative Neutron Scattering Capabilities at Oak Ridge for Solving Cutting Edge Research Problems"
12:25 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	New Instrumentation Enabling New Science Discussion Leaders: Toby Perring (ISIS Neutron Source, Rutherford Appleton Laboratory, STFC, United Kingdom) and Frank Klose (Australian Nuclear Science and Technology Organisation, Australia)
4:00 pm - 4:30 pm	Ken Andersen (European Spallation Source, Sweden) "ESS: The Next-Generation Neutron Source"
4:30 pm - 4:40 pm	Discussion

4:40 pm - 5:10 pm	Kenji Nakajima (J-PARC Center, Japan) "New Opportunities of Neutron Sciences Provided by MLF, J-PARC"
5:10 pm - 5:20 pm	Discussion
5:20 pm - 5:50 pm	Helmut Schober (Institut Laue-Langevin (ILL), France) "A Tour of Recent Scientific Highlights Made Possible Thanks to ILL's Modernisation Programmes"
5:50 pm - 6:00 pm	Discussion
6:00 pm - 7:00 pm	Dinner
Friday	
7:30 am - 8:30 am	Breakfast
9:00 am	Departure

Contributors

		
		
		
		
		