

**Report of MRS Fall 2015 Symposium BBB**  
**“Liquids and Glassy Soft Materials: Theoretical and Neutron Scattering Studies”**

**Symposium Organizers:**

Lead Organizer (Point of Contact): **Yang Zhang**

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Co-Organizer: **Takeshi Egami**

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Co-Organizer: **Li Emily Liu**

Affiliation/Organization: Rensselaer Polytechnic Institute, Department of Mechanical, Aerospace, and Nuclear Engineering

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Co-Organizer: **H Eugene Stanley**

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**Sponsors**

- Neutron Sciences Directorate, Oak Ridge National Laboratory
- Neutron Scattering Society of America
- Army Research Office
- Materials Research Society

## **Objective of the Symposium**

The objective of the symposium is to bring synergies of latest theoretical concepts and advanced neutron scattering characterizations to the understanding of universal aspects of liquids and glassy materials.

## **Description of Topical Focus of the Symposium:**

Liquids, prototypical disordered condensed matter, are ubiquitous. Furthermore, when the temperature is carefully lowered, many liquids can be supercooled and eventually vitrified into thermodynamically unstable but kinetically trapped glassy states. The phase behaviors of liquids and glasses are exceptionally rich, and the understanding of which requires the development of new theoretical concepts and new experimental techniques. In addition, numerous soft and biological materials of amazing far-from-equilibrium complexity seem to share many intriguing features of liquids and glasses. Therefore, quantitative descriptions of the structure and dynamics of liquids and glassy soft materials and in-depth understanding of the nature of the glass transition will likely impact a wide range of disciplines in physics, chemistry, and materials science and engineering.

Due to the special scattering characteristics, neutrons have enabled a collection of powerful experimental tools, which provide detailed atomic spatial distributions as well as atomic dynamics. Historically, the quantitative treatment of liquids, such as using the intermediate scattering function, is largely influenced by early-age neutron scattering experiments. In the recent years, with the advent of the new generation of neutron sources around the world, it is possible to conduct elastic, quasi-elastic, and inelastic scattering experiments with extremely high accuracy, which, in principle, allows us to examine far more detailed predictions from theories and modeling than ever. This symposium focuses on the forefront of the liquids and glassy soft materials research and discuss the best practices of the cutting-edge neutron scattering experimental tools, as well as the related theories and multi-scale modeling and simulations.

## **List of symposium topics:**

- Unusual phase behavior of water and supercooled water
- Physics and chemistry of liquids under confinement or near interfaces
- Structure and transport properties of ionic liquids and their novel applications
- Atomic-scale structure and dynamics of metallic liquids and their vitrification
- Fluctuations and emergent ordering at complex interfaces and in complex fluids
- Polymers and intrinsically disordered biomolecular assemblies
- New theoretical perspectives and computational methods in liquids, supercooled liquids, and glasses

## **Summary and Highlight of the Symposium**

The symposium started on Nov. 30<sup>th</sup>, Monday and ended on Dec. 4<sup>th</sup>, Friday – a program spanning the entire week of the MRS meeting. Because of the broad coverage of materials, the symposium is very well attended. In fact, we attracted eight National Academy members, and many others among that category. It is epochal for the community.

We divided all the talks into five subareas: Metallic Liquids and Glasses (2 sessions), Water (3 sessions), Molecular Liquids and Glasses (1 session), Glassy Soft Materials (3 sessions), Others (1 session). There is also one poster session on Tuesday night.

The detailed agenda (author, title, schedule) of the symposium is attached.

The symposium is a great attempt bringing together people from the traditional metallurgy field, molecular field, and soft matter field. Such crosslinking of concepts and languages is in particular useful to bridge the gaps. Many universal phenomena across systems of different length scales are identified. There is a need of similar efforts from the community in the future.

The list of people supported with grant funds will be provided by MRS.

### **Brief Biographies of the Organizers**

Dr. Yang Zhang is an Assistant Professor in the Department of Nuclear, Plasma, and Radiological Engineering, Department of Materials Science and Engineering, Program of Computational Science and Engineering at University of Illinois at Urbana-Champaign. He is the recipient of various awards and honors including Collins Fellow 2013, Clifford G. Shull fellowship 2010, Manson Benedict Award 2008 and the Neutron Scattering Society of America Prize 2008. His research focuses on the study of beyond-equilibrium materials using integrated neutron and synchrotron light experimental probes and atomistic modeling and simulation. The structure and dynamics of these systems are either inherently complex or driven out of equilibrium by extreme conditions. In particular, his current interests include a range of fundamental and technical problems involving slow phenomena and rare events, such as: materials beyond equilibrium and in extreme environments; extreme phase behavior of liquids; and glassy or jammed soft matters.

Dr. H. Eugene Stanley is the William Fairfield Warren Distinguished Professor and Director of the Center for Polymer Studies at Boston University. He is a member of the US National Academy of Sciences, the Brazilian Academy of Sciences, the Hungarian Physical Society, Honorary Professor at the Institute for Advanced Studies, University of Pavia, and Eötvös Loránd University. He is one of the founders of econophysics. He is the recipient of the Boltzmann Medal 2004, and the American Physical Society 2008 Julius Edgar Lilienfeld Prize, and the Teresiana Medal in Complex Systems Research given by the University of Pavia. He has received nine doctorates Honoris Causa from universities around the world. He has made seminal contributions to statistical physics and is one of the pioneers of interdisciplinary science. His current research focuses on understanding the anomalous behavior of liquid water, but he had made fundamental contributions to complex systems.

Dr. Takeshi Egami is Director of Joint Institute for Neutron Sciences and Distinguished Scientist/Professor at the University of Tennessee, Department of Materials Science and Engineering and Department of Physics and Astronomy, and the Oak Ridge National Laboratory. He is the recipient of J. D. Hanawalt Award from IUCr 2010, Senior Researcher Prize from International Symposium on Metastable and Nano Materials 2006, Bertram Eugene Warren Diffraction Physics Award from ACA 2003 and John Wheatley Scholar 2002 from LANL. His research focus is on physics of liquids and glasses, metallic systems in particular, and local methods in neutron and X-ray scattering. He and Simon Billinge (Columbia) wrote a textbook on the pair-density function (PDF) method, "Underneath the Bragg peaks: Structural analysis of complex materials".

Dr. Li Emily Liu is an Associate Professor of Engineering Physics and Nuclear Engineering in the Department of Mechanical, Aerospace, and Nuclear Engineering at Rensselaer Polytechnic Institute. She is the recipient of various honors and awards including two Outstanding Teaching Awards 2013, the School of Engineering Research Excellence Award 2012, the Career Campaign Award from the RAMP-UP Program 2009, the NRC Faculty Development Award 2008, and the PNAS Cozzarelli Prize 2006. Dr.

Liu was trained and now highly specialized in using neutron, X-ray, and light scattering experiments and MD simulations to explore properties of soft matter in real time. She is motivated by studying the structure, nano-scale dynamics, meso-scale evolution, and macroscopic functions of materials under different external environments, because it may lead to innovative theories for collective behaviors at various scales and among different groups.

Session Information							
<p>Session Title: BBB1: Metallic Liquids and Glasses I            Session Status: Admin Created            Session Type: Oral            Session Start Time: Mon 11/30/2015 8:30 AM            Session End Time: Mon 11/30/2015 12:00 PM            Duration: 210            Session Location: Sheraton, 3rd Floor, Gardner A/B            Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory            Session Hosts: Session Chair: Peter Derlet            Session Chair: Craig Maloney            Session Creator: Organizer, SympBBB            Session Owners:            Session Notes:            Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies            Session Abbreviation: BBB1            Client Session ID: 900            Session Prefix: BBB1            Include in IP: Yes            Display Individual Presentation Times: Yes            Display View Presentation Link in IP: Yes</p>							
Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1			OPENING REMARKS			8:30 AM 8:45 AM	
2	<a href="#">2309492</a>	BBB1.01	<b>Strain Induced Fragility Transition and Unified Lindemann Criterion for Thermal and Mechanical Yielding in Metallic Glasses</b>	Samwer, Konrad	Invited Speaker	8:45 AM 9:15 AM	Not Yet Invited
3	<a href="#">2338669</a>	BBB1.02	<b>Thermodynamic and Structural Fragility in Simulated Metallic Glasses</b>	Morris, James	Oral Presentation Preferred	9:15 AM 9:30 AM	Not Yet Invited
4	<a href="#">2332646</a>	BBB1.03	<b>Fractal Arrangement of Atomic Structures in Metallic Glasses</b>	Chen, David	Oral Presentation Preferred	9:30 AM 9:45 AM	Not Yet Invited
5	<a href="#">2328815</a>	BBB1.04	Diffusional Decomposition and Glass Forming Ability of Solidifying Ternary Liquids	Katsman, Alex	Oral Presentation Preferred	9:45 AM 10:00 AM	Not Yet Invited
6			BREAK			10:00 AM 10:30 AM	
7	<a href="#">2337670</a>	BBB1.05	<b>Atomistics of Creep: Mesoscale Perspective on Amorphous Plasticity and Shear Instability</b>	Yip, Sidney	Invited Speaker	10:30 AM 11:00 AM	Not Yet Invited
8	<a href="#">2330792</a>	BBB1.06	<b>Onset of Cooperative Dynamics in Equilibrium Metallic Glass-Forming Liquids</b>	Jaiswal, Abhishek	Oral Presentation Preferred	11:00 AM 11:15 AM	Not Yet Invited
9	<a href="#">2344659</a>	BBB1.07	<b>Structural Evolution Correlated with Properties in Metallic Liquids</b>	Ma, Evan	Invited Speaker	11:15 AM 11:45 AM	Not Yet Invited
10	<a href="#">2335084</a>	BBB1.08	Electron Correlation Microscopy Measurements of Relaxation Dynamics in Metallic Glass-Forming Liquid with Nanometer Resolution	Voyles, Paul	Oral Presentation Preferred	11:45 AM 12:00 PM	Not Yet Invited

**Session Information**

Session Title: BBB2: Metallic Liquids and Glasses II  
 Session Status: Admin Created  
 Session Type: Oral  
 Session Start Time: Mon 11/30/2015 1:30 PM  
 Session End Time: Mon 11/30/2015 5:00 PM  
 Duration: 210  
 Session Location: Sheraton, 3rd Floor, Gardner A/B  
 Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory  
 Session Hosts: Session Chair: Abhishek Jaiswal  
 Session Chair: James Morris  
 Session Creator: Organizer, SympBBB  
 Session Owners:  
 Session Notes:  
 Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies  
 Session Abbreviation: BBB2  
 Client Session ID: 901  
 Session Prefix: BBB2  
 Include in IP: Yes  
 Display Individual Presentation Times: Yes  
 Display View Presentation Link in IP: Yes

Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1	<a href="#">2329779</a>	BBB2.01	<b>Liquid-to-Liquid Phase Transition in a Supercooled Metallic Liquid</b>	Wang, Xun-Li	Invited Speaker	1:30 PM 2:00 PM	Not Yet Invited
2	<a href="#">2334584</a>	BBB2.02	Local Order Inheritance from Molten State in Marginal Glass Forming Alloys	Kutsal, Mustafacan	Oral Presentation Preferred	2:00 PM 2:15 PM	Not Yet Invited
3	<a href="#">2329390</a>	BBB2.03	<b>Link between Fragility and Ordering in Metallic Liquids</b>	Kelton, Ken	Invited Speaker	2:15 PM 2:45 PM	Not Yet Invited
4	<a href="#">2335106</a>	BBB2.04	<b>Universal Enthalpy–Entropy Compensation Rule for Deformation of Metallic Glasses</b>	Wang, Yunjiang	Oral Presentation Preferred	2:45 PM 3:00 PM	Not Yet Invited
5			BREAK			3:00 PM 3:30 PM	
6	<a href="#">2321941</a>	BBB2.05	Structural Relaxation is a Scale-Free Process	Lemaitre, Anael	Invited Speaker	3:30 PM 4:00 PM	Not Yet Invited
7	<a href="#">2330630</a>	BBB2.06	<b>Crossover from Localized to Cascade Relaxations in Metallic Glasses</b>	Fan, Yue	Oral Presentation Preferred	4:00 PM 4:15 PM	Not Yet Invited
8	<a href="#">2335503</a>	BBB2.07	Thermally Driven Plasticity in Model Amorphous Solids: A Molecular Dynamics Study	Derlet, Peter	Oral Presentation Preferred	4:15 PM 4:30 PM	Not Yet Invited
9	<a href="#">2337974</a>	BBB2.08	Shear Transformation Zones: State Determined or Protocol Dependent?	Jaiswal, Prabhat	Oral Presentation Preferred	4:30 PM 4:45 PM	Not Yet Invited
10	<a href="#">2338820</a>	BBB2.09	Diffusion and Localization in Elasto-Plastic Models of Amorphous Solids	Maloney, Craig	Oral Presentation Preferred	4:45 PM 5:00 PM	Not Yet Invited

**Session Information**

Session Title: BBB3: Water I  
 Session Status: Admin Created  
 Session Type: Oral  
 Session Start Time: Tue 12/01/2015 8:30 AM  
 Session End Time: Tue 12/01/2015 12:00 PM  
 Duration: 210  
 Session Location: Sheraton, 3rd Floor, Gardner A/B  
 Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory  
 Session Hosts: Session Chair: Eugene Mamontov  
 Session Chair: Li Emily Liu  
 Session Creator: Organizer, SympBBB  
 Session Owners:  
 Session Notes:  
 Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies  
 Session Abbreviation: BBB3  
 Client Session ID: 902  
 Session Prefix: BBB3  
 Include in IP: Yes  
 Display Individual Presentation Times: Yes  
 Display View Presentation Link in IP: Yes

Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1	<a href="#">2325343</a>	BBB3.01	Evidence of Liquid-to-Liquid Phase Transition in Deeply Cooled Confined Water Shown by Neutron Scattering Studies	Chen, Sow-Hsin	Invited Speaker	8:30 AM 9:00 AM	Not Yet Invited
2	<a href="#">2330225</a>	BBB3.02	Anomalous Transport Property in Supercooled Water by Volume—Temperature Replica Exchange Molecular Dynamics	Kuo, Jer-Lai	Oral Presentation Preferred	9:00 AM 9:15 AM	Not Yet Invited
3	<a href="#">2347987</a>	BBB3.03	Anomalous Fluctuations, and How They Are Central to Life and High Tech Processes	Angell, C. Austen	Invited Speaker	9:15 AM 9:45 AM	Not Yet Invited
4	<a href="#">2335812</a>	BBB3.04	Dynamics of Low-temperature Water Confined in Periodic Mesoporous Organosilica with Different Hydrophobic Walls	Yamaguchi, Toshio	Oral Presentation Preferred	9:45 AM 10:00 AM	Not Yet Invited
5			BREAK			10:00 AM 10:30 AM	
6	<a href="#">2333807</a>	BBB3.05	<b>Dynamics of Molecular Associates in Methanol and Methanol/Water Mixtures</b>	Faraone, Antonio	Invited Speaker	10:30 AM 11:00 AM	Not Yet Invited
7	<a href="#">2331462</a>	BBB3.06	<b>Some Considerations on Confined Water: The Thermal Behavior of Transport Properties in Water-Glycerol and Water-Methanol Mixtures</b>	Mallamace, Francesco	Invited Speaker	11:00 AM 11:30 AM	Not Yet Invited
8	<a href="#">2347557</a>	BBB3.07	<b>X-Ray Studies of Water: From Hot to Supercooled Conditions</b>	Nilsson, Anders	Invited Speaker	11:30 AM 12:00 PM	Not Yet Invited

**Session Information**

Session Title: BBB4: Molecular Liquids and Glasses  
 Session Status: Admin Created  
 Session Type: Oral  
 Session Start Time: Tue 12/01/2015 1:30 PM  
 Session End Time: Tue 12/01/2015 5:00 PM  
 Duration: 210  
 Session Location: Sheraton, 3rd Floor, Gardner A/B  
 Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory  
 Session Hosts: Session Chair: Yang Zhang  
 Session Chair: Jeffrey Sokoloff  
 Session Creator: Organizer, SympBBB  
 Session Owners:  
 Session Notes:  
 Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies  
 Session Abbreviation: BBB4  
 Client Session ID: 903  
 Session Prefix: BBB4  
 Include in IP: Yes  
 Display Individual Presentation Times: Yes  
 Display View Presentation Link in IP: Yes

Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1	<a href="#">2347050</a>	BBB4.01	<b>The Hydration Structure of Aqueous Carbonic Acid and Carbon Dioxide from X-Ray Absorption Spectroscopy</b>	Saykally, Richard	Invited Speaker	1:30 PM 2:00 PM	Not Yet Invited
2	<a href="#">2332663</a>	BBB4.02	Molecular Dynamics Simulations of Ion-Modulated and Curvature-Dependent Hydrophobic Solvations	Huang, Kai	Oral Presentation Preferred	2:00 PM 2:15 PM	Not Yet Invited
3	<a href="#">2345014</a>	BBB4.03	Molecular Liquids: Local Order and Dynamics Approaching the Glass Transition	Alba-Simionesco, Christiane	Invited Speaker	2:15 PM 2:45 PM	Not Yet Invited
4	<a href="#">2326012</a>	BBB4.04	Sub-nm Photoinduced Glass Dynamics on the Amorphous Silicon Carbide Surface	Nguyen, Duc	Oral Presentation Preferred	2:45 PM 3:00 PM	Not Yet Invited
5			BREAK			3:00 PM 3:30 PM	
6	<a href="#">2325985</a>	BBB4.05	Using Vapor Deposition to Control the Structure of Glasses	Ediger, Mark	Invited Speaker	3:30 PM 4:00 PM	Not Yet Invited
7	<a href="#">2326601</a>	BBB4.06	Neutron Scattering in Drug Discovery	Smith, Jeremy	Invited Speaker	4:00 PM 4:30 PM	Not Yet Invited
8	<a href="#">2323894</a>	BBB4.07	<b>Structure-Solubility Relations for Amorphous Pharmaceuticals</b>	Benmore, Chris	Invited Speaker	4:30 PM 5:00 PM	Not Yet Invited



**Session Information**

Session Title: BBB5: Poster Session: Liquids and Glassy Soft Materials  
 Session Status: Admin Created  
 Session Type: Poster  
 Session Start Time: Tue 12/01/2015 8:00 PM  
 Session End Time: Tue 12/01/2015 10:30 PM  
 Duration: 150  
 Session Location: Hynes, Level 1, Hall B  
 Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory  
 Session Hosts: Session Chair: Li Emily Liu  
 Session Chair: Yang Zhang  
 Session Creator: Organizer, SympBBB  
 Session Owners:  
 Session Notes:  
 Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies  
 Session Abbreviation: BBB5  
 Client Session ID: 904  
 Session Prefix: BBB11  
 Include in IP: Yes  
 Display Individual Presentation Times: No  
 Display View Presentation Link in IP: Yes

Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1		BBB5.01	Poster from NSSA			8:00 PM 10:30 PM	
2	<a href="#">2333952</a>	BBB5.02	Evidence for Two Structural Relaxations in Protein Hydration Water	Camisasca, Gaia	Poster Presentation Preferred	8:00 PM 10:30 PM	Not Yet Invited
3	<a href="#">2333953</a>	BBB5.03	Hopping Phenomena and Fragile to Strong Transition in Supercooled Water	De Marzio, Margherita	Poster Presentation Preferred	8:00 PM 10:30 PM	Not Yet Invited
4	<a href="#">2334982</a>	BBB5.04	Structure Origins of Phase Stability in Ternary Supercooled Metallic Glass-Forming Liquids	Wei, Xiaoya	Poster Presentation Preferred	8:00 PM 10:30 PM	Not Yet Invited
5	<a href="#">2336046</a>	BBB5.05	Free Energy of Formation of Small Ice Nuclei near the Widom Line in Simulations of Supercooled Water	Morris, Siobhan	Poster Presentation Preferred	8:00 PM 10:30 PM	Not Yet Invited
6	<a href="#">2336355</a>	BBB5.06	Nucleation in the Metamagnet	James, Daniella	Poster Presentation Preferred	8:00 PM 10:30 PM	Not Yet Invited
7	<a href="#">2383069</a>	BBB5.07	Designing Microstructures of Metallic-Glass-Matrix Composites by Flash-Annealing	Kosiba, K.	Poster Presentation Preferred	8:00 PM 10:30 PM	Not Yet Invited
8	<a href="#">2341664</a> (W)	BBB5.08	WITHDRAWN 9-16-15 Compositional-Dependence Structural Evolution and Thermodynamic Anomalies of Liquid Al <sub>100-x</sub> Cu <sub>x</sub> Alloys	Xiong, Lianghua	Oral Presentation Preferred	8:00 PM 10:30 PM	Not Yet Invited

**Session Information**

Session Title: BBB6: Water II  
 Session Status: Admin Created  
 Session Type: Oral  
 Session Start Time: Wed 12/02/2015 8:30 AM  
 Session End Time: Wed 12/02/2015 12:00 PM  
 Duration: 210  
 Session Location: Sheraton, 3rd Floor, Gardner A/B  
 Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory  
 Session Hosts: Session Chair: Paola Gallo  
 Session Chair: Antonio Faraone  
 Session Creator: Organizer, SympBBB  
 Session Owners:  
 Session Notes:  
 Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies  
 Session Abbreviation: BBB6  
 Client Session ID: 905  
 Session Prefix: BBB6  
 Include in IP: Yes  
 Display Individual Presentation Times: Yes  
 Display View Presentation Link in IP: Yes

Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1	<a href="#">2334736</a>	BBB6.01	Water at Interfaces	Galli, Giulia	Invited Speaker	8:30 AM 9:00 AM	Not Yet Invited
2	<a href="#">2339271</a>	BBB6.02	<b>Predicting Anomalous Properties of Water Using <i>Ab Initio</i> Molecular Dynamics</b>	Santra, Biswajit	Oral Presentation Preferred	9:00 AM 9:15 AM	Not Yet Invited
3	<a href="#">2322077</a>	BBB6.03	<b>The Family of Oxygen-Oxygen Radial Distribution Functions for Water</b>	Head-Gordon, Teresa	Invited Speaker	9:15 AM 9:45 AM	Not Yet Invited
4	<a href="#">2337273</a>	BBB6.04	Ions in Water Studied by <i>Ab-Initio</i> Molecular Dynamics and Implicit Solvation Models	Todorova, Mira	Oral Presentation Preferred	9:45 AM 10:00 AM	Not Yet Invited
5			BREAK			10:00 AM 10:30 AM	
6	<a href="#">2331136</a>	BBB6.05	Quantum Tunneling of Ultra-Confined Water	Kolesnikov, Alexander	Invited Speaker	10:30 AM 11:00 AM	Not Yet Invited
7	<a href="#">2330653</a>	BBB6.06	<b>Role of Quantum Fluctuations in Dynamics of Bulk and Confined Water</b>	Sokolov, Alexei	Invited Speaker	11:00 AM 11:30 AM	Not Yet Invited
8	<a href="#">2347058</a>	BBB6.07	<b>The Anomalous Ground State of Nano-Confined Water</b>	Reiter, George	Invited Speaker	11:30 AM 12:00 PM	Not Yet Invited

**Session Information**

Session Title: BBB7: Glassy Soft Materials I  
 Session Status: Admin Created  
 Session Type: Oral  
 Session Start Time: Wed 12/02/2015 1:30 PM  
 Session End Time: Wed 12/02/2015 5:00 PM  
 Duration: 210  
 Session Location: Sheraton, 3rd Floor, Gardner A/B  
 Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory  
 Session Hosts: Session Chair: Yang Zhang  
 Session Chair: Udayan Mohanty  
 Session Creator: Organizer, SympBBB  
 Session Owners:  
 Session Notes:  
 Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies  
 Session Abbreviation: BBB7  
 Client Session ID: 906  
 Session Prefix: BBB7  
 Include in IP: Yes  
 Display Individual Presentation Times: Yes  
 Display View Presentation Link in IP: Yes

Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1	<a href="#">2330580</a>	BBB7.01	<b>Finely Controlled Cleaning of Cultural Heritage</b>	Baglioni, Piero	Invited Speaker	1:30 PM 2:00 PM	Not Yet Invited
2	<a href="#">2328532</a>	BBB7.02	Ring Polymers: Unique Topology with Dramatic Consequences for Their Molecular Dynamics	Richter, Dieter	Invited Speaker	2:00 PM 2:30 PM	Not Yet Invited
3			BREAK			2:30 PM 3:30 PM	
4	<a href="#">2331614</a>	BBB7.03	Universal Trend of the Non-Exponential Rouse Mode Relaxation in Glass-Forming Polymer Systems: Experimental Facts, MD-Simulations and a Theoretical Approach Based on a Generalized Langevin Equation	Colmenero, Juan	Invited Speaker	3:30 PM 4:00 PM	Not Yet Invited
5	<a href="#">2326588</a>	BBB7.04	Dynamics of Chain Exchange in Block Copolymer Micelles	Lodge, Timothy	Invited Speaker	4:00 PM 4:30 PM	Not Yet Invited
6	<a href="#">2338082</a>	BBB7.05	<b>Nanoscale Structure and Flow Behavior of Water-Swollen Block Copolymer Soft Solids with Dispersed Particles</b>	Walker, Lynn	Invited Speaker	4:30 PM 5:00 PM	Not Yet Invited

**Session Information**

Session Title: BBB8: Water III  
 Session Status: Admin Created  
 Session Type: Oral  
 Session Start Time: Thu 12/03/2015 8:30 AM  
 Session End Time: Thu 12/03/2015 12:00 PM  
 Duration: 210  
 Session Location: Sheraton, 3rd Floor, Gardner A/B  
 Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory  
 Session Hosts: Session Chair: Erik LASCARIS  
 Session Chair: Yang Zhang  
 Session Creator: Organizer, SympBBB  
 Session Owners:  
 Session Notes:  
 Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies  
 Session Abbreviation: BBB8  
 Client Session ID: 907  
 Session Prefix: BBB8  
 Include in IP: Yes  
 Display Individual Presentation Times: Yes  
 Display View Presentation Link in IP: Yes

Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1	<a href="#">2331807</a>	BBB8.01	<b>Widom Lines and Dynamic Crossovers in Supercritical and Supercooled States of Water</b>	Gallo, Paola	Invited Speaker	8:30 AM 9:00 AM	Not Yet Invited
2	<a href="#">2329521</a>	BBB8.02	Mixed Quantum/Classical Modeling of the OH-Stretch Inelastic Incoherent Neutron Scattering Spectroscopy for Water	Shi, Liang	Oral Presentation Preferred	9:00 AM 9:15 AM	Not Yet Invited
3	<a href="#">2324041</a>	BBB8.03	<b>The Spatial Characteristics of the Fast and Slow Secondary Relaxations in Aqueous Systems</b>	Mamontov, Eugene	Invited Speaker	9:15 AM 9:45 AM	Not Yet Invited
4	<a href="#">2329023</a>	BBB8.04	Direct Calculation of Ice Homogeneous Nucleation Rate for a Molecular Model of Water	Haji-Akbari, Amir	Oral Presentation Preferred	9:45 AM 10:00 AM	Not Yet Invited
5			BREAK			10:00 AM 10:30 AM	
6	<a href="#">2347065</a>	BBB8.05	Tuning the Liquid-Liquid Transition by Modulating the Hydrogen Bond Angular Flexibility in a Model for Water	Sciortino, Francesco	Invited Speaker	10:30 AM 11:00 AM	Not Yet Invited
7	<a href="#">2336144</a>	BBB8.06	Simulations of Ice Nucleation Approaching the Liquid-Liquid Critical Point in Supercooled Water	Poole, Peter	Invited Speaker	11:00 AM 11:30 AM	Not Yet Invited
8	<a href="#">2343145</a>	BBB8.07	Thermodynamics and Kinetics of Supercooled Water: A Computational Perspective	Debenedetti, Pablo	Invited Speaker	11:30 AM 12:00 PM	Not Yet Invited

**Session Information**

Session Title: BBB9: Glassy Soft Materials II  
 Session Status: Admin Created  
 Session Type: Oral  
 Session Start Time: Thu 12/03/2015 1:30 PM  
 Session End Time: Thu 12/03/2015 5:00 PM  
 Duration: 210  
 Session Location: Sheraton, 3rd Floor, Gardner A/B  
 Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory  
 Session Hosts: Session Chair: Wei-Ren Chen  
 Session Chair: Victoria Garcia Sakai  
 Session Creator: Organizer, SympBBB  
 Session Owners:  
 Session Notes:  
 Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies  
 Session Abbreviation: BBB9  
 Client Session ID: 908  
 Session Prefix: BBB9  
 Include in IP: Yes  
 Display Individual Presentation Times: Yes  
 Display View Presentation Link in IP: Yes

Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1	<a href="#">2334191</a>	BBB9.01	<b>Untangling Complexity in Functional Polymeric Materials through Integrated Simulation, Synthesis and Neutron Scattering</b>	Sumpter, Bobby	Invited Speaker	1:30 PM 2:00 PM	Not Yet Invited
2	<a href="#">2332988</a>	BBB9.02	Using Janus Nanoparticles to Trap Polymer Blend Morphologies during Solvent-Evaporation-Induced Demixing	Russell, Thomas	Invited Speaker	2:00 PM 2:30 PM	Not Yet Invited
3	<a href="#">2329472</a>	BBB9.03	Structure and Dynamics of P3ATs from Neutron Scattering and MD Simulations	Pozzo, Lilo	Invited Speaker	2:30 PM 3:00 PM	Not Yet Invited
4			BREAK			3:00 PM 3:30 PM	
5	<a href="#">2347512</a>	BBB9.04	<b>Protein Stabilization in Organic Solvent via Designed Random Copolymer</b>	Xu, Ting	Invited Speaker	3:30 PM 4:00 PM	Not Yet Invited
6	<a href="#">2335808</a>	BBB9.05	Intrinsically Disordered States in Riboswitch, Protein, and Polyelectrolyte Chain	Mohanty, Udayan	Oral Presentation Preferred	4:00 PM 4:15 PM	Not Yet Invited
7	<a href="#">2338462</a>	BBB9.06	The Effect of Competing Interactions on the Colloidal Glass Transition	Liu, Yun	Invited Speaker	4:15 PM 4:45 PM	Not Yet Invited
8	<a href="#">2337554</a>	BBB9.07	Compression and Lubrication of Salt Free Polyelectrolyte Microgel Particles in Highly Compressed Suspensions by Counterion Osmotic Pressure	Sokoloff, Jeffrey	Oral Presentation Preferred	4:45 PM 5:00 PM	Not Yet Invited

**Session Information**

Session Title: BBB10: Glassy Soft Materials III  
 Session Status: Admin Created  
 Session Type: Oral  
 Session Start Time: Fri 12/04/2015 8:30 AM  
 Session End Time: Fri 12/04/2015 12:00 PM  
 Duration: 210  
 Session Location: Hynes, Level 2, Room 209  
 Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory  
 Session Hosts: Session Chair: Magdaleno Medina-Noyola  
 Session Chair: Takeshi Egami  
 Session Creator: Organizer, SympBBB  
 Session Owners:  
 Session Notes:  
 Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies  
 Session Abbreviation: BBB10  
 Client Session ID: 909  
 Session Prefix: BBB10  
 Include in IP: Yes  
 Display Individual Presentation Times: Yes  
 Display View Presentation Link in IP: Yes

Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1	<a href="#">2338950</a>	BBB10.01	An Alternative View of the Glass Transition	Glotzer, Sharon	Invited Speaker	8:30 AM 9:00 AM	Not Yet Invited
2	<a href="#">2337531</a>	BBB10.02	Liquid Crystals from Spherical Particles	Molinero, Valeria	Invited Speaker	9:00 AM 9:30 AM	Not Yet Invited
3	<a href="#">2338062</a>	BBB10.03	Flow in Disordered Systems: From Fluids to Athermal Solids	Robbins, Mark	Invited Speaker	9:30 AM 10:00 AM	Not Yet Invited
4			BREAK			10:00 AM 10:30 AM	
5	<a href="#">2334254</a>	BBB10.04	Flow Mechanism in Colloidal Suspensions under Shear	Chen, Wei-Ren	Invited Speaker	10:30 AM 11:00 AM	Not Yet Invited
6	<a href="#">2338870</a>	BBB10.05	Spatial Structure of the Instantaneous Velocity and Finite-Time Displacement Fields in Sheared Soft Glassy Solids	Roy, Arka	Oral Presentation Preferred	11:00 AM 11:15 AM	Not Yet Invited
7	<a href="#">2338843</a>	BBB10.06	<b>SANS and Rheo-SANS Study of Particle Dispersion and Block Copolymer and Surfactant Self-Assembly in Ionic Liquids</b>	Wagner, Norman	Invited Speaker	11:15 AM 11:45 AM	Not Yet Invited
8	<a href="#">2339089</a>	BBB10.07	<b>Polymer Dynamics, Free Volume, and Transport in Cross-Linked Polymer Networks</b>	Frieberg, Bradley	Oral Presentation Preferred	11:45 AM 12:00 PM	Not Yet Invited

**Session Information**

Session Title: BBB11: Glassy Soft Materials IV  
 Session Status: Admin Created  
 Session Type: Oral  
 Session Start Time: Fri 12/04/2015 1:30 PM  
 Session End Time: Fri 12/04/2015 5:00 PM  
 Duration: 210  
 Session Location: Hynes, Level 2, Room 209  
 Commercial Sponsor: Army Research Office; Neutron Scattering Society of America; Oak Ridge National Laboratory  
 Session Hosts: Session Chair: Yun Liu  
 Session Chair: Yang Zhang  
 Session Creator: Organizer, SympBBB  
 Session Owners:  
 Session Notes:  
 Session Topic: BBB: Liquids and Glassy Soft Matter—Theoretical and Neutron Scattering Studies  
 Session Abbreviation: BBB11  
 Client Session ID: 910  
 Session Prefix: BBB11  
 Include in IP: Yes  
 Display Individual Presentation Times: Yes  
 Display View Presentation Link in IP: Yes

Order	Control ID	Final ID	Title	Presenting Author	Presentation Type	Start time End time	Invitation Status
1	<a href="#">2331809</a>	BBB11.01	Theory of Arrested Spinodal Decomposition: Physical Gels, Porous Glasses, and the Glass Transition	Medina-Noyola, Magdaleno	Invited Speaker	1:30 PM 2:00 PM	Not Yet Invited
2	<a href="#">2335513</a>	BBB11.02	<b>Neutrons for Complex Macromolecular Systems</b>	Garcia Sakai, Victoria	Invited Speaker	2:00 PM 2:30 PM	Not Yet Invited
3	<a href="#">2347048</a>	BBB11.03	<b>Ion Containing Polymers for Battery Technology</b>	Maranas, Janna	Invited Speaker	2:30 PM 3:00 PM	Not Yet Invited
4			BREAK			3:00 PM 3:30 PM	
5	<a href="#">2332198</a>	BBB11.04	Energy Resolved Study of the Pair Correlation Function in Liquid <sup>4</sup> He.	Dmowski, Wojciech	Oral Presentation Preferred	3:30 PM 3:45 PM	Not Yet Invited
6	<a href="#">2330511</a>	BBB11.05	From Single Chain Nano-Particles to All-Polymer Nano-Composites	Arbe, Arantxa	Oral Presentation Preferred	3:45 PM 4:00 PM	Not Yet Invited
7	<a href="#">2335675</a>	BBB11.06	<b>In-Situ Neutron Scattering Study of Crystallization Behaviour in Ternary Supercooled Metallic Liquids and Its Correlation to Glass Forming Ability</b>	Lan, Si	Oral Presentation Preferred	4:00 PM 4:15 PM	Not Yet Invited
8	<a href="#">2330934</a>	BBB11.07	Scattering Studies of Metallic Liquids Using the Neutron ElectroStatic Levitator (NESL) at the Spallation Neutron Source (SNS)	Vogt, Adam	Oral Presentation Preferred	4:15 PM 4:30 PM	Not Yet Invited
9	<a href="#">2333812</a>	BBB11.08	Spin Glassy Behaviors and Isolated Spin Pairs in Frustrated Magnet <i>BaCr<sub>9p</sub>Ga<sub>12-9p</sub>O<sub>19</sub></i>	Yang, Junjie	Oral Presentation Preferred	4:30 PM 4:45 PM	Not Yet Invited
10	<a href="#">2336632</a>	BBB11.09	<b>Analyzing the Dynamics of RNA on a Nanodiamond Surface by QENS and MD Simulation Study</b>	Goswami, Monojoy	Oral Presentation Preferred	4:45 PM 5:00 PM	Not Yet Invited