

NSF Workshop on Emerging Opportunities in Ceramics and Glass Science

Holiday Inn – Arlington
4610 N. Fairfax Dr.
Arlington, VA 22203

September 12-14, 2016

All meetings, breaks and meals will be in the Ballston Ballroom, unless otherwise noted

Agenda Version 09 September 2016

Monday, September 12

- 7:30 – 8:15 am Continental Breakfast
- 8:15 – 8:30 am Welcome and Charge to Workshop Participants (Faber/Madsen)
- 8:30 – 10:00 am Challenges in Advanced Processing (20 minutes each)
Jennifer Lewis, *Programmable Assembly of Ceramics*
Tobias Schaedler, *Additive Manufacturing of Polymer-Derived Ceramics*
Clive Randall, *Cold Sintering Ceramics*
Hong Wang, *Multi-functional Ceramic-Based Composites*
- 10:00 – 11:00 am Panel Discussion on Advanced Processing, **John Halloran** (Moderator),
Javier Garay, **Don Lipkin**, **Kathy Lu**, **Gary Messing**
- 11:00 – 11:15 am Break
- 11:15 – 1:00 pm Challenges in Defect-Enabled Phenomena (20 minutes each)
Lane Martin, *The Limits of Perfection in Functional Materials*
Sossina Haile, *Defect Manipulation*
James LeBeau, *Opportunities for Characterizing Ceramics and Glass using Imaging and Diffraction*
Susan Trolier-McKinstry, *Role of defects in the functional properties of ferroelectric materials*
- 1:00 – 2:00 pm Lunch
- 2:00 – 3:00 pm Panel Discussion on Defect-Enabled Phenomena, **Monika Backhaus**
(Moderator), **Igor Levin**, **Darrell Schlom**, **Bilge Yildiz**, **Julia Chan**
- 3:00 – 4:30 pm Challenges in Low-Dimensional Phenomena
Jian Luo, *2D Interfacial Phases or Complexations*
Veena Tikare, *Methods for Quantitative Characterization of Microstructures*
Greg Rohrer, *Kinetics of Interface Transitions*
Yuri Gogotsi, *2D Carbides and Nitrides*
- 4:30 – 4:45 pm Break
- 4:45 – 5:45 pm Panel Discussion on Low-Dimensional Phenomena, **Edwin Garcia**
(Moderator), **Teddy Asefa**, **Alp Sehirlioglu**, **Toshihiko Tani**
- 5:45 pm Wrap-up
Dinner on your own

Tuesday, September 13

- 7:30 – 8:15 am Continental Breakfast
- 8:15 – 9:00 am **Adam Stevensen**, *Using Data Mining to Identify New Research Avenues*
- 9:00 – 10:30 am Challenges for Materials for Extreme Environments
Bill Fahrenholtz, *Ceramics for Extreme Environments*
Alexandra Navrotsky, *Ultra Refractory Materials* (remotely)
Nitin Padture, *New Paradigms in High-Temperature Ceramic Coatings and Composites*
Bill Lee, *Structural Ceramics for Extreme Environments*

10:30 – 10:45 am Break
10:45 – 11:45 am Panel Discussion on Materials for Extreme Environments, **Carlos Levi** (Moderator), **Shen Dillon**, **Steve Jacobsen**, **Edgar Lara-Curzio**, **Katherine Faber**
12:00 – 1:00 pm Lunch – The Junior Ballroom
1:00 – 2:30 pm Challenges for Glasses and High Entropy Materials
Richard Brow, *Bridging the Gap between Atomistic Structures and the Macroscopic Properties of Glass*
Liping Huang, *Unconventional Approaches to Glass Formation*
Steve Martin, *New Glassy Electrolytes for Next Generation Lithium and Sodium Batteries: Challenges and Opportunities*
Jon-Paul Maria, *Entropy-Stabilized Crystals*
2:30 – 3:15 pm Panel Discussion on Glasses and High Entropy Materials, **Anatoly Rosenflanz** (Moderator), **Monika Backhaus**, **JJ Hu**, **Alexandra Navrotsky**
3:15 – 3:30 pm Break
3:30 – 5:00 pm Breakout Sessions
Processing – Glebe Room
Defects – Ballston Ballroom
Low-D Phenomena – Fairfax Room
Extreme Materials - Wilson Room
Glasses – Ballston Ballroom
5:00 pm Wrap-Up
Dinner on your own

Wednesday, September 14

7:30 – 8:15 am Continental Breakfast
8:15 – 10:30 am Breakout Sessions to formalize recommendations and draft reports
(See Tuesday afternoon for room assignments)
10:30 – 10:45 am Break
10:45 – 12:00 pm Draft recommendations to full group
12:00 pm Adjourn