

Basic Research Needs for Synthesis Science for Energy Relevant Technology
Hilton Washington DC/Rockville Hotel and Executive Meeting Center
May 2-4, 2016

Monday, May 2, 2016

7:00 - 8:00 AM Registration/Breakfast

Opening Plenary Session – Plaza II and III

- 8:00 - 8:15 AM *BES Welcome and Workshop Charge*
Harriet Kung, Associate Director of Science for Basic Energy Sciences
- 8:15 - 8:30 AM *Chair Welcome*
Jim DeYoreo, Pacific Northwest National Laboratory
- 8:30 - 9:10 AM *Plenary 1 – Where do we go from here?*
George Whitesides, Harvard University
- 9:10 - 9:50 AM *Plenary 2 – Synthesis as the heart of New Materials Physics*
Paul Canfield, Iowa State University/Ames Laboratory
- 9:50 - 10:20 AM Break
- 10:20 - 11:00 AM *Plenary 3 – Challenges in Synthesis Science: Rational Creation of New Matter*
Tobin Marks, Northwestern University
- 11:00 - 11:40 AM *Plenary 4 – The Increasing Role of Modeling in Guiding Discovery and Synthesis of Novel Functional Materials*
Kristin Persson, Lawrence Berkeley National Laboratory
- 11:40 - 12:20 AM *Plenary 5 – Emerging Approaches to Bioinspired Synthesis of Soft and Hybrid Materials (tentative)*
Angela Belcher, Massachusetts Institute of Technology
- 12:20 - 1:30 PM Working Lunch
1:10 - 1:30 PM Panel Introductions – Workshop Co-Chairs
- 1:30 - 5:30 PM Panel Sessions – will meet in parallel
- Panel 1 – Mechanisms of synthesis under kinetic and thermodynamic controls - Jefferson**
Tori Forbes, University of Iowa and Mercouri Kanatzidis, Northwestern University/Argonne National Laboratory
- Panel 2 – Establishing the design rules for supramolecular and hybrid assemblies - Adams**
Ulrich Wiesner, Cornell University and Ting Xu, Lawrence Berkeley National Laboratory/University of California-Berkeley
- Panel 3 – Interface-defined matter - Roosevelt**
Sarah Tolbert, University of California-Los Angeles and Michael Zaworotko, University of Limerick
- Panel 4 – Crystalline matter: Challenges in discovery and directed synthesis - Plaza I**
Julia Chan, University of Texas-Dallas and John Mitchell, Argonne National Laboratory
- Panel 5 – Emerging approaches to synthesis at all length scales - Madison**
Jonah Erlebacher, Johns Hopkins University and Julia Laskin, Pacific Northwest National Laboratory
- 5:30 - 9:00 PM Working Dinner – Panel discussions (continued); cross-cut panels will meet from 8-9 in the plenary room, Plaza II and III.

Tuesday, May 3, 2016

- 7:30 - 8:30 AM Breakfast
- 8:30 - 9:10 AM *Plenary 6* – Materials Discovery and Energy Science
Anthony Cheetham, University of Cambridge
- 9:10 - 9:30 AM Break and move to panel sessions
- 9:30 - 10:10 AM Panels meet for discussion/preparation of preliminary reports
- 10:10 - 10:20 AM Move to plenary room for panel reports
- 10:20 - 10:40 AM Report from Panel 1 - Mechanisms of synthesis under kinetic and thermodynamic controls
- 10:40 - 11:00 AM Report from Panel 2 - Establishing the design rules for supramolecular and hybrid assemblies
- 11:00 - 11:20 AM Report from Panel 3 - Interface-defined matter
- 11:20 - 11:40 AM Report from Panel 4 - Crystalline matter: Challenges in discovery and directed synthesis
- 11:40 - Noon Report from Panel 5 - Emerging approaches to synthesis at all length scales
- Noon - 1:30 PM Working Lunch
- 1:30 - 5:30 PM Panel discussions (continued); cross-cut panels will meet in plenary room
- 3:00 - 4:00 PM Break
- 5:30 - 9:00 PM Working Dinner – Panel discussions (continued) & Preparation for final panel reports

Wednesday, May 4, 2016

- 7:00 - 8:00 AM Breakfast
- 8:00 - 8:30 AM Report from Panel 1 - Mechanisms of synthesis under kinetic and thermodynamic controls
- 8:30 - 9:00 AM Report from Panel 2 - Establishing the design rules for supramolecular and hybrid assemblies
- 9:00 - 9:30 AM Report from Panel 3 - Interface-defined matter
- 9:30 - 9:45 AM Break
- 9:45 - 10:15 AM Report from Panel 4 - Crystalline matter: Challenges in discovery and directed synthesis
- 10:15 - 10:45 AM Report from Panel 5 - Emerging approaches to synthesis at all length scales
- 10:45 - 11:15 AM Report from cross-cutting panel - In situ characterization
- 11:15 - 11:45 AM Report from cross-cutting panel - Theory and simulation
- 11:45 - Noon Closing Remarks
Jim DeYoreo, Pacific Northwest National Laboratory
- Noon** **Workshop Adjourned**
- 1:00 - 5:30 PM Writing (only chairs, panel leads and designated writers)
- 5:30 Adjourn