Mesoscale Chemistry
A Workshop by the Chemical Sciences Roundtable
November 6-7, 2014 - Washington, DC

November 6, 2014

12:30 – 12:40 Introduction to Workshop and Topic – Jennifer Curtis

Session 1: Overview
Chair: Jennifer Curtis

12:40 – 1:20 Growing (Up) from the Nanoscale to the Mesoscale
Speaker: Paul Weiss

Session 2: Catalysis
Chair: Bruce Garrett

1:20 – 1:40 Architectural Complexity at the Molecular Level
Speaker: Andrew Borovik
1:40 – 2:00 Bringing Mesoscale Properties to Molecular Catalysts by Attaching an Outer Coordination Sphere
Speaker: Wendy Shaw
2:00 – 2:20 Elucidating Key Features of Mesoscale Biocatalytic Systems and Employing them in Designing Functional Artificial Enzymes with High Activity
Speaker: Yi Lu
2:20 – 2:40 Mesoscale Concepts for Design and Behavior in Heterogeneous Catalysis
Speaker: Cynthia Jenks
2:40 – 3:00 Strategies for the Synthesis of Mesoscale Catalyst Designs
Speaker: Peter Stair

3:00 – 3:30 Panel Discussion

3:30 – 3:40 Break

Session 3: Membrane behavior/Microchemical Systems
Chair: Vernon Anderson

3:40 – 4:00 Asymmetric Lipid Vesicles Formation and Properties
Speaker: Erwin London
4:00 – 4:20 Digital Microfluidics: Not Just for Liquids, Anymore
Speaker: Aaron Wheeler
4:20 – 4:40 Engineering at the Mesoscale: Microreactors and Membranes
Speaker: Benjamin Wilhite
4:40 – 5:10 Panel Discussion
5:10 Workshop Day 1 Adjourns

November 7, 2014

Session 1: Biomineralization/Geochemical
Chair: Patricia Thiel

8:45 – 9:05 Formation Pathways in Biominerals Revealed by Their Structure
Speaker: Pupa Gilbert

Speaker: John Spencer Evans

9:25 – 9:45 The Dynamics of Macromolecular Assembly and Subsequent Mineral Formation: Understanding the Emergence of Order
Speaker: Jim De Yoreo

9:45 – 10:05 Small Compositional Signals With a Big Impact: From Sub-Micron Geochemical Heterogeneity To Climate Records
Speaker: Alex Gagnon

10:05 – 10:25 Mesoscale Geochemistry Research Opportunities on, Within, and Beyond Earth
Speaker: Andrew Madden

10:25 – 10:55 Panel Discussion

10:55 – 12:20 Lunch on your own

Session 2: Computational/Chemical Processes in Self-Assembly
Chair: Miguel Garcia-Garibay

12:20 – 12:40 Designing Novel Self-Assembling Protein Materials: Recent Successes and Future Prospects
Speaker: Todd Yeates

12:40 – 1:00 Bottom-Up Multiscale Approaches For Mesoscale Phenomena: Progress and Opportunities
Speaker: William Noid

1:00 – 1:20 View Of Intelligent Mesoscale Biological Systems At Chemical Resolution - What Can Be Learned
Speaker: Klaus Schulten

1:20 – 1:40 Talk #4
Speaker: Sharon Glotzer

1:40 – 2:00 Multiscale Computer Simulation of Mesoscale Biomolecular Cooperativity
Speaker: Gregory Voth

2:00 – 2:30 Panel Discussion
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Closing Discussion

2:30 – 3:00  Open Discussion

3:00  Workshop Day 2 Adjourns