

Schoenborn 2018 Graduate Research Symposium

8:15 – 8:45 AM Continental Breakfast / Welcome

8:50 – 10:30 AM Oral Presentations Session I: Biotechnology

- 8:50 AM** Adam Mischler *Defining the Differentiation of Human Embryonic Stem Cells to Trophoblasts: A Better Understanding of Early Gestation*
- 9:10 AM** Shah Md Toufiqur Rahman *Elucidation of Crosstalk between Mitogen-Activated Signaling Pathways by Light-Activated Protein Kinase*
- 9:30 AM** Laura L. Lee *Boiling Bugs Break Biomass: An Investigation into High Temperature, Cellulolytic Microorganisms*
- 9:50 AM** David Chang *Investigation of Surfactant-Mediated Shear Protection of Mammalian Cells for Increased Biomanufacturing Efficiency*
- 10:10 AM** Benjamin Zeldes *Carbon Dioxide Capture into Chemicals; Green Chemistry with Extreme Thermophiles*

10:30 – 10:50 AM Coffee Break

10:50 – 12:30 PM Oral Presentations Session II: Materials

- 10:50 AM** Amit Mishra *Tailored Mn-Containing Perovskites for Chemical Looping Processes*
- 11:10 AM** Ishan Joshipura *Soft, Dynamic, and Wearable Electronics via Controlled Adhesion of Liquid Metal Alloys*
- 11:30 AM** Sangchul Roh *3D Printing of Silicone Composites with Multiphase Capillary Bridging*
- 11:50 AM** Dishit P. Parekh *3D Printing of Liquid Metals for Fabrication of Soft Electronics*
- 12:10 PM** Koohee Han *A New Class of Microbots and Microswimmers based on Assemblies of Metallo-Dielectric Microcubes*

12:30 – 2:20 PM Lunch

- 1:00 PM** Announcement of Vivian T. Stannett Fellow Award
- 1:15 PM** Announcement of Praxair Exceptional Teaching Assistant Award
- 1:30 PM** Keynote Address: Prof. Arthi Jayaraman
Associate Professor, University of Delaware
Using Molecular Simulations and Theory to Design Macromolecular Soft Materials

2:20 – 4:20 PM Oral Presentations Session III: Materials and Computation

- 2:20 PM** Yiliang Lin *Shape-transformable Liquid Metal Nanoparticles for Soft Electronics and Biomedical Application*
- 2:40 PM** Stephen Barilovits *Experimental Study of a Multi-Row Meltblowing Process and Web Structures*
- 3:00 PM** Steven J. Zboray *Maleic Anhydride Copolymers for Water Purification*

3:20 – 3:40 PM Coffee Break

- 3:40 PM** Yiming Wang *Understanding Amyloid β peptide Aggregation and Inhibition using Coarse-Grained Simulations*
- 4:00 PM** Chengxiang Liu *Nucleation Kinetics: Connecting Simulations to Experiment*

4:30 – 6:00 PM Poster Session

5:00 – 6:00 PM Symposium Happy Hour

Keynote Presentation

Using Molecular Simulations and Theory to Design Macromolecular Soft Materials

Prof. Arthi Jayaraman

Associate Professor, Department of Chemical and Biomolecular Engineering

Associate Professor, Department of Materials Science and Engineering

University of Delaware, Newark DE

In my research group we develop molecular models, theory and simulation techniques to connect molecular features of macromolecular materials, specifically polymers, to their morphology and macroscopic properties, thereby guiding synthesis and characterization of these materials for various applications in the energy and biomedical fields. In this talk, I will share highlights of our recent work aimed at designing materials with thermoresponsive polymers using a combination of simulations in my group and experiments in our collaborators' labs. Besides the technical aspects, I will also share with the graduate students and postdocs present at the Schoenborn symposium my personal story of how NC State Chemical Engineering played a big role in preparing me for my career.



Arthi Jayaraman received her B.E (Honors) degree in Chemical Engineering from Birla Institute of Technology and Science, Pilani, India in 2000. She received her Ph.D. in Chemical and Biomolecular Engineering from North Carolina State University in 2006, and from 2006-2008 conducted her postdoctoral research in the department of Materials Science and Engineering at University of Illinois-Urbana Champaign. In August 2008 she joined the faculty of the Department of Chemical and Biological Engineering at University of Colorado at Boulder, and held the position of Patten Assistant Professor. In August 2014 she joined the faculty at the University of Delaware as Associate professor of Chemical and Biomolecular Engineering and Materials Science and Engineering. She has been awarded the Saville Lectureship at Princeton University (2016), the AIChE COMSEF division young investigator award (2013), the ACS PMSE division young investigator recognition (2014), University of Colorado Provost Faculty Achievement Award (2013), Department of Energy (DOE) Early Career Research Award (2010), the University of Colorado outstanding undergraduate teaching award (2011) and graduate teaching award (2014) in Chemical and Biological Engineering. Her research expertise lies in development of theory and simulation techniques and application of these techniques to study polymer functionalized nanoparticles and polymer nanocomposites, and to design macromolecular materials for biomedical applications.