RISING STARS IN SOFT AND BIOLOGICAL MATTER SYMPOSIUM

December 11 & 12, 2024

All times indicated in Central Time (CT)

Day 1: Wednesday, December 11

10:00 – 10:05 Introduction & Welcome

Session 1 – Soft Matter: Self-Assembly, Topology, and Mechanics

10:05 – 10:21 Hamed Almohammadi, Harvard University

Self-assembly of shape-shifting chiral colloids

10:21 – 10:37 Maitane Muñoz-Basagoiti, Institute of Science and Technology Austria

Sliding through the landscape: Self-assembly of colloidal polymer via programmable folding

10:37 – 10:53 Kai Qian, University of California, San Diego

Synthetically non-Hermitian nonlinear wave-like behavior in a topological mechanical metamaterial

10:53 – 11:09 Samar Alqatari, University of Chicago

Epistatic pathways in evolvable mechanical networks

11:09 – 11:25 Giada Risso, Harvard University

Stretch and twist of soft double-helix chiral rods

11:25 – 11:50 Discussion with all Session 1 speakers

Session 2 – Dynamics of Active Matter

11:50 – 12:06 Chuqi Huang, University of Michigan

Self-Propelled Morphing Matter for Small-Scale Swimming Soft Robots

12:06 – 12:22 Jack-William Barotta, Brown University

Synchronization of wave-propelled capillary spinners

12:22 – 12:38 Mehrana Nejad, Harvard University

Active Nematic Behaviour in Deformable Cell Monolayers

12:38 – 12:54 Qing Zhang, Stanford University

Frozen Flow: Motility of diatoms in ice

12:54 – 1:20 Discussion with all Session 2 speakers

Session 3 – Advances in Biological Matter: Dynamics, Function, and Design

1:20 – 1:36 Maryam Kohram, Princeton University

Heterogeneity and stress-driven acceleration of bacterial aging

1:36 – 1:52 Kalukula Yohalie, Mons University

Morphological switch and Memory in confined migration

1:52 – 2:08 Alexander Prossnitz, Stanford University

Defining Structure-Function Relationships of Amphiphilic Excipients Enables Rational Design of Ultra-Stable Biopharmaceuticals

2:08 – 2:24 Olenka Jain, Princeton University

The Role of Cell Geometry in Cytoplasmic Streaming

2:24 – 2:40 Yuanwei Li, Stanford University

Sculpting Light for Sustainability and Health: Nano-Architected Photonic Structures

2:40 – 3:05 Discussion with all Session 3 speakers

Informal Discussion of Symposium Participants with Faculty (Closed Session)
3:10 – 4:00

Day 2: Thursday, December 12

10:00 – 10:05 Introductions

Session 4 – Materials and Electrolytes Relevant to Energy and Water

10:05 – 10:21 Seongon Jang, University of Illinois, Urbana-Champaign

Understanding the Effect of Salts in Imine Vitirmer Electrolytes

10:21 – 10:37 Gregory Parisi, University of Pennsylvania

Nanostructured Yarns for Sustainable Water and Energy Harvesting

10:37 – 10:53 Carlos Diaz-Marin, Massachusetts Institute of Technology

Physics and Engineering of Hydrogel-Salt Composites for Freshwater Production from Air

10:53 – 11:09 Dylan Barber, Harvard University

How the inter-charge tether governs properties in zwitterionic dielectrics

11:09 – 11:30 Discussion with all Session 4 speakers

Session 5 – Emerging Strategies for Sustainable and Bioderived Polymers

11:30 – 11:46 Jignesh Mahajan, University of Delaware

Structure-property-processing relationships in lignin-derivable, isocyanate-free polyurethanes

11:46 – 12:02 Pamela Cai, University of Chicago

Biopolymer-based solid polyelectrolyte complexes for fully recyclable plastics

12:02 – 12:18 Michael Burroughs, Stanford University

Illuminating circularity in reversible star polymer networks

12:18 – 12:34 Subhajit Pal, University of California, Berkeley

Versatile and Sustainable α-Lipoic Acid Polymers

12:34 – 1:00 Discussion with all Session 5 speakers

Session 6 – Advances in Polymer Design and Functionality

1:00 – 1:16 Nicholas Boynton, University of Chicago

Toward pluripotent materials through tempering of dynamic, thia-Michael polymer networks

1:16 – 1:32 Bruce Kirkpatrick, University of Colorado

Photochemical modulation of hydrogel network topology

1:32 – 1:48 Mustafa Abdelrahman, Harvard University

Material assembly from collective action of shape-changing polymers

1:48 – 2:04 Aoon Rizvi, Stanford University

Polymerization-Induced Condensation (PICON): Investigating the Impact of Phase Separation on Polymerization Kinetics

2:04 – 2:20 Guillen Campos, University of California, Santa Barbara

Encoding homeostatic behavior in a synthetic material

2:20 – 2:45 Discussion with all Session 6 speakers

2:45 Conclusion of Symposium