

PROGRAM

20th Northeast Complex Fluids and Soft Matter Workshop

Friday, Feb 6th 2026

University of Pennsylvania
Singh Center for Nanotechnology
Glandt Forum (3rd floor)

- 8:15 - 9:00 AM **Breakfast and Registration**
Light refreshments on the third floor
Coffee bar sponsored by Melitta
- 9:05 - 9:10 AM **Opening remarks**
- 9:10 - 9:35 AM **Invited talk: Victoria Muir, University of Delaware**
"Multiscale Design of Hydrogel Microenvironments for Studying Microbial Collectives"
- 9:35 - 10:15 AM **Short Talks**
5 minute presentation +1 min Q&A + 1 min transfer
1. **Eleni Katifori**, University of Pennsylvania
"Pumps in biological systems"
 2. **Daniel Alber**, University of Pennsylvania
"Symmetry-breaking in branching kidney morphogenesis"
 3. **Sidney Holden**, Flatiron Institute
"Continuum limits for dense biological transport networks"
 4. **Mir Md Nasim Hossain**, New Jersey Institute of Technology
"Estimation of 3D Wall Shear Stress in In Vivo Blood Vessel Sprouts Using High-Fidelity Red Blood Cell Resolved Simulations"
 5. **Hong Huy Tran**, University of Pennsylvania
"Robotic Microcapsule Assemblies with Adaptive Mobility for Targeted Treatment of Rugged Biological Microenvironments"
 6. **Ran Tao**, University of Pennsylvania
"Upstream racing: morpho- logical features enabling bacteria to swim against flow"
- 10:15 - 10:40 AM **Invited talk: Dan Pabst, Melitta**
"Coffee Explored! The Science Behind a Great Cup of Coffee"
- 10:40 - 11:10 AM **Coffee break**
Coffee bar sponsored by Melitta

11:10 - 11:35 AM **Invited talk: Wen Zhang, New Jersey Institute of Technology**
"Colloidal and Interfacial Mechanisms of Nanobubble-Enabled Remediation from Impaired Water and Soil"

11:35 - 12:30 PM **Short Talks**

5 minute presentation +1 min Q&A + 1 min transfer

1. **Brock Hunter**, University of Delaware
"Immobilized, visible light photocatalysts for scalable wastewater treatment"
2. **Nandish Vora**, University of Pennsylvania
"Understanding dynamics of creep in model earth systems"
3. **Alan Gao**, University of Pennsylvania
"Hydrogel-Mediated Evaporative Cooling for Sustainable Data Center Applications"
4. **Christopher Spitler**, Columbia University
"Rising Intruder Dynamics in Vibrated Gas-Fluidized Granular Materials"
5. **Liuchi Li**, Princeton University
"Shearing dense granular crystals in confined space can be easy: A geometry-mediated interplay between (simple) elasticity and (multi-body) contact"
6. **Oscar Punch**, Columbia University
"Instabilities in Inclined Granular Flows"
7. **Giovanni Savorana**, Princeton University
"Bacterial extracellular DNA forms stress-hardening biofilm streamers"
8. **Xander Karpowicz**, University of Pennsylvania
"Simulation of Microfluidic Devices"

12:30 - 2:00 PM **Lunch and posters**

Grab & Go lunch will be served on the first floor. Tables are distributed throughout the Singh Center, including some on the 2nd floor and between the 2nd and 3rd floors. Poster presentations will be distributed near the lunch area:

1. **Han Zou**, University of Pennsylvania
"Modeling and Computation of Open Membranes in Stokes Flows"
2. **Aakash Karlekar**, New Jersey Institute of Technology
"Mitigating Topological Noise in 3D Images of Porous Media"
3. **Ruhao Li**, University of Delaware
"Particle-Directed Ionic Transport in Poly(Ionic Liquid) Grafts in Solution"
4. **Gregory Parisi**, University of Pennsylvania
"Thermally Responsive Composites for Dynamic Fouling Control"

5. **Manav Arora**, New Jersey Institute of Technology
"Point-Cloud vs Distance Filtration TDA for Permeability Estimation"
6. **Charlotte Slaughter**, University of Pennsylvania
"Coalescence of Suspended and Sessile Radial Nematic and Isotropic Liquid Crystal Drops"
7. **Sho Kawakami**, New Jersey Institute of Technology
"Shape dynamics of an elastic, nearly inextensible membrane"
8. **Felipe Martins**, University of Pennsylvania
"Structure-Function Relation in Physical Networks"
9. **Chanoknun Sintavanuruk**, University of Pennsylvania
"Error analysis of an acceleration corrected diffusion approximation of Langevin dynamics with background flow"

2:00 - 2:25 PM

Invited talk: Peter Olmsted, Georgetown University

"Polymer glasses, a tale of ends.....or not?"

2:25 - 3:15 PM

Short Talks

5 minute presentation +1 min Q&A + 1 min transfer

1. **Saurabh Nath**, University of Pennsylvania
"Where have all the droplets gone?"
2. **Raisa Achiriloaie**, University of Pennsylvania
"Low Reynolds Number Flow Instabilities in Elasto-Visco-Plastic Fluids"
3. **Michio Tanaka**, University of Pennsylvania
"Melting behavior and Defect dynamics of a colloidal antiferromagnetic tetratic phase confined in quasi-2d"
4. **Kushal Kumar Iyyapareddy**, Stony Brook University
"Ordered Assembly of Polydisperse Nanoparticle Suspensions via Landau-Levich Flow on Nanopillar Arrays"
5. **Nicholas Paolini**, Stony Brook University
"Electrokinetic Flow Modulation via Topographic Surface Design"
6. **Sambeeta Das**, University of Delaware
"Light-Induced Selective Speed Alteration of Magnetically Rolled Semiconductor Particles"
7. **Yihao Chen**, University of Pennsylvania
"Harnessing geometry to assemble topological defects through phase transitions"

3:15 - 3:35 PM

Coffee break

3:35 – 4:00 PM

Invited talk: Yoichiro Mori, University of Pennsylvania

"Computation, Analysis and Modeling of Open Membrane Problems"

4:00 - 4:35 PM

Short Talks

5 minute presentation +1 min Q&A + 1 min transfer

1. **Evan Willmarth**, Yale University
"Particle-scale origin of quadrupolar nonaffine displacement fields in granular solids"
2. **Austin Dick**, Stony Brook University
"Topographic and Chemical Control of Electrokinetic Properties"
3. **Gabriel Unger**, University of Pennsylvania
"Liebau Pumping Enables Valveless Soft Swimmer Robot"
4. **Ben Pisanty**, University of Pennsylvania
"Local Excess Entropy and Microscopic Rearrangements in Sheared Particle Films"
5. **Boyuan Deng**, John Hopkins University
"Physics-Informed Gaussian Processes for Solving the Helmholtz Equation"

4:35 – 5:00 PM

Invited talk: Itamar Kolvin, Georgia Institute of Technology

"Liquid-liquid phase separation in glassy networks"

5:00 PM

Closing remarks

Thank you to all of our participants and to our sponsors!



Stay tuned for information from organizers at Yale University for NCS21 in summer 2026, we hope to see you there!