

Announcing the **93rd** New England
Complex Fluids Workshop
Friday, December 2, 2022
at Harvard University



Note: This is an **in person (only)** workshop following Harvard's safety protocols.

- Face coverings are optional.
- No eating is allowed in Maxwell Dworkin G115.
- Everyone is responsible for disposing their own trash and wiping clean their eating surface.

AGENDA

8:00–8:55 a.m. **Breakfast and Registration**, Maxwell-Dworkin, Ground Floor Lobby

Morning Presentations, Maxwell-Dworkin, Room G115

9:00–9:30 a.m. **Sound Bites Session I (early bird awardee)**

Bobby Haney, Harvard University
Extrusion printing of biomimetic scaffolds for in vitro investigation of tissue regeneration in multicellular environments

Theadora Vessella, Worcester Polytechnic Institute
3D cancer metastasis model

Xun Wang, Massachusetts Institute of Technology
A 3D in vitro human brain model for studying neurodegenerative diseases

Nadia Erkamp, University of Cambridge
Formation of double-emulsion biomolecular condensates

Ho Pan Bei, Harvard University
Lubricating osteochondral scaffold for instructed anti-inflammatory healing

Ryan Garry, Harvard University
Engineering multilayered emulsions for drug delivery

Robinson Tom, Harvard University
Droplet-based, high-throughput microfluidic assay for protein selection

Rohan Thakur, Harvard University
Improving the precision and dynamic range of picoinjection by synchronizing injection with droplet transit

Xingcai Zhang, Massachusetts Institute of Technology
Machine-learning/microfluidics-mediated medicine and materials manufacturing (M6)

Junil Ryu, Harvard University
Instability of double emulsions due to the fast evaporation of organic solvents

9:30–10:00 a.m. **Shabnam Raayai-Ardakani**, Rowland Institute at Harvard
"Dynamics of flow past textures and arrays inspired by sharks and pelicans"

10:00–10:30 a.m. **Karen E. Kasza**, Columbia University
"Stress management: Cell packings and tissue flows in developing embryos"

10:30–11:00 a.m. Coffee, *Maxwell-Dworkin*, Ground Floor Lobby

11:00–12:00 p.m. **Sound Bites Session II** (**early bird awardee** and **on the SB bubble**)

Jean Serrano, Harvard University
Integrating nanoplasmonic heating with ddPCR for rapid and high-sensitivity diagnostics

LaNell Williams, Harvard University
Bulk light-scattering measurements of viral capsid self-assembly around RNA

Lindsey Young, Northeastern University
Dynamic hydrogel systems for bioinspired optical materials

Teagan Bate, Worcester Polytechnic Institute
Self-mixing of microtubule-kinesin active fluid with non-uniform activity

Daichi Hayakawa, Brandeis University
Programming the interface of DNA origami to control 3d assembly geometries

Wenhui Tang, Massachusetts Institute of Technology
Topological packing and phase transition on multicellular spheres

Berta Tinao, Universidad Autonoma de Madrid
Aqueous two-phase systems within selectively permeable vesicles

Ian Murphy, Brandeis University
Determining successful urease-DNA conjugations with minimal loss of enzymatic activity

Indresh Yadav, Massachusetts Institute of Technology
Tuning the topology of a two-dimensional catenated DNA network

Qiaoling Huang, Harvard University
Utilizing magnetic tweezers to study the deformation properties of cytoplasm

Damian Renggli, ETH Zurich
A macroscopic interfacial rheology approach to measure lipid membrane fluidity

Paula Magrinya Aguilo, Universidad Autonoma de Madrid
Motility of rotating vesicles

Thomas Videbaek, Brandeis University
Reducing polymorphism in the self-assembly of tubules

Yujing Du, Harvard University
Experimental study of penny-shaped hydraulic fracturing process in stiff material using pressurized complex fluid

Salem Al Mosieh, Harvard University
Growing flat surfaces and interfaces – from leaves to batteries

Shin Seonghun, Sungkyunkwan University
Oil pollution remediation with mass producible and recyclable amphiphilic magnetic Janus particle

Moon Hyeokhyun, Sungkyunkwan University
Effect of plate inclination on the liquid transfer between nonparallel plates

Rahil Ukani, Harvard University
Understanding thermal transport in two-dimensional organic–inorganic perovskites

Bennett Sessa, Brandeis University
Pattern formation in active fluids

Jinyoung Seo, Harvard University
Barocaloric materials for solid-state cooling

Louison Thorens, Tufts University
Lagrangian stretching reveals stress topology in viscoelastic flows experiments

12:00–1:30 p.m. Lunch, *Maxwell-Dworkin, Room 119*

Afternoon Presentations, *Maxwell Dworkin, Room G115*

1:30–2:00 p.m. **Xiaoyu Tang**, Northeastern University
"Impact dynamics of suspension droplets on liquid surfaces"

2:00–2:30 p.m. **Jarad Mason**, Harvard University
"Transporting gases in microporous water"

2:30–3:30 p.m. **Sound Bites Session III** (**early bird awardee** and **on the SB bubble**)

Benjamin Thorne, Harvard University
Compression induced syneresis of fibrous oil-in-gel emulsions

Caroline Martin, Harvard University
High-precision measurement and inference of short-ranged colloidal interactions

Seongsoo Kim, Harvard University
Direct observation of strain hardening in colloidal crystals

Hunter Seyforth, Brandeis University
Mysteries in the structure of binary colloidal crystals assembled from DNA-coated

Mario Ibrahim, Massachusetts Institute of Technology
Crack pattern selection in drying suspensions

Katharine Jensen, Williams College
Marchantia polymorpha gemmae interact as capillary multipoles

Zsolt Terdik, Harvard University
Traction rheoscopy

Michael Nelwood, Harvard University
Direct ink writing of electrode batteries using graphene nanoplatelettes

Max Jiang, Harvard University
Mechanics of colloidal gels

Sharavan Pradeep, University of Pennsylvania
Dense suspension rheology approach towards debris flow

Jessica Sun, Harvard University
Seeded colloidal crystallization

Daniel Keane, University of Rhode Island
Stiff, telechelic polymers increase chain bridging in physically crosslinked emulsions

Xinyu Mao, Massachusetts Institute of Technology
Particle focusing in a wavy channel

Ahmed Sherif, Harvard University
Braiding and weaving microscale fibers using capillary forces

Benjamin Strain, Brandeis University
Emergent behavior in motile beads driven by actin polymerization

Jennifer McGuire, Harvard University
How surfactants break down grease films

Elnaz Nikoumanesh, University of Rhode Island
The effect of thixotropy on the yield transition in cellulose nanocrystal gels

Haoyu Wang, Massachusetts Institute of Technology
Optofluidic resonance of a liquid jet excited by laser-induced fluorescence

Ian Graham, University of Pennsylvania
Excess entropy and rearrangement barriers in simple supercooled liquids

Yunting Yan, Boston University
Ellipticity dynamics of an obliquely impacting droplet

3:30–4:00 p.m. Coffee and Cookies, *Maxwell-Dworkin, Ground Floor Lobby*

4:00 p.m. Applied Physics Colloquium, *Maxwell Dworkin, Room G115*
David J. Pine, New York University
"Self-assembly of colloidal diamond: Prospects for band gaps and localization"

Please join us for the

94th New England Complex Fluids Workshop
March 17, 2023
at the University of Rhode Island

95th New England Complex Fluids Workshop
June 23, 2023
at Boston University

96th New England Complex Fluids Workshop
September 2023
at Brandeis University

97th New England Complex Fluids Workshop
December 1, 2023
at Harvard University

98th New England Complex Fluids Workshop
March 2024
at Tufts University

99th New England Complex Fluids Workshop
June 2024
at Brown University

100th New England Complex Fluids Workshop
September 2024
at Brandeis University

100+1st New England Complex Fluids Workshop
December 6, 2024
at Harvard University

Celebrating 24 years of NECF workshops and still going strong