

Northeastern University, Boston, MA
June 14-17, 2023

Symposium Organizer: Xiaocun Lu
Clarkson University, xlu@clarkson.edu

- **Interdisciplinary forum** on cutting-edge research and technology for developing future smart materials
- **Speakers** with expertise in chemistry, materials, engineering, and manufacturing
- **Topics:** Polymers • Nanomaterials • Biomaterials • Biomedical Devices • Advanced Manufacturing
- **Welcome to join us at Northeastern University, Boston, MA, June 14-17**



Symposium Opening Session: Plenary Seminar by Prof. Xuanhe Zhao Bioadhesive Ultrasound for Long-Term Continuous Simultaneous Imaging of Multiple Organs

June 14, 2023, 10:30 am – 11:30 am; Presider: Diego Alzate-Sanchez & Xiaocun Lu

Robinson Hall 109, Northeastern University, 336 Huntington Ave, Boston, MA 02115

[Zoom Registration](#) Hosted by Department of Chemistry and Chemical Biology, Northeastern University

10:30-11:30 Xuanhe Zhao, Plenary Speaker, Massachusetts Institute of Technology, Mechanical Engineering
Bioadhesive ultrasound for long-term continuous simultaneous imaging of multiple organs

Session I: Ultrasonic and Mechanoresponsive Materials and Applications

June 15, 2023, 8:30 am – 12:00 pm; Presider: Xiaocun Lu

Curry Student Center 440, Northeastern University, 360 Huntington Ave, Boston, MA 02115

8:30-8:35 Session Opening Remarks

8:35-9:15 Jianyu Li, Keynote Speaker, McGill University, Mechanical Engineering
#140 A sound way for bioadhesion

9:15-9:40 Chris Puleo, GE Research
#141 Bioelectronic or mechanomedicine? mechanisms and effects of pulsed ultrasound stimuli on neurons innervating peripheral organs

9:40-10:05 Xiaocun Lu, Clarkson University, Chemistry & Biomolecular Science
#142 Empowering ultrasonic and mechanoresponsive materials with polymer mechanochemistry

10:05-10:25 Coffee Break

10:25-10:50 Geoffrey Luke, Dartmouth College, School of Engineering
#143 Ultrasound-activated perfluorocarbon nanodroplets for molecular imaging and drug delivery

10:50-11:15 Bryan Ranger, Boston College, Department of Engineering
#144 Machine learning-based ultrasound image analysis of musculoskeletal phantoms and decellularized tissue scaffolds in bioreactors

11:15-11:55 Jeffrey Ruberti, Keynote Speaker, Northeastern University, Bioengineering
#145 The mechanochemistry of type I collagen, the structural biopolymer of choice in vertebrate animals

11:55-12:00 Session Closing Remarks

Session II: Bioinspired and Biomimetic Materials

June 15, 2023, 1:15 pm – 4:45 pm; Presider: Xiaocun Lu

Curry Student Center 440, Northeastern University, 360 Huntington Ave, Boston, MA 02115

1:15-1:20 Session Opening Remarks

1:20-2:00 Jia Niu, Keynote Speaker, Boston College, Chemistry
#226 Polymer chemistry inspired approaches to polysaccharides and glycomimetics

2:00-2:25 Shicheng Yang, Northeastern University, Chemical Engineering
#227 Sustained delivery of PARP inhibitor Talazoparib for the treatment of BRCA-deficient ovarian cancer

2:25-2:45 Lightning Talks
Selected speakers from poster sessions

2:45-3:10 Coffee Break

3:10-3:35 Jinglin Fu, Rutgers University, Chemistry
#232 A magic of double helix: Biomimetic nanosystem by selfassembled nucleic acids

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- 3:35-4:00** **Halle Redfearn**, Cornell University, Food Science
#233 Reactive extrusion of active and intelligent curcumin-graft-polypropylene
- 4:00-4:40** **Edmund Palermo, Keynote Speaker**, Rensselaer Polytechnic Institute, Materials Science & Engineering
#234 Poly(pro-curcumin) thin film coatings for intracortical microelectrode longevity
- 4:40-4:45** Session Closing Remarks

Session III: Empowering Women in Advanced Polymer and Biomaterials

June 16, 2023, 8:00 am – 10:55 am; *Presider: Rachel Steinhardt & Xiaocun Lu*

Raytheon Auditorium, Northeastern University, 120 Forsyth St, Boston, MA 02115

- 8:00-8:05** Session Opening Remarks
- 8:05-8:45** **Rachel Steinhardt, Keynote Speaker**, Syracuse University, Chemistry
#310 Design and synthesis of soft actuators for photo-control of multiscale movement
- 8:45-9:10** **Elizabeth Landis**, College of the Holy Cross, Chemistry
#311 Electrically transmissive and stable alkyne-derived molecular layers on nanoporous gold electrodes
- 9:10-9:35** **Ying Wang**, Northeastern University, Mechanical & Industrial Engineering
#312 Strong and highly ionic conductive ionogel through interpenetrated polymer networks for wearable all solid state supercapacitor
- 9:35-10:00** Coffee Break
- 10:00-10:25** **Lenore Rasmussen**, Ras Labs, Inc.
#313 Electroactive polymer based tactile fingertips for robotic grippers
- 10:25-10:50** **Juana Mendenhall**, Morehouse College, Chemistry
#314 Directing chemomechanical response using smart hydrogels with functional gradients at various length scales
- 10:50-10:55** Session Closing Remarks

Session IV: Structural Precision and Stimuli-Responsiveness in Polymer and Nanomaterials

June 17, 2023, 8:30 am – 11:00 am; *Presider: Xiaocun Lu*

Curry Student Center 440, Northeastern University, 360 Huntington Ave, Boston, MA 02115

- 8:30-8:35** Session Opening Remarks
- 8:35-9:00** **Jannika Lauth**, Eberhard Karls Universitat Tubingen, Chemistry
#622 Tailor-made colloidal two-dimensional semiconductors: A chemical approach to innovative photonics
- 9:00-9:25** **Karen Hindricks**, Leibniz Universitat Hannover, Institute of Inorganic Chemistry
#623 2D photochemical patterning and postsynthetic modification of metal-organic framework thin films
- 9:25-9:50** **Olukayode Majekodunmi**, Northeastern University, Chemical Engineering
#624 Adsorption of additive Ca²⁺ ions on chemically precipitated CaCO₃ particles inhibits their excessive growth
- 9:50-10:05** Coffee Break
- 10:05-10:30** **Michael Ploch**, Northeastern University, Chemical Engineering
#625 Statistical mechanics of aramid fiber nanostructures upon ballistic impact
- 10:30-10:55** **Julianne Gripenburg**, Rutgers University, Physics
#626 Pulsed laser induced membrane disruptions of gold nanoparticle loaded micron- and nano-scale polymersomes
- 10:55-11:00** Symposium Closing Remarks