

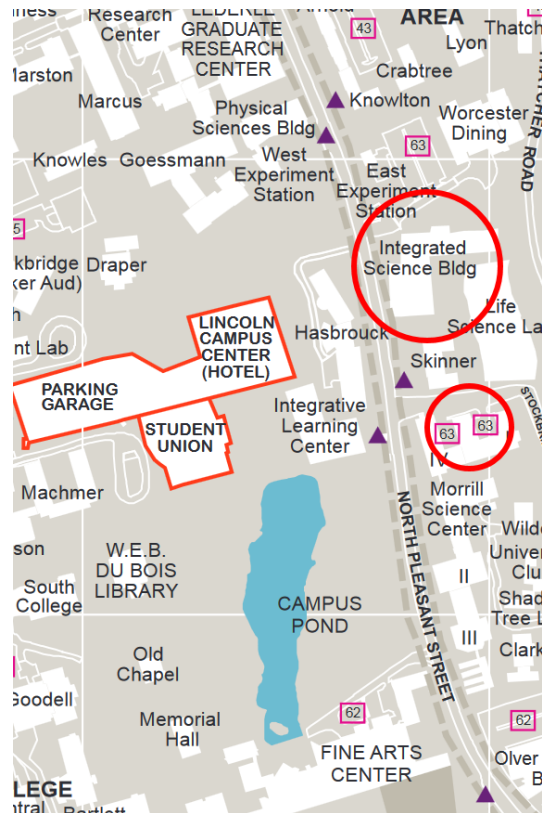
## Map

**Integrative Sciences Building Room ISB135:** Talks and posters. Lunch and reception at the atrium of ISB.

**Parking Garage:** Parking is located behind the Lincoln Campus Center and in lot 63.

**Bus pickup from Cambridge:** Buses leave for Amherst at 7am from 77 Massachusetts Avenue.

**Bus pickup from Amherst:** Buses leave for Cambridge at 7:00pm from 661 North Pleasant Street, Amherst (in front of ISB) and drop off at 77 Massachusetts Avenue, Cambridge.



# NEW.Mech 2019

University of Massachusetts Amherst

Saturday, October 5, 2019



## Support

We graciously thank the support of the University of Massachusetts Colleges of Natural Sciences and Engineering, the Department of Polymer Science and Engineering, the Center for UMass/Industry Research on Polymers, the Department of Civil and Environmental Engineering, the Institute for Applied Life Sciences for supporting the poster awards and the Department of Biomedical Engineering.

## Schedule

9:00am - 9:45	Registration and breakfast
9:45 - 10:00	Opening remarks
10:00-10:40	Invited talk: <b>Tal Cohen</b> “Growth, instability, and failure: bringing order into the chaos of natural phenomena”
10:40-11:20	Contributed talks I
11:20-11:50	Coffee break
11:50-12:30pm	Contributed talks II
12:30-2:10	Lunch and Poster session
2:10-2:50	Invited talk: <b>Jae-Hwang Lee</b> “Microballistics: An emerging opportunity for quantitative extreme mechanics of nanomaterials”
2:50-3:20	Coffee break
3:20-4:00	Contributed talks III
4:00-4:40	Invited talk: <b>Zhigang Suo</b> “Fatigue resistant materials”
4:40-5:00	IALS Poster prizes presented by IALS director Peter Reinhart Closing Remarks
5:00-7:00	Wine & Cheese Reception <i>ISB Atrium</i>

## Contributed Talks

### Session I

- Junsoo Kim*, Thermodynamics of imperfect gels  
*Chockalingam Senthinathan*, Shear shock evolution in incompressible soft solids  
*Hyunki Kim*, Light-driven assembly of nanocomposite gel surfers  
*Adam Sliwiak*, An arc-length simulation-based analysis of elastic instabilities in hydrogels  
*Hmaed O’Ghaffar*, Topological transition point in an Acoustic-Crackling Crystal  
*Qihan Liu*, A viscoelastic beam theory of polymer jets  
*Jian Li*, Domain formations and pattern transitions via instabilities in soft particulate composite  
*Shihong Li*, Continuum modeling of size-segregation in dense, bidisperse granular materials  
*Chris Barney*, Fracture of model end-linked networks  
*Kim Hyeongjun*, Low-voltage reversible electro-adhesion of Ionoelastomer junctions

### Session II

- Teng Zhang*, Harnessing energy landscape exploration to control the buckling of cylindrical shells  
*Kshitij Kumar Yadav*, Imperfection insensitivity of thin wave cylindrical shells under axial compression or bending  
*Emmanuel Viroat*, Non-destructive prediction of the buckling load of imperfect shells  
*Jacob Merson*, Using generalized boundary conditions to reduce model size in multiscale modeling of collagen tissue

## Contributed Talks

### Session II (cont.)

- Changyeob Baek*, Unravelling the mechanics of a clasp between two contacting filaments  
*Xudong Liang*, Programming impulsive deformation with mechanical metamaterial  
*Bryan Ovelheiro*, Consideration of 3D printed biofilm carriers for wastewater treatment  
*Matthew Giso*, Sculpting high aspect ratio crystals from an oil in water emulsion  
*Zhaoyu Xie*, Percolation governs order to disorder transition for two-dimensional dense particle packing

### Session III

- Gary Choi*, Geometric and topological control of kirigami  
*Yi Yang*, Delicate high precision grasping with a kirigami shell gripper  
*Jiawei Tian*, Designing ferromagnetic soft robots (FerroSoRo) with Level-Set-Based Multiphysics Topology optimization  
*Xiaoqiang Xu*, Topology optimization of multimaterial thermoelectric structures  
*Jun Li*, Modeling anisotropic elastic and fracture properties of 3D printed polymers  
*Pinkeh Malhotra*, High-speed microscopic imaging of dynamic failure events  
*Anup Dey Anita*, Oscillations of a cantilevered micro beam driven by a viscoelastic flow instability  
*Maysam Gorji*, Towards a neural network approach to describe the constitutive modeling of a material  
*Yecheng Wang*, Instant, tough, noncovalent adhesion

## Poster Session

- 1** *Peter Yichen Chen*, Simulating Granular Shear Localization Using a Hybrid Discrete-Continuum Approach
- 2** *Mary Elizabeth Lee*, Configuration spaces of simple origami
- 3** *Pavida Charoen-Rajapark*, Capturing electric-field induced surface instabilities of soft dielectrics with fluorescence confoca
- 4** *Wanliang Shan*, Dynamic dry adhesion through subsurface pressure modulation
- 5** *Hares Wahdat*, Polymer interdiffusion in ionically cross-linked, water-borne acrylic PSAs studied with FRET
- 6** *Sacchita Tiwari*, Laser-induced cavitation dynamics of polydimethylsiloxane with varying cross-linking density and mol
- 7** *Xiaoxiao Xiang*, Non-uniform curvature and anisotropic deformation control wrinkling patterns on tori
- 8** *Zhiqiang Shen*, Interplay between ligand mobility and nanoparticle geometry during cellular uptake of PEGylated lipo
- 9** *Rojin Ghandriz*, Predicting fracture of layered 3D printed material
- 10** *Cynthia Bukowski*, Entanglement of mechanical properties of ultra-thin glassy polymer films
- 11** *Baohong Chen*, Molecular staples for tough and stretchable adhesion in integrated soft materials
- 12** *Shyamal Kishore*, Underwater dynamic collapse of sandwich composite structures integrated soft materials
- 13** *Irine NEBA Mforsoh*, Constitutive compressive behavior of polyurea with exposure to aggressive marine environments

## Poster Session (cont.)

- 14** *Fani Derveni*, High-fidelity finite element modeling of cold-formed steel shear walls
- 15** *John Farah*, Rapid wafering of wide bandgap substrates
- 16** *Fan Lie*, Effect of interface width and printing orientation on tensile properties of 3D printed interfaces
- 17** *Lucia Stein-Montalvo*, Circumferential buckling of the confined d-cone
- 18** *Chen Chao*, Flower inspiration: iridescence through hierarchical wrinkles in soft multilayers
- 19** *Arman Guerra*, Emergence of structure in elastogranular columns
- 20** *Koray Senol*, Underwater mechanical response of foams
- 21** *Hao Wu*, Mechanically-mediated interactions between solid domains in composite vesicles
- 22** *Zi Chen*, A reconfigurable biohybrid soft robot with remote control
- 23** *Schicheng Huang*, Controllable shape changing and tri-stability of bilayer composite
- 24** *Hongbo Fu*, Needle-induced liquid deposition in soft material
- 25** *Kshitij Kumar Yadav*, Imperfection insensitivity of thin wavy cylindrical shells under axial compression or bending
- 26** *Junbo Chen*, Harnessing energy landscape exploration to control the buckling of cylindrical shells

