

SUNDAY, OCTOBER 8 (University Memorial Center, Glenn Miller Ballroom)

12:00-13:00 Registration

LCE and Robotics I – Prof. White

13:00-13:35 **Shengqiang Cai** (UCSD)
"Recent applications of liquid crystal elastomers"

13:35-14:00 **Carlos Sánchez-Somolinos** (CSIC-UNIZAR)
"Enabling Functionality and Miniaturization in Soft Robotic LCEs through Additive Manufacturing"

14:00-14:25 **Danqing Liu** (Eindhoven University of Technology)
"Interactive liquid crystal polymers for 2D soft robotic functions"

14:25-14:40 **Joselle McCracken** (University of Colorado, Boulder)
"Thickness-Dependent Topography of Liquid Crystalline Elastomer Conical Actuators Under Compressive Load"
J.M. McCracken, T.J. White

14:40-14:55 Break (Coffee and Snacks available)

Computational & Experimental Mech I – Prof. Liu

14:55-15:30 **Kaushik Bhattacharya** (California Institute of Technology)
"Mechanical properties of isotropic-genesis polydomain nematic elastomers"

15:30-15:45 **Daniel Duffy** (University of Cambridge)
"LCE Cones: Lifting, Loading, and Buckling"
D. Duffy, J.S. Biggins, J.M. McCracken, T.S. Hebner, T.J. White

15:45-16:05 **Renee Zhao** (Stanford)
"Liquid Crystal Elastomer – Liquid Metal Composite: Ultrafast, Untethered, and Programmable Actuation by Induction Heating"

16:05-16:20 **Milan Wilborn** (Harvard University)
"Inverse Gaussian Shape Morphs based on LCE films"
M. Wilborn, P. Qu, S. Li, F. Streicker, J. Aizenberg

16:20-16:55 **Shu Yang** (University of Pennsylvania)
"Programming shape morphing and chirality switching by liquid crystalline elastomer microparticles"

16:55-17:10 **Morgan Barnes** (University of Cambridge)
"Microstructures and Surface Instabilities in Liquid Crystal Elastomers"
M. Barnes, F. Feng, J. Biggins

17:10-19:00 **Welcome Reception – South Terrace, University Memorial Center**
Heavy appetizers and drinks (provided)

MONDAY, OCTOBER 9 (University Memorial Center, Glenn Miller Ballroom)

7:30-8:30 Registration

Molecular Engineering of LCEs – Prof. White8:30-9:15 **Dirk J. Broer** (Eindhoven University of Technology)
"On the history of reactive mesogens"9:15-9:40 **Javier Read de Alvaniz** (UC Santa Barbara)
"Exploration of white-light responsive liquid crystal elastomers"9:40-10:00 **Emily Davidson** (Princeton University)
"Controlling Phase Behavior With Precise Liquid Crystalline Oligomers"
*C.L.C. Chan, S. Maguire, E. Ostermann, E. Davidson*10:00-10:15 **Charlie Lindberg** (University of Chicago)
"Relax, everything is under control: Leveraging modularity for precision dynamic bond placement in liquid crystal elastomers"
*C. Lindberg, E. Ghimire, C. Chen, S. Lee, N.D. Dolinski, J.M. Dennis, S. Wang, J.J. de Pablo, S.J. Rowan*10:15-10:30 **David Kennedy** (University of Colorado, Boulder)
"Molecular Engineering of Mesogen Interactions in Liquid Crystalline Elastomers"
D. Kennedy, T.J. White

10:30-10:45 Break

10:45-11:20 **Yue Zhao** (Université de Sherbrooke)
"Actuation Functions Enabled by Crosslinker in Liquid Crystal Elastomer Structure"11:20-11:45 **Taylor Hebner** (University of Oregon)
"Spatial Patterning of Material Properties in Liquid Crystalline Elastomers for Complex and Dynamic Actuation"
*T. Hebner, C.N. Bowman, T.J. White*11:45-12:00 **Tim White** (University of Colorado, Boulder)
"Mark Warner's Contributions to Our Field and the ILCEC"12:00-13:00 **Conference Photograph @ 12:00, Lunch, Buffet Lunch (Provided), Hang Posters****Nonlinear Deformation & Impact Resistance – Prof. Davidson**13:00-13:35 **Helen Gleeson** (University of Leeds),
"Auxetic liquid crystal elastomers: how they work"
*H.F. Gleeson, D. Mistry, T. Raistrick, A. Street, M. Reynolds, S. Berrow, Z. Wang*13:35-14:00 **Eugene Terenjev** (University of Cambridge)
"Pressure sensitive adhesion of nematic elastomers"14:00-14:25 **Takuya Ohzono** (AIST)
"Optimal conditions for efficient photomechanical response in nematic elastomers"
*T. Ohzono, E. Koyama*14:25-14:50 **Thao (Vicky) Nguyen** (Johns Hopkins University)
"Modeling the Viscoelastic Behavior of Liquid Crystal Elastomers"14:50-15:15 **Kenji Urayama** (Kyoto University)
"Exploring Nonlinear Elasticity in Nematic Elastomers: Beyond Simple Stretching?"

15:15-15:30 Break

To (Be) LCE or Not (To Be) LCE? – Prof. Gleeson15:30-15:55 **Ivan I. Smalyukh** (University of Colorado, Boulder)
"Towards Hopfionic Haptics"
*I.I. Smalyukh, J. Peixoto, D. Hall, D.J. Broer, D. Liu*15:55-16:20 **Albert Schenning** (Eindhoven University of Technology)
"Thermoplastic Liquid Crystal Elastomers"
*A. Schenning, D.J. Mulder, S. Lugger*16:20-16:45 **Ryan Hayward** (University of Colorado, Boulder)
"High-performance photomechanical materials via polymer-templated growth of aligned microcrystal arrays"16:45-17:00 **Hongye Guo** (University of Cambridge)
"Main-chain nematic side-chain smectic composite liquid crystalline elastomers"
H. Guo, M.O. Saed, E.M. Terentjev

TUESDAY, OCTOBER 10 (University Memorial Center, Glenn Miller Ballroom)

7:30-8:30 Registration

3-D Printing of LCE – Prof. Lagerwall

8:30-8:55 **Howon Lee** (Seoul National University)
"Programming Molecular Order of a Liquid Crystal Elastomer with Magnetic-Field-Assisted DLP Printing"

H. Lee, Y. Wang, J. An, H. Kim, S. Ko

8:55-9:15 **Devin Roach** (Sandia National Laboratories)
"Multi-Planar 4D Printing and Deformation Control Strategies for Liquid Crystal Elastomers"

D. Roach, J. Herman, A. Cook, T. White, B. Kaehr

9:15-9:35 **Suk-kyun Ahn** (Pusan National University)
"Dual Morphing of Direct-Ink-Written Liquid Crystal Elastomers Under Heat and Moisture"

K. Kim, K. Kim, S. Ahn

9:35-9:50 **Klaudia Dradrach** (University of Cambridge)
"3D-printed flat sheets of LCE morphing into intrinsically curved folds"

K. Dradrach, F. Feng, M. Barnes, M. Zmyslony, J. Biggins

9:50-10:05 **Wei-Ting Hsu** (National Taipei University of Technology)
"The fabrication of liquid crystal networks structures using two-photon technology"

W.-T. Hsu, H.-J. Chou, Y.-C. Cheng

10:05-10:20 **Caitlyn Krikorian (Cook)** (Lawrence Livermore National Laboratory)
"Light driven morphing of printed liquid crystal elastomers"

C. Krikorian, M. Ford, D. Porcincula, R. Telles-Arriaga, J. Mancini, Y. Wang, M.H. Rizvid, C.K. Loeb, B. Moran, J.B. Tracy, El. Lee, J. Lewis, S. Yang

10:20-10:35 Break

Hierarchical Structure in LCE – Prof. Schenning

10:35-11:00 **Jan Lagerwall** (University of Luxembourg)
"Cholesteric Liquid Crystal Elastomer Sheets and Fibers for Mechanochromic Strain Sensing"

Y. Geng, R. Kizhakkidathazhath, J.P.F Lagerwall

11:00-11:25 **Ana Almeida** (Universidade Nova de Lisboa)
"Cellulose-based anisotropic networks for moisture and temperature time sensors"

A. Almeida, N. Monge, J.P. Canejo, P.L. Almeida, M.J. Godinho

11:25-11:40 **Yoo Jin Lee** (Texas A&M University)
"Self-Assembled Microactuators Using Chirality of Liquid Crystal Elastomers"

Y.J. Lee, M.K. Abdelrahman, M.S. Kalairaj, T.H. Ware

11:40-11:55 **Alexis Phillips** (University of Colorado, Boulder)
"Color change in cholesteric liquid crystalline elastomers"

A.Phillips, J. Chen, T.J. White

11:55-13:00 **Buffet Lunch (Provided), Poster #1-30 Presenters Available for Discussion 12:30-13:00****LCE and Motility in Robotics – Prof. Kuenstler**

13:00-13:25 **Ravi Shankar** (University of Pittsburgh)
"Motility from Liquid Crystallinity"

13:25-13:50 **Antonio DeSimone** (The Biorobotics Institute, Scuola Superiore Sant'anna)
"Morphing and motility of LCE films"

A.DeSimone, L. Teresi

13:50-14:10 **Hao Zeng** (Tampere University)
"Self-Oscillating Materials: Enabling Self-Regulated Robotic Functions"

J. Yang, Z. Deng, Y. Nemat, H. Zeng

14:10-14:25 **Jacopo Movilli** (Harvard University)
"Encoding life-like multimodal locomotion in photo-responsive microstructures"

J. Movilli, A. Wilborn, J.T. Waters, F. Stricker, A. Balazs, J. Aizenberg

14:25-14:40 **Mason Zadan** (Carnegie Mellon University)
"Wireless and Thermoelectric Actuation Methods for Liquid Crystal Elastomer Based Soft Robots"

M. Zadan, J. Wang, Y. Song, D.K. Patel, Z. Li, L. Yao, S. Kumar, C. Majidi

14:40-14:55	Sean Lee (The University of Chicago) "Soft liquid crystal elastomer with integrated stretchable Joule heater" <i>S. Lee, S.J. Rowan, S. Wang</i>
14:55-15:10	Break
LCE and Material Processing – Prof. Shankar	
15:10-15:35	Atsushi Shishido (Tokyo Institute of Technology) "Photoalignment patterning of liquid crystals by scanning wave photopolymerization"
15:35-16:00	Zachariah A. Page (The University of Texas at Austin) "Liquid Crystalline Elastomers as Photoswitchable Adhesives" <i>Y. Wu, B.D. Clarke, K.M. Liechti, Z.A. Page</i>
16:00-16:20	Alexa Kuentler (University of Illinois Urbana-Champaign) "Liquid Crystal Elastomer Nanocomposites as a Platform for Optically- Addressable Materials"
16:20-16:35	Lovish Gulati (Max Planck Institute for Medical Research) "3D director alignment of liquid crystalline structures with magnetic fields" <i>L. Gulati, F. Giesselmann, P. Fischer</i>
Poster Session	
16:35-17:20	Poster Presentations - #1-30
17:30	Transit via bus from UMC to Chautauqua Dining Hall
18:00-20:00	Conference Banquet (Chautauqua Dining Hall) <i>Appetizers and dinner (provided)</i> <i>Cash bar for alcoholic beverages</i>

WEDNESDAY, OCTOBER 11 (University Memorial Center, Glenn Miller Ballroom)

7:30-8:30 Registration

Emerging Frontiers in LCE – Prof. Li8:30-9:05 **Arri Priimagi** (Tampere University)
"Liquid crystal network actuators that "adapt" (?), "self-regulate" (?) and "learn" (?)"9:05-9:30 **Chinedum Osuji** (University of Pennsylvania)
"Limit Cycle LC Elastomer Actuation for Temperature Regulation and Programmed Thermal Transport"*C. Osuji, Z. Liu, Y. Zhao*9:30-9:45 **Asaf Dana** (Texas A&M)
"Liquid crystal elastomer based entangled active matter"*A.Dana, M.K. Abdelrahman, T.H. Ware*9:45-10:00 **Stuart Berrow** (University of Leeds)
"The Effect of Spacer Length on the Properties of Auxetic Liquid Crystal Elastomers"*S. Berrow, R.J. Madle, H.F. Gleeson*10:00-10:15 **Friedrich Stricker** (Harvard John A. Paulson School Of Engineering And Applied Sciences)
"Light driven liquid crystalline actuators with multiple phase transitions"*F. Stricker, M. Wilborn, J. Movilli, J. Aizenberg*10:15-10:30 **Laurens Theobald de Haan** (South China Normal University), G. Zhou
"Soft electricity-responsive liquid crystal polymer materials for switchable surfaces"*L.T. Haan, G. Zhou*

10:30-10:45 Break

Biology and Bioinspiration – Prof. Priimagi10:45-11:10 **Taylor Ware** (Texas A&M University)
"Liquid Crystal Elastomers: Artificial Muscles and Collective Action"11:10-11:35 **Kelly Burke** (University of Connecticut)
"Synthesis of Liquid Crystalline Networks for Biomaterials Applications"*A. Tulli IV, K.A. Burke*11:35-11:50 **Nathaniel Skillin** (University of Colorado, Boulder)
"Stiffness anisotropy coordinates supracellular contractility driving long-range myotube-ECM alignment"*N. Skillin, B.E. Kirkpatrick, K.M. Herbert, B.R. Nelson, G.K. Hach, K.A. Gunay, R.M. Khan, F.W. DelRio, T.J. White, K.S. Anseth*11:50-12:05 **Zixuan Deng** (Tampere University)
"A light-fueled cilium"*Z. Deng, H. Zhang, A. Priimagi, H. Zeng*12:00-13:00 **Buffet Lunch (Provided), Poster #1-30 Presenters Available for Discussion 12:30-13:00****LCE Materials Chemistry and Processing – Prof. Osuji**13:00-13:25 **Christopher Bowman** (University of Colorado, Boulder)
"Reconfigurable Shape Change in Liquid Crystalline Elastomers Enabled by Stimulus Orthogonality in Dynamic Covalent Networks"*T.S. Hebner, T.J. White, C.N. Bowman*13:25-13:50 **Min-Hui Li** (Institut de Recherche de Chimie Paris, CNRS, Chimie ParisTech, Université PSL)
"Electroactive Bi-functional Liquid Crystal Elastomer Actuators"*Min-Hui Li, G. Liu, Y. Deng, G. Nguyen, C. Vancaeyzeele, A. Brulet, F. Vidal, C. Plesse*13:50-14:05 **Kristin Lewis** (University of Colorado, Boulder)
"Supramolecular Liquid Crystalline Elastomers"*K. Lewis, J. Hoang, S. Aye, D. Kennedy, T.J. White*14:05-14:20 **Elina Ghimire** (University of Chicago)
"Trainable liquid crystal elastomers via the controlled synthesis and dynamic covalent exchange of aza-Michael reactions"*E. Ghimire, C.A. Lindberg, T.D. Jorgenson, C. Chen, N.D. Dolinski, S.J. Rowan*14:20-14:35 **Jin-Hyeong Lee** (Pusan National University)
"Body Temperature Actuation of Exchangeable Liquid Crystal Elastomers"*J.-H. Lee, D.-G. Kim, S.-K. Ahn*

14:35-14:50	Hongshuang Guo (A. Priimagi presenting) (Tampere University) "Halogen-bonded shape memory liquid crystal polymer" <i>H. Guo, R. Puttreddy, H. Zeng, A. Priimagi</i>
14:50-15:05	Break
Computational & Experimental Mech II – Prof. Burke	
15:05-15:30	Rafael Verduzco (Rice University) "Understanding the effect of liquid crystal content on the phase behavior and mechanical properties of liquid crystal elastomers" <i>M. Barnes, S. Cetinkaya, A. Ajnsztajn, R. Verduzco</i>
15:30-15:55	Gregor Skačej (University of Ljubljana) "Photo-responsive liquid crystal elastomers: A molecular Monte Carlo study" <i>G. Skačej, L. Querciagrossa, C. Zannoni</i>
15:55-16:15	Kai Yu (University of Colorado, Denver) "Enhanced Energy Dissipation of 3D Printed Liquid Crystal Elastomers and Their Material Structures"
16:15-16:30	Thomas Raistrick (University of Leeds) "Direct and indirect evidence of biaxial order in auxetic liquid crystal elastomers" <i>T. Raistrick, Z. Wang, A. Street, M. Reynolds, Y. Liu, R. Mandle, H.F. Gleeson</i>
16:30-16:35	Closing Remarks