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14TH INTERNATIONAL SYMPOSIUM ON STIMULI-RESPONSIVE MATERIALS

OCTOBER 21-23, 2018
WINDSOR, CA, USA

SONOMA COUNTY CALIFORNIA

2019 SYMPOSIUM DATES
OCTOBER 20-22, 2019
WINDSOR, CALIFORNIA, USA

Welcome to Sonoma!

On behalf of all scientists, researchers, and scholars whose research and scholarly efforts focus on the development of a new generation of materials with stimuli-responsive attributes, we welcome you to the 2018 International Symposium on Stimuli-Responsive Materials. This year marks the 14th anniversary of this event that has become a benchmark in the field and continues to offer many diverse scientific contributions from around the world. Every year at least five to ten countries are represented at this event. Last year the Symposium was interrupted by destructive 2017 California wildfires which leveled off the Hilton Santa Rosa Hotel about a week before the conference. We are excited that most of the last year's speakers came back. The success of this event is possible only through the outstanding research contributions from leaders in this field, graduate students, post-doctoral research associates, and researchers from around the World. In the enjoyable settings of the Sonoma Wine Country, the symposium has developed into one of the best annual opportunities for academic, industrial, and government researchers to discuss the most recent advances in the areas of responsive and adaptive materials. Presentation themes range from smart materials, polymer synthesis, responsive biological materials, biomimicry, engineering of shape-adaptive objects, nanomaterials design and devices, self-healing, and theoretical predictions/simulations. We hope that this year's symposium will be even more successful as past symposia, and will be as professionally fruitful and personally rewarding. We sincerely thank *IOP Publishing* and *Tosoh Biosystem LLC,* as well as the continued support of the Royal Society of Chemistry for their partial support of this event.

Marek W. Urban and Brent S. Sumerlin
Symposium Co-Chairs

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14th INTERNATIONAL SYMPOSIUM ON STIMULI-RESPONSIVE MATERIALS

Symposium Organizers and Chairs: Marek W. Urban and Brent S. Sumerlin

Holiday Inn Windsor
8755 Redwood Hwy · Windsor
California 95492 · USA

SUNDAY, OCTOBER 21, 2018

2:30-6:00 **REGISTRATION** **Location: Foyer Holiday Inn**

4:00-4:05 **Opening Remarks;** M. W. Urban, B. S. Sumerlin **Room: Alexander + Dry Creek**

OPENING SESSION **From Responsive Molecules to Applications**

4:05-4:35 **Photo and Stress Responsive Polymers; ROBERT H. GRUBBS, California Institute of Technology, Pasadena, CA, USA.**

4:35-5:05 **Engineering Responsive, Bilayer Composites via Strategic Control of Fiber Alignment and Interfacial Assembly; LASHANDA KORLEY, University of Delaware, DE, USA.**

5:05-5:35 **Stimuli-responsive polymer materials based on liquid crystals; ALBERT SCHENNING, Laboratory of Stimuli-responsive Functional Materials and Devices, Eindhoven University of Technology, Eindhoven, The Netherlands.**

5:35-6:05 **Responsive Crosslinking: From Transient Polyimide Organogels for 3D Printing to Nucleobase Hydrogen Bonded Elastomers (and Beyond!); TIMOTHY E. LONG, Maruti Hegde, Jana Herzberger, James Brown, Xi Chen, Mingtao Chen, Joseph M. Dennis, Christopher B. Williams, Nicholas Chartrain, and Viswanath Meenakshisundaram, Virginia Tech, Department of Chemistry, Macromolecules Innovation Institute (MII), Blacksburg, VA 24061, USA.**

6:15 - 8:00 **WINE SOCIAL** **Room: Alexander + Dry Creek**

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MONDAY, OCTOBER 22, 2018 **Room: Alexander + Dry Creek**

AM SESSION: Smart Networks, Gels, and Complex Materials, Session Chair: Thomas Epps III

8:30-9:00 Stimuli-responsive Hydrogels by Supramolecular Designs; **ERIC A. APPEL**, Department of Materials Science & Eng., Stanford University, Stanford CA. USA.

9:00-9:30 Poly(Curcumin b-Amino ester) as a Hydrogen Peroxide Triggered Release System for the Treatment of Oxidative Stress Related Diseases; **THOMAS DZIUBLA**, University of Kentucky, Lexington, KY, USA.

9:30-10:00 Stimuli-Responsive Nanostructured Materials through Photopolymerization in Liquid Crystal Templates; **C. ALLAN GUYMON**, Department of Chemical and Biochemical Engineering, University of Iowa, Iowa City, IA, USA.

10:00 – 10:30 COFFEE BREAK

AM SESSION: Responsive Materials in Medicine and Biology, Session Chair: Eric Appel

10:30-11:00 Stimuli-Responsive Superhydrophobic Biomaterials: From Point of Care Diagnostics to Local Drug Delivery; **MARK W. GRINSTAFF**, Departments of Biomedical Engineering, Chemistry, and Medicine, Boston University, Boston, MA, USA.

11:00-11:30 Photo-responsive polymeric nanocarriers for spatiotemporal control in gene therapy and wound healing applications; Chad T. Greco, Victoria Muir, Millicent O. Sullivan, **THOMAS H. EPPS III**, University of Delaware, DE, USA.

11:30-12:00 Biorecognition – a Key to Drug-Free Macromolecular Therapeutics; **JIYUAN YANG**[1] and Jindřich Kopeček,[1,2] Departments of [1]Pharmaceutics and Pharmaceutical Chemistry, and [2]Bioengineering, University of Utah, Salt Lake City, UT, USA.

12:00 PM LUNCH BUFFET **Room: Russian River**

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TUESDAY, OCTOBER 23, 2018 **Room: Alexander + Dry Creek**

AM SESSION: New Concepts in Responsive Polymers and Assemblies I, Session Chair: Emily Pentzer

8:30-9:00 Mechanochromic Polymers Made with Supramolecular Mechanophores; **CHRISTOPH WEDER**, Adolphe Merkle Institute, University of Fribourg, Fribourg, Switzerland.

9:00-9:30 Dispersity-Enhanced Responsive Properties in Polyelectrolyte Brushes; **MEGAN L. ROBERTSON**, Jacinta C. Conrad, Vivek Yadav, University of Houston, TX, USA.

9:30-10:00 Bridging the Nanoscale and Mesoscale with Solution Assembly of Functional Polymers; **TODD EMRICK**, Department of Polymer Science and Engineering, University of Massachusetts, Amherst, MA, USA.

10:00-10:30 COFFEE BREAK

AM SESSION: New Concepts in Responsive Polymers and Assemblies II, Session Chair: Michael Serpe

10:30-11:00 Responsive, Flexible Foams via 3D Printing of Polymer Composites; Peiran Wei,[†] Houming Leng,[†] Qiyi Chen,[‡] Rigoberto C. Advincula,[‡] **EMILY B. PENTZER**,[†*] [†]Department of Chemistry, [‡]Department of Macromolecular Science and Engineering, Case Western Reserve University, Cleveland, OH, USA.

11:00-11:30 Structured Responsive Materials Through Designed Polymer Synthesis; **ROBERT B. GRUBBS**, Chemistry Department, Stony Brook University, Stony Brook, NY 11794, USA.

11:30-12:00 Toward Synthetic Constructs of Bio-Mimicking Excitable and Motile Systems; **GARY E. WNEK**, Macromolecular Science and Engineering, Case Western Reserve University, Cleveland, OH, USA.

12:00 PM LUNCH BUFFET **Room: Russian River**

PM SESSION Shape Memory, Actuation, and NanoComposites I, Session Chair: Tayler Ware

1:30-2:00 Shape-memory Polymer Actuators; **ANDREAS LENDLEIN**, Institute of Biomaterial Science, Helmholtz-Zentrum Geesthacht, Teltow and Institute of Chemistry, University of Potsdam, Potsdam, Germany.

2:00-2:30 Stimuli-Responsive Polymer-Based Devices for Actuation; **MICHAEL J. SERPE**, Department of Chemistry, University of Alberta, Edmonton, Alberta, Canada.

2:30-3:00 Evolution of Self-Oscillating Polymer Gels as Biomimetic and Smart Soft Materials; **RYO YOSHIDA**, School of Engineering, The University of Tokyo, Japan.

3:00-3:30 COFFEE BREAK

PM SESSION Shape Memory, Actuation, and NanoComposites II, Session Chair: Megan Robertson

3:30-4:00 Thermal Gradient-Induced Voltage Generation from Completely Organic Polymer Nanocomposites; **JAIME C. GRUNLAN**, Department of Mechanical Eng., Materials Science & Eng. and Chemistry, Texas A&M University, College Station, TX, USA.

4:00-4:30 Intelligence, Both Living and Non-Living, in Shape-Morphing Polymers; Mohand O. Saed, Laura K. Rivera, Cedric P. Ambulo, **TAYLOR H. WARE**,[*] Department of Bioengineering, The University of Texas at Dallas, TX, USA.

4:30-5:00 Self-Healable Commodity Copolymers; **YING YANG**, M.W. Urban, Department of Materials Science and Eng., Clemson University, Clemson, SC, USA.

5:00-5:05 Closing Remarks Marek W. Urban and Brent S. Sumerlin

5:30-7:30 POSTER SESSION AND WINE SOCIAL **Room: Alexander + Dry Creek**

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Poster Session

201. **Electrochemical Stimulation of Gels for High Strain Actuation**, S.C. Moratti,* L.R. Hanton, S. Goswami, R. Wickramasinhage, Chemistry Department, University of Otago, Dunedin, New Zealand.

202. **Shape-morphing Living Composites**, Laura K. Rivera-Tarazona,[1] Vandita D. Bhat, Zachary T. Campbell and Taylor H. Ware,[1*] [1]Department of Bioengineering, [2]Department of Biology, The University of Texas at Dallas, TX, USA.

203. **Liquid Crystal Elastomers as Substrates for Flexible Electronics**, Hyun Kim,[1] Rashed T. Rihani,[1] John Gibson,[2] Yousuf Shafiq,[2] Bryan J. Black,[1] Stavros V. Georgakopoulos[2] and Taylor H. Ware,[1*] [1]Department of Bioengineering, [2]Department of Electrical and Computer Engineering, Florida International University, FL, USA.

204. **Tough and Water-insensitive Self-Healing Elastomer for Robust Electronic Skin**, Jiheong Kang and Zhenan Bao,* Stanford University, CA, USA.

205. **Effect of Non-conjugated Spacers on Mechanical Properties of Semiconducting Polymers for Stretchable Transistors**, Jaewan Mun and Zhenan Bao,* Stanford University, Stanford, CA, USA.

206. **Characterizing Acrylic Elastomer Variants as Dielectric Elastomer Actuators**, Lindsey Hines, Dean Moren, Chin-yee Ng, Scott Simons, Jia Hu, 3M Center, St. Paul, MN, USA.

207. **Cationically Photo-polymerized PCL/Epoxy Shape Memory Blends: Comparison between Bulk and Nanofiber Morphology**, Álvaro Iregui,[1*] Idoia Arandia,[1] Carlo Perotto,[2] Christoph Weder,[2] Alejandro Müller,[1] Lourdes Irusta,[1] Alba González,[1*] [1]University of the Basque Country UPV-EHU, Spain; [2]University of Fribourg, Switzerland.

208. **Highly Stretchable, Conductive Hydrogels with Tunable Modulus for Enhanced Compatibility with Biological Tissue**, Vivian R. Feig,[1] Helen Tran,[2] Minah Lee,[2] Zhenan Bao,[2] [1]Department of Materials Science and Eng.,[2] Department of Chemical Eng., Stanford University, Stanford, CA, USA.

209. **Electronically Active, Degradable, and Stretchable Transistors**, Helen Tran,[1] Vivian Feig[2], Kathy Liu[2], Zhenan Bao,[1*] [1]Department of Chemical Eng., [2]Department of Materials Science & Eng., Stanford University, Stanford, USA.

210. **Elastic Autonomous Self-healing Capacitive Sensor Based on a Dynamic Dual Crosslinked Chemical System**, Qiuhong Zhang, Xuzhou Yan, Simiao Niu, Zhiyuan Liu, Zhenan Bao,* Department of Chemical Eng., Stanford University, Stanford, CA 94305, USA.

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211. **Stimuli-responsive GNBA-based Gelators; Toward New Scaffolds for Tissue Engineering**, J. Baillet, A. Gaubert, L. Latxague, and P. Barthélémy, ARNA Laboratory, CNRS UMR 5320, University of Bordeaux, Bordeaux, France.

212. **Responsive Materials for Defense Applications**, Alice M. Savage, US Army Research Laboratory, Polymers Branch, Aberdeen Proving Ground, MD, USA.

213. **Leaf-Inspired Self-Healing Polymers**, S. Wang, Y. Yang, D. Davydovich, C.C. Hornat, X. Liu, M.W.

214. **Stimuli-Responsive Polymers for Artificial Muscles**, Yu Wan, Yifan Su, Myles Blurton, Michael J. Serpe, University of Alberta, Canada.

215. **Visible-Light Responsive Liquid Crystal Elastomers**, Zuleikha Kurji, Tobin Shea, Ashley Woodyard, Saint Mary's College of California, Moraga, CA, USA.

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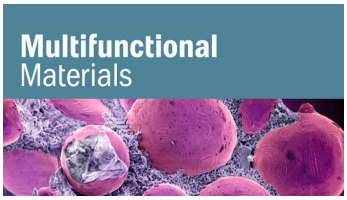

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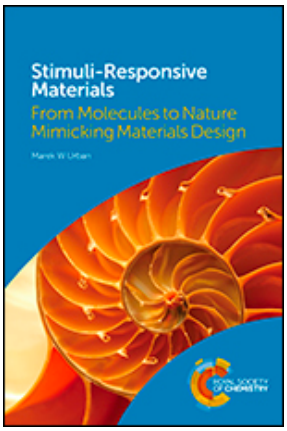

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