

PNG 2020 CONFERENCE PROGRAM

SUNDAY, MAY 17

16:00-18:00 PM **REGISTRATION**

MONDAY, MAY 18

OPENING REMARKS

8:30 AM Srinivasa Raghavan (Conference chair)
 Costas Patrickios (Chair of PNG)

PLENARY LECTURE 1

Chair: Robert Briber (University of Maryland)

8:45 AM New Insight into the Swelling and Deformation Theories of Neutral, Ionic, and Stimuli-responsive Networks and Gels, Their Network Mechanics and Solute Transport Behavior

[Nicholas A. Peppas](#) and Nathan R. Richbourg

9:35 AM Coffee Break

SESSION 1

Session chairs: Ferenc Horkay (NIH), Kevin Cavicchi (University of Akron)

9:45 AM Response of Polymer Gels to Electric Fields

[Srinivasa R. Raghavan](#) (University of Maryland)

10:15 AM Biomolecules for Non-biological Things: Materials Construction through Peptide Design and Solution Assembly

[Darrin J. Pochan](#) (University of Delaware)

10:45 AM Structural Studies of Star-polymer and Star-polymer Gels Exposed to Extreme Stretch

[Kell Mortensen](#)^a, Anine L. Borger^a, Jacob J.K. Kirkensgaard^a, Christopher J. Garvey^b, Kristoffer Almdal^c, Qian Huang^c, Ole Hassager^c. Masahiko Annaka^d
^aNiels Bohr Institute, University of Copenhagen, Denmark, ^bANSTO, Lucas Heights, Australia, ^cTechnical University of Denmark, Denmark, ^dKyushu University, Japan)

- 11:15 AM Tough Gels with Weak Bonds
[Alba Marcellan](#) (ESPCI Paris)
- 11:45 AM Structural Diversity and Assembly Dynamics of DNA-linked Nanoparticle Networks
[Francis Starr](#) (Wesleyan University)
- 12:15 PM LUNCH BREAK
- SESSION 2A**
Session chairs: Alba Marcellan (ESPCI Paris), Francis Starr (Wesleyan University)
- 13:15 PM Control of Mechanical Response in Physically Crosslinked Hydrogels
[Bryan D. Vogt](#) (The Pennsylvania State University)
- 13:45 PM Fracture Mechanics of Interpenetrating Rubbery/Glassy Polymer Networks
[Kenneth R. Shull](#)¹, Anthony Silvaroli,¹ Tyler Heyl,² Dongchan Ahn,³ Jeremy Beebe,³ Shane Mangold,³ Carl Reinhardt,³ Muzhou Wang² (¹ Department of Materials Science and Engineering, Northwestern University, ² Department of Chemical and Biological Engineering, Northwestern University, ³ The Dow Chemical Company)
- 14:15 PM Solvation and Gelation of Polymers in Inorganic Ionic Liquids
[Svetlana Sukhishvili](#) (Texas A&M University)
- 14:45 PM Tough Emulsion-templated Hydrogels: Absorption, Adsorption, and Shape Memory
[Michael S. Silverstein](#) (Technion, Israel)
- 15:15 PM Coffee Break
- 15:30 PM Modeling Dynamics of Pattern Formation and Restructuring in Constrained Hydrogel Membranes
[Yao Xiong](#), Olga Kuksenok (Clemson University)
- 15:50 PM Crack Propagation Behaviour of Polyurethane Thermoplastic Elastomers in Cyclic Fatigue

[Giorgia Scetta](#)^a Costantino Creton^a, Matteo Ciccotti^a, Patrick Heuillet^b (^aESPCI Paris, ^bLaboratoire de Recherches et de Contrôle du Caoutchouc et des Plastiques, France)

16:10 PM Stimuli Responsive Photonic Crystals

[Guillaume Votte](#), Yvette Tran, Christian Fretigny (ESPCI Paris, France)

16:30 PM Enhancing the Elastic Modulus of Polymer Networks by Tuning Strand Rigidity

[Minkyu Kim](#) (University of Arizona)

16:50 PM Viscoelastic Study of Weakly Associated Networks

[Takuya Katashima](#), Gaku Ishihara, Mitsuru Naito, Kanjiro Miyata, Ung-il Chung, Takamasa Sakai (The University of Tokyo, Japan)

17:10 PM Nonvolatile Polymer Gel Electrolytes for Thin-film Electrochemical Devices

[Kyung Gook Cho](#), Hae Min Yang, Hyun Je Kim, [Keun Hyung Lee](#) (Inha University, Republic of Korea)

17:30 PM Mechanically Reinforced Conducting Hydrogel and Its Application on Stretchable Strain Sensors

[Jinhwan Yoon](#) (Pusan National University, Republic of Korea)

SESSION 2B

Session chairs: Christopher N. Bowman (University of Colorado Boulder), Bing Xu

13:15 PM Electrical Conductivity of Poly(4-vinyl pyridine) Gel: Mechanism and Applications

[Evgenia Vaganova](#)¹, Dror Eliaz¹, Gregory Leitus², Alexei. Solomonov¹, Vladimir Lokshin³, Ulyana Shimanovitch¹, Vladimir Khodorkovsky³ (¹Department of Materials and Interface, ²Chemical Research Support Department, Weizmann Institute of Science, ³Aix Marseille Université, France)

13:45 PM Advances on Metal-Adhesive Polymers via Click Chemistry

[David Díaz Díaz](#) (Universidad de La Laguna, Spain and Universität Regensburg, Germany)

- 14:15 PM Periodically Grafted Amphiphilic Copolymers – An Alternate Strategy to Access Sub-10 nm Microphase Separation
[S. Ramakrishnan](#) (Indian Institute of Science, Bangalore)
- 14:45 PM Adaptive Colloidal Catalysts based on Stimuli-Responsive Microgels
Denise Kleinschmidt^{a,b}, Kok Hui Tana,^b, [Andrij Pich](#)^{a,b,c} (^aRWTH Aachen University, ^bDWI – Leibniz-Institute for Interactive Materials e.V., ^cAachen Maastricht Institute for Biobased Materials (AMIBM)).
- 15:15 PM Coffee Break
- 15:30 PM Designer Thermo-Reversible Soft Elastomers for Additive Manufacturing
[Liheng Cai](#) (University of Virginia)
- 15:50 PM Toughening Polymer Networks in Freezing Cycles via Radical Generation
[S. Kato](#), D. Aoki, H. Otsuka (Tokyo Institute of Technology, Japan)
- 16:10 PM Supercritical CO₂ Foaming of PCL Covalent Adjustable Networks: taking benefit from the thermoreversible Diels–Alder Cycloaddition
[Maxime Houbben](#), Jean-Michel Thomassin, Christine Jérôme (University of Liege, Belgium).
- 16:30 PM Sticker Cooperativity in Metallo-Supramolecular Polymer Gels
[Katharina Breul](#), Sebastian Kissel, Karl Fischer, Sebastian Seiffert (Johannes Gutenberg-Universität Mainz, Germany)
- 16:50 PM Host-Guest Chemistry: A Powerful Tool to Create Colored Multi-stimuli Responsive Hydrogels
[Patrice Woisel](#),¹Khaled Belal,¹François Stoffelbach,²Joel Lyskawa,¹Lieselot De Smet,^{1,3}Alba Marcellan,⁴Dominique Hourdet,⁴Richard Hooegenboom,³Victor De la Rosa³ (¹UNIV. LILLE, ²Université Pierre et Marie Curie, France, ³Ghent University, Belgium, ⁴École supérieure de physique et de chimie industrielles de la Ville de Paris)
- 17:10 PM Simple, Tunable, and Modular Synthesis of Star Polymer Networks
[Shintaro Nakagawa](#)¹, Xin Huang¹, Xiang Li², Mitsuhiro Shibayama², Naoko Yoshie¹ (¹Institute of Industrial Science, ²Institute for Solid State Physics, The University of Tokyo)

17:30 PM A Supramolecular Cross-linker for Responsive Dually Cross-linked Hydrogels: Rheological and Swelling behavior

[Sandrine Laquerbe](#)^a, Cédric Lorthioir^b, Christophe Meyer^c, Patrick Perrin^a,
Nicolas Sanson^a (^aSorbonne Université, ^bCollège de France, ^cESPCI Paris)

TUESDAY, MAY 19

PLENARY LECTURE 2

Chair: Jack Douglas (NIST)

8:45 AM Equilibrium and Dynamics of Charged Gels, and Topologically Frustrated Dynamics of Guest Charged Macromolecules

[M. Muthukumar](#) (University of Massachusetts Amherst)

9:35 AM Coffee Break

SESSION 3

Session chairs: Darrin J. Pochan (University of Delaware), Shi-Qing Wang (University of Akron)

9:45 AM Non-Linear-Viscoelasticity Characteristics of the Gelation Process

David Kogan and [Moshe Gottlieb](#) (Ben Gurion University, Israel)

10:15 AM Chemically Controlled Shape-morphing of Elastic Sheets

Raj Kumar Manna¹, Oleg E. Shklyaev¹, Howard A. Stone², [Anna C. Balazs](#)¹
(¹University of Pittsburgh, ²Princeton University)

10:45 AM Rheology of Soft Solids Just Beyond the Gel Point

[H. Henning Winter](#), University of Massachusetts, Amherst

11:15 AM Ionomer Networks

[Kevin Cavicchi](#) (University of Akron)

11:45 AM Micromechanics and Performance of Tunable Core-shell Thermoresponsive Microgels

[Gaio Paradossi](#), Letizia Oddo, Yosra Toumia, Ester Chiessi, Elisa Bassotti,

Fabio Domenici (Università degli Studi di Roma “Tor Vergata”)

12:15 PM LUNCH BREAK

SESSION 4A

Session chairs: Moshe Gottlieb (Ben Gurion University), Anna Balazs (University of Pittsburgh)

13:15 PM Tracer Diffusion of Soft Nanoparticles in All Polymer Nanocomposites
[Mark Dadmun](#) (University of Tennessee and Oak Ridge National Laboratory)

13:45 PM Hierarchical Design of Nanoparticle Network Materials
[Sinan Keten](#) (Northwestern University)

14:15 PM Coffee Break

14:30 PM Using Polymer Hydrogels to Improve High-Performance Concrete
[Kendra A. Erk](#) (Purdue University)

15:00 PM Experimental Evidence of Universal Behavior in Ion-induced Volume Phase Transition in Polyelectrolyte Gels
[Matan Mussel](#), Peter J. Basser, and Ferenc Horkay (NICHD, NIH)

15:20 PM Stimuli-responsive Polyelectrolyte Gels and the Role of Ion and Polymer Solvation
[Alexandros Chremos](#), Matan Mussel, Peter Basser, Ferenc Horkay (NICHD, NIH)

15:40 PM Gel Formation of Polysaccharides: Influence of Entanglement, Electrostatic and Hydrophobic Interactions
[Carlos G. Lopez](#) and Walter Richtering (RWTH Aachen University, Germany)

SESSION 4B

Session chairs: Vijay Johns (Tulane University), Emanuela del Gado (Georgetown University)

13:15 PM Hierarchical Polymer Networks and Homocomposite Gels Enabled by a New Class of Soft Dendritic Colloids

[Orlin D. Velev](#) (North Carolina State University)

13:45 PM Double-Network Concept for the Design of Tough and Multifunctional Hydrogels

[Jie Zheng](#) (University of Akron)

14:15 PM Coffee Break

14:30 PM Confinement Effects in Densely-grafted Polyelectrolyte Brushes: Thermodynamics, Electrostatics, and Transport

[Siddhartha Das](#) (University of Maryland)

15:00 PM Bioinspired Design of Peptide-based Antibacterial Gels to Prevent Implant-related Infections

[G. Fichman](#), J.P. Schneider (National Cancer Institute, NIH)

15:20 PM An Analysis of the Gel Point of Polymer Model Networks by Computer Simulations

[Michael Lang](#), Toni Müller (Leibniz-Institut für Polymerforschung Dresden, Germany)

15:40 PM Quantification of Phase Diagram and Structure of Polyelectrolyte Complex Coacervates with Lower Critical Solution Temperature Behavior

[Yuanchi Ma](#),¹ Samim Ali,¹ Yimin Mao,² Debra Audus,¹ Vivek Prabhu¹
(¹Material Measurement Laboratory, ²NIST Center for Neutron Research)

16:00 – 18:00 PM **POSTER SESSION**

Freezing-Induced Mechano fluorescence to Toughening Polymer Networks
[S. Kato](#), D. Aoki, H. Otsuka (Tokyo Institute of Technology)

Design of a Double Dynamic Model Network with Terpyridine Complex and Thermoresponsive Polymer Crosslinking Motifs
[Paola Nicoletta](#) and Sebastian Seiffert (Johannes Gutenberg University, Germany)

Understanding the Static and Dynamic Behaviour of Stars Forming Reversible Networks

[Kiran Suresh Kumar](#)^{1,2}, Toni Müller^{1,2}, Jens-Uwe Sommer^{1,2}, Michael Lang¹
(¹Leibniz-Institut für Polymerforschung Dresden, Technische Universität
Dresden, Germany)

Mechanoresponsive Polymers that Enable Color Change, Fluorescence and
Cross-linking Reaction in the Bulk State

[Kota Seshimo](#), Hio Sakai, Daisuke Aoki, Hideyuki Otsuka (Tokyo Institute of
Technology, Japan)

Influence of Combined Electric and Electrolytic Stress on the Hydrophobic
Behavior of Unfilled PDMS for High-voltage Outdoor Insulators

[Florian Praße](#)^{1,3}, Stefan Kornhuber¹, Brigitte Voit^{2,3}, Jens Weber¹ (¹Hochschule
Zittau/Görlitz, ²Leibniz-Institute of Polymer Research, ³TU Dresden)

Treatment of Heavy Metal Contaminated Sludge with Hydrogel

[Takehiko Gotoh](#), Akihiro Sasaya, and Satoshi Nakai (Hiroshima University,
Japan)

Separation of CO₂ from Moisture-Controlled Air Using Thermo-Responsive
Amine Gel

[Yoshimi Seida](#)¹, Takehiko Goto², Eiji Furuya³ (¹Toyo University, ²Hiroshima
University, ³Meiji University, Japan)

Roles of Dynamic Bonds in the Mechanical Property of Thermoplastic Elastomers

[Shintaro Nakagawa](#), Saki Kawana, Shuya Nakai, Naoko Yoshie, (¹Institute of
Industrial Science, The University of Tokyo, Japan)

Physico-chemical and Mechanical Characteristics of Quenched Polyampholyte
Hydrogels Based on 3-Acrylamidopropyl-trimethylammonium Chloride and
Sodium Salt of 2-Acrylamido-2-methyl-1-propanesulfonic Acid

[G.Toleutay](#)^{1,2}, E. Su³, O.Okay³, S. Kudaibergenov^{1,2} (¹Institute of Polymer
Materials and Technology, Kazakhstan, ²Satbayev University, Kazakhstan,
³Istanbul Technical University, Turkey)

Developing Structure Property Relationships of Thermoset and Polymer Glasses
through Instantaneous Normal Mode Analysis

[Timothy W. Sirk](#)¹, Robert M. Elder², I. Kriuchevskiy³, Alessio Zaccone^{3,4}
(¹U.S. Army Research Laboratory, ²U.S. Food and Drug Administration,
³University of Milan, Italy, ⁴University of Cambridge, U.K.)

Self-Interactions of a Virus Glycan Shield

[Ogharandunkun, Eric](#); Damtae, Elbethel; Chandran, Preethi L (Howard
University)

Dynamical Heterogeneity in Cross-Linked Epoxy Resins

[Wengang Zhang](#)^{1,2}, Zhaoxu Meng³, Francis W. Starr¹, Jack F. Douglas²

(¹Wesleyan University, Middletown, CT 06459, ²National Institute of Standards and Technology, ³Clemson University)

WEDNESDAY, MAY 20

SESSION 5

Session chairs: Uday Maitra (Indian Institute of Science), Bjorn Stokke (The Norwegian University of Science and Technology)

- 8:30 AM Amphiphilic Polymer Conetworks Based on Dynamically End-linked Star Block Copolymers: Structuring in Aqueous Media with Long-range Order
- [Costas S. Patrickios](#),¹ Demetris E. Apostolides,¹ Zoe Gregoriou,¹ Miriam Simon,² Michael Gradzielski² and Daniel Clemens³ (¹University of Cyprus, ²Technical University of Berlin. ³Institute for Soft Matter and Functional Materials, Helmholtz-Zentrum Berlin)
- 9:00 AM Design of Polyampholytic and Aptamer-Containing Hydrogels for Stimuli-Responsive Behavior
- [Jules John Magda](#) (University of Utah)
- 9:30 AM Coffee Break
- 9:45 AM Lubricating Polymer Hydrogels and Hydrogel Composites
- [Nir Kampf](#), Weifeng Lin, Monika Kluzek, Noa Iuster, Eyal Shimoni, Ronit Goldberg and Jacob Klein (Weizmann Institute of Science)
- 10:15 AM Enzymatic Noncovalent Synthesis in Cellular Environment
- [Bing Xu](#) (Department of Chemistry)
- 10:45 AM Tuning the Aqueous Solubility of Charged Polymers
- [Heikki Tenhu](#) (University of Helsinki, Finland)
- 11:15 AM Photopolymerized Semicrystalline Polymer Networks for Additive Manufacturing
- Kimberly K. Childress¹, Marvin D. Alim², Juan J. Hernandez¹, Jeffrey W. Stansbury^{1,3}, [Christopher N. Bowman](#)^{1,2}
- (¹Department of Chemical and Biological Engineering, University of Colorado Boulder, ²Materials Science and Engineering Program, University of

Colorado Boulder, ³Department of Craniofacial Biology, University of Colorado Denver)

- 11:45 AM Self-Assembly Model of Entanglement and Glass-Formation
[Jack F. Douglas](#) (NIST)
- 12:15 PM LUNCH BREAK
- SESSION 6A**
Session chairs: Namita R. Choudhury (RMIT University), Evgenia Vaganova (Hebrew University)
- 13:15 PM Polymers of High Molecular Weight as a Chain Network in Liquid (above T_g and T_m) and Solid (Glassy or Semicrystalline) States: Their Molecular Mechanics
[Shi-Qing Wang](#) (The University of Akron)
- 13:45 PM Probing Microdynamics of Highly Filled Styrene Butadiene Rubber Using X-ray Photon Correlation Spectroscopy
[Mark D. Foster](#) (The University of Akron)
- 14:15 PM Generating Elastomer and Hydrogel Substrate-anchored Layers with Spatial Variation of Crosslink Density
[Jan Genzer](#) (North Carolina State University)
- 14:45 PM Bile Salt derived Metallohydrogels and their Applications
[Uday Maitra](#) (Indian Institute of Science, Bangalore)
- 15:15 PM Controlled Degradation of Polymer Networks: from Surface Erosion to Reverse Gelation
[Vaibhav Palkar](#), Chandan K. Choudhury, Olga Kuksenok (Clemson University)
- 15:35 PM Dual-crosslinked Hydrogels with Increased Resistance to Fracture
[L. Debertrand](#)^a, G.E. Sanoja^a, J. Comtet^a, T. Naritaa,^b C. Creton^{a,b}
^aLaboratory of Soft Matter Science and Engineering, PSL Research University - ESPCI Paris - CNRS, France, ^bGlobal Station for Soft Matter, GI-CoRE, Hokkaido University, Japan)

15:55 PM The Tendomer: A Model System for Topological Interlocked Systems

[Toni Müller](#)^{1,2}, Jens-Uwe Sommer^{1,2}, Michael Lang¹ (¹Leibniz Institute of Polymer Research Dresden, ²Technische Universität Dresden, Germany)

16:15 PM Quantitative Detection of Damage in Soft Materials Using Mechanofluorescence

[Victoria Waltz](#)¹, Juliette Sloopman¹, Josh Yeh¹, Bruno Bresson¹, Robert Göstl², Costantino Creton¹ (¹ESPCI Paris, France, ²Leibniz-Institut für Interaktive Materialien Germany)

16: 35 PM Focus on Fracture Processes in Model Silica Nanocomposite Gels by Shear Wave Elastography

[H. Le Blay](#)^{1,2}, T. Deffieux², M. Tanter², A. Marcellan¹ (¹Laboratoire de Sciences et Ingénierie de la Matière Molle, ESPCI Paris, Université PSL, Sorbonne Université, ²Institute Physics for Medicine Paris, Inserm U1273, ESPCI Paris.)

16: 55 PM Functional Supramolecular Polymers and Topologically Elastic Linkers to Control Structure, Properties, and Performance in Polymer Networks

[Jonathan C. Barnes](#) (*Washington University*)

17:15 PM Microstructure of Adaptive Double Networks

[Olga E. Philippova](#), Andrey V. Shibaev (Moscow State University, Russia)

SESSION 6B

Session chairs: Heikki Tenhu (University of Helsinki), Andrij Pich (University of Aachen)

13:15 PM Mechanisms in Specific Molecular Responsive Hydrogels

Natasa Zurzul¹, Eleonora P. Jonasova¹, Arne Ilseng², Victorien Prot², Bjørn H. Skallerud², [Bjørn T. Stokke](#)¹

(Dept of Physics, The Norwegian University of Science and Technology, ²Dept. of Structural Engineering, The Norwegian University of Science and Technology)

13:45 PM Cell Volume Control and Osmosis Driven Cell Movement

[Yoichiro Mori](#) (University of Pennsylvania)

- 14:15 PM Confinement Induced Percolation-Wetting Transition in Physical Cross-Link Network of Amphiphilic Block Copolymers Films
- Namrata Salunke¹, Robert Weiss¹, [Alamgir Karim](#)^{1,2} (¹University of Akron, ²University of Houston)
- 14:45 PM Toward Mapping the Mechanics of Newborn Mouse Joint Cartilage
- [Emilios K. Dimitriadis](#)¹, Edward Mertz², Preethi L. Chandran³ and Ferenc Horkay⁴ (¹ BEPS, NIBIB, NIH ² SQITS, NICHD, NIH, ³Howard University)
- 15:15 PM Properties of Cross-linked Methylcellulose Gels
- [Svetlana Morozova](#)¹, McKenzie L. Coughlin², Julia T. Early², S. Piril Ertem², Theresa M. Reineke², Frank S. Bates², Timothy P. Lodge² (¹Case Western Reserve University, ²University of Minnesota)
- 15:35 PM Synthesizing Charge-optimized Polyelectrolytes for Protein Binding and Gelation
- [Nicholas D. Posey](#), Julia Danischewski, Michael Lueckheide, Yuanchi Ma, Kathryn Beers, Vivek Prabhu
- 15:55 PM Robust and Flexible Gel-Sheet that can Rapidly Absorb Water and Blood
- [Hema Choudhary](#)¹, Matthew B. Dowling², Srinivasa R. Raghavan¹ (¹University of Maryland, ²Gel-e, Inc.)
- 16:15 PM Vaterite/PEG-based scaffolding structures for bone-tissue engineering
- [Elena Stengelin](#)¹, Alena Kuzmina¹, Guillermo L. Beltramo², Martha F. Koziol¹, Laura Besch³, Romina Schröder³, Ronald E. Unger⁴, Wolfgang Tremel³, Sebastian Seiffert¹ (¹Institute of Physical Chemistry, Johannes Gutenberg-University, ²Jülich Forschungszentrum GmbH, ³Institute of Inorganic Chemistry and Analytical Chemistry, Johannes Gutenberg-University, ⁴Institute of Pathology, Johannes Gutenberg-University)
- 16: 35 PM Quantification of Cell Distributions on Surfaces with Varying Degree of Softness
- [Alexandros Chremos](#)¹, Emilios K. Dimitriadis,² Ferenc Horkay¹, Stella Alimperti³ (¹NICHD, ²NIBIB, ³American Dental Association Science and Research Institute)
- 16: 55 PM One Theory for Hyperbranched and Crosslinking Gelation, Overview and

Perspectives

[Ivan Kryven](#) (Utrecht University, The Netherlands)

17:15 PM *In Vivo* Supramolecular Self-assembly of Peptides for Nanomedicine

[Yuan Gao](#) (National Center for Nanoscience and Technology)

THURSDAY, MAY 21

SESSION 7

Session chairs: Orlin Velev (North Carolina State University), Yoichiri Mori (University of Pennsylvania)

8:30 AM Multiaxial Analysis of Nonlinear Mechanical Properties of Gels and Elastomers

[Kenji Urayama](#) (Kyoto Institute of Technology)

9:00 AM Topology, Softness and Rigidity in gel Networks

[Emanuela Del Gado](#) (Georgetown University)

9:30 AM Coffee Break

9:45 AM Biomimetic Composite Gel Model of Cartilage

[Peter Bassler](#), Ferenc Horkay (NICHD/NIH)

10:15 AM Imaging Whole Eukaryotic Cells in 3D at the Nanoscale with Electron Probes

[Richard D. Leapman](#), Matthew D. Guay, Qianping He, Maria A. Aronova (National Institute of Biomedical Imaging and Bioengineering, National Institutes of Health)

10:45 AM Non-linear Responses of Filamentous Networks to Uniaxial Stress

Anne van Oosten^{1,2}, Xingyu Chen^{3,4}, Vivek Shenoy^{3,4}, [Paul A. Janmey](#)^{1,3,5}
(¹Institute for Medicine and Engineering, University of Pennsylvania, ²Leiden Academic Centre for Drug Research, Leiden University, ³Center for Engineering Mechanobiology, University of Pennsylvania, ⁴Department of Materials Science and Engineering, University of Pennsylvania, ⁵Departments of Physiology and Physics, University of Pennsylvania)

11:15 AM Biopolymer Networks that form a Skin over Vesicles and Hook them to

Clusters through Hydrophobic Interactions

[Vijay John](#) (Tulane University)

- 11:45 AM Engineering of Elastomeric Gels with Tailored Properties
- [Namita R. Choudhury](#)¹, Rajkamal Balu,¹ Naba Dutta¹, Andrew Zannettino², Anita J. Hill³
- (¹RMIT University, Melbourne, ²University of Adelaide, ³CSIRO Materials Science and Engineering, Australia)
- 12:15 PM LUNCH BREAK
- SESSION 8A**
Session chairs: Kenji Urayama (Kyoto Institute of Technology), Mark D. Foster (The University of Akron)
- 13:15 PM Complexation Phenomena within Polyelectrolyte Microgels
- [Matthew Libera](#) (Stevens Institute of Technology)
- 13:45 PM Conformational Plasticity and Resilience in Intrinsically Disordered Protein: Gel Network Structure Formation and Conformational Modulation in Resilin-mimetic Peptides
- [Naba K. Dutta](#)¹, Rajkamal Balu¹, Anita J. Hill², Namita Roy Choudhury¹
(¹RMIT University, Australia, ²CSIRO Manufacturing, Australia)
- 14:15 PM Evaluating Network Structures of Hydrogels Designed for Biomedical Applications by Mechanical Testing and Low Field NMR
- [Stevin H. Gehrke](#), Alan M. Allgeier, Josephine V. Hriscu, Faiz Mandani, Joseph M. Scalet, Murilo T. Suekuni (University of Kansas)
- 14:35 PM Understanding Effect of Charge Density on the Transport of Water in Poly Acrylamide co Acrylic Acid Gels: A Combine Study of Small Angle Neutron Scattering and Low Field NMR
- [Velencia J Witherspoon](#)¹, Tyler Martin², Ferenc Horkay¹ (NIH, NIST)
- 14:55 PM Coffee Break
- 15:10 PM A simple Way to Synthesize a Protective ‘Skin’ around a Hydrogel

[Sai Nikhil Subraveti](#) and Srinivasa R. Raghavan (University of Maryland)

15:30 PM Single-step Synthesis of Alginate Microbeads with a Polymer Shell: A New Way to Protect Encapsulated Cells

[So Hyun Ahn](#), Srinivasa R. Raghavan, William E. Bentley (University of Maryland)

15:50 PM A Guided Soft Thermo-Electric Harvester Fuelled by Elastic Leidenfrost

[Sreepathy Sridhar](#)¹, Zuankai Wang², Steven Wang², Ben Bin Xu¹
(¹Northumbria University, UK, ²University of Hong Kong)

16:10 PM Prediction of the Morphology and Mechanical Properties of Self-Assembled Amphiphilic Polymer Conetworks Using Langevin Dynamics Simulations

[Constantina K. Varnava](#),¹ Costas S. Patrickios,¹ Yuji Higuchi² and Takamasa Sakai² (¹University of Cyprus, ²The University of Tokyo, Japan)

16:30 PM Controlling the Degradation of Polymer Networks through Mechanophore Incorporation and Activation

[Junpeng Wang](#) (The University of Akron)

SESSION 8B

Session chairs: Henning Winter (University of Massachusetts), Alamgir Karim (University of Houston)

13:15 PM Toward Synthetic Macromolecular Constructs of Excitable and Motile Systems

[Gary Wnek](#) (Case Western Reserve University)

13:45 PM Wood Nanotechnologies

[Liangbing Hu](#) (University of Maryland)

14:15 PM Temperature-Dependent Assembly Structure of Sulfobetaine-Based Polyzwitterions via SANS

[Phillip D. Pickett](#), Michael Lueckheide, Yuanchi Ma, Vivek M. Prabhu (NIST)

14:35 PM Deconvolving Multimodal Correlation Curves from Dynamic Light Scattering

[Chandran, Preethi L](#) (Howard University)

- 14:55 PM Coffee Break
- 15:10 PM Microstructure Dependent Mechanical Properties of Thermoplastic Elastomeric Gels
[Santanu Kundu](#), Satish Mishra, Rosa Maria Badani Prado (Mississippi State University)
- 15:30 PM Puncture Mechanics of Ultra-soft Hydrogels at Elasto-cappillary Length Scale
[Yuanyuan Wei](#)¹, Costantino Creton^{1,2} and Tetsuharu Narita^{1,2} (¹ CNRS UMR 7615, ESPCI Paris, ² Hokkaido University, Japan)
- 15:50 PM Tough and Robust Hydrogels: Self-Reinforcement by Strain-Induced Crystallization
[Koichi Mayumi](#), Chang Liu, Jiang Lan, Hideaki Yokoyama, Takeshi Fujiyabu, Takamasa Sakai, and Kohzo Ito (The University of Tokyo, Japan)
- 16:10 PM The Linear Viscoelastic Spectrum and Non-affine Rearrangements in Soft Gel Networks
[Minaspi Bantawa](#)¹, Mehdi Bouzid², Bavand Keshavarz³, Michela Geri³, Thibaut Divoux^{4,5}, Gareth McKinley³ and Emanuela Del Gado¹ (¹ Institute for Soft Matter Synthesis and Metrology, Georgetown University, ²Universite Paris Sud, Orsay, France, ³Hatsopoulos Microfluidics Laboratory, MIT, ⁴MultiScale Material Science for Energy and Environment, ⁵Department of Civil and Environmental Engineering, MIT)
- 16:30 PM Designing Nanostructured Soft Interfaces: Focus on Shape Changes and Spreading of Nanogels
Chandan K. Choudhury, Vaibhav Palkar, [Olga Kuksenok](#) (Clemson University)

