


## Program

3<sup>rd</sup> International Conference on  
**POLYMER SCIENCE  
AND ENGINEERING**

October 21-23, 2024 | Boston, MA (In-Person)

October 24, 2024 (Virtual)

  
Boston Marriott Newton Hotel  
2345 Commonwealth Avenue  
Newton, MA



**Time Zone:**

GMT-4 Eastern Daylight Time (EDT)



[secretary@polymersmeeting.com](mailto:secretary@polymersmeeting.com)



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## Meeting Links for Live Streaming on Zoom

### Time Zone: GMT-4 Eastern Daylight Time (EDT)

As the conference will be held in hybrid format, the virtual attendees can access the in-person presentations and queries can be asked through zoom chat box

Registered participants can join the meeting any time using the link below.

### October 21-24, 2024 | In-Person/Virtual

<https://us06web.zoom.us/j/84430100602?pwd=t06GQCzXydCC9KXz2AlKsb8YyoZl0u.1>

Meeting ID: **844 3010 0602**

Passcode: To **665428**

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### Publishing Partner: Polymers Advanced Technologies



**Special Issue:** We are excited to announce that Polymers-2024 has established a full collaboration with the Polymers Advanced Technologies journal for the publication of a special issue. This issue aims to feature papers stemming from discussions and discoveries showcased at the Third International Conference on Polymer Science and Engineering (Polymers-2024) held in Boston, Massachusetts, USA, from October 21 to 24, 2024.

08:20-08:40 Registrations & Badge Pickup  
 08:40-08:50 Opening Remarks & Introduction

**Plenary Presentations**

**Moderator: Raymond Thompson**, Vista Engineering LLC, Hoover, AL

08:50-09:30



**Xuanhe Zhao**, Massachusetts Institute of Technology, Cambridge, MA  
 Merging Humans and Machines with Polymers

**Keynote Presentations**

09:30-10:00



**Raymond Thompson**, Vista Engineering LLC, Hoover, AL  
 Commercialization of Composite Technologies and Products

10:00-10:30



**Nianqiang Wu**, University of Massachusetts Amherst, Amherst, MA  
 Engineering Polymer-ceramic Interface in Solid-state Composite Electrolytes of Batteries

10:30-10:50 Coffee Break @ Salon D Grand Ballroom Foyer

10:50-11:20



**Phillip Choi**, University of Regina, Canada  
 Polymer Free Volume and its Connection to Polymer Dynamics

11:20-11:50



**Jie Zheng**, University of Akron, Akron, OH  
 Advanced Molecular Design and Applications of Multifunctional Hydrogels

**Plenary Presentation (Pre-recorded talk)**

11:50-12:30



**Liming Dai**, University of New South Wales, Australia  
 Multidimensional Macromolecules for Energy Conversion: From 1D Conjugated Polymers to 3D Carbon Nanomaterials

12:30-12:40 Discussion Time & Group Photo

12:40-13:40 Lunch Break @ Commonwealth ~ 2nd Floor

## Oral Presentations

### Polymer Applications

**Chair: Yanfei Xu**, University of Massachusetts Amherst, Amherst, MA

- 13:40-14:00 **Yanguang Zhang**, National Research Council of Canada (NRC), Canada  
Fully Solution-processed Polymeric Multilayer Piezoelectric Devices
- 14:00-14:20 **Yaquan Wang**, Queen Mary University of London, United Kingdom  
Versatile and Recyclable Conductive Hydrogels for Flexible Electronics
- 14:20-14:40 **Subramanian Venkatachalam**, IIT Madras, India  
Machine Learning Optimization for Designing Polymer Based Multilayer Microwave Absorber
- 14:40-15:00 **Shawn Putnam**, University of Central Florida, Orlando, FL  
Impact of Material Stiffness on the Dynamic Wetting and Deformation of Microstructured Polymer Surfaces
- 15:00-15:20 **Donghong Yu**, Aalborg University, Denmark  
Non-fully Conjugated Polymers for Efficient and Thermally Stable Solar Cells
- 15:20-15:40 **Marthe Nees**, University of Antwerp, Belgium  
The Nco Cycle: A Two-step Complete Recycling Process for Polyurethanes
- 15:40-16:00 **Coffee Break** @ Salon D Grand Ballroom Foyer
- 16:00-16:20 **Yanfei Xu**, University of Massachusetts Amherst, Amherst, MA  
Understanding Thermal Transport Properties in Polymers
- 16:20-16:40 **Eduardo Ruiz**, Polytechnique Montreal, Canada  
Eco-friendly Reinforced Green-plastics from Waste Tires and Renewable Resources
- 16:40-17:00 **Rocio Guadalupe Casanas Pimentel**, Instituto Politecnico Nacional, Mexico  
Extracellular Matrix-derived Biomaterials for Tissue Engineering
- 17:00-17:20 **Tanyaradzwa Muzata**, Hampton University, Hampton, VA  
Development of EMI Shielding Materials from Virgin and Postconsumer Derived Polymers

### 17:20-18:00 Poster Presentations and Drinks @ Grand Ballroom Foyer

- P-01 **Nadarajah Vasanthan**, Long Island University, Brooklyn, NY  
Surface Modification and Antimicrobial Properties of Cellulose Nanocrystals and its Impact on Crystallization of Poly[(R)-3-hydroxybutyrate]
- P-02 **Przemyslaw Rybinski**, Jan Kochanowski University of Kielce, Poland  
Influence Cage Nanofillers, on Fire Hazard, Including Toxicity of Gaseous Destructs, Emitted during Thermal Decomposition of Polyurethane Foam
- P-03 **Mohak Desai**, University of Connecticut, Storrs, CT  
Scale up of High Temperature Polyimide and Polyolefin Dielectrics, Film Processing and Testing
- P-04 **Ningel Omar Gama Castaneda**, Instituto Politecnico Nacional, Mexico  
Polymeric Nanofibers as an Antibiotic Delivery System for the Treatment of Resistant Infections

**End of Day-1**

## Keynote Presentations

**Moderator: Ping Zhang**, University of Macau, Macau

08:50-09:20



**Guoqiang Li**, Louisiana State University, Baton Rouge, LA  
Bioinspired Self-healing Thermoset Polymers

09:20-09:50



**Tianbo Liu**, University of Akron, Akron, OH  
Block Copolymers with Rigid Components – Unique Assembled Structures from New Packing Pathways

09:50-10:20



**Qing Wang**, Pennsylvania State University, State College, PA  
Dielectric Polymers Under Elevated Temperatures and High Electric Fields

10:20-10:40

Coffee Break

@ Salon D Grand Ballroom Foyer

## Oral Presentations

## Polymer Properties

10:40-11:00

**Michael L. Hall**, SABIC, Selkirk, NY  
Application of *In-Situ* Reaction Monitoring to Achieve Greater Process Understanding

11:00-11:20

**Mark A. Arnould**, Bruker, Billerica, MA  
Polymer Characterization Using MALDI-TOF Mass Spectrometry and Tandem Mass Spectrometry

11:20-11:40

**Ping Zhang**, University of Macau, Macau  
Polymeric Scale Inhibitor for Mineral Scale Control

11:40-12:00

**Qihan Liu**, University of Pittsburgh, Pittsburgh, PA  
Independent Characterization of the Elastic and Mixing Free Energy Densities of Swellable Polymer Networks

12:00-12:20

**Igor Sokolov**, Tufts University, Medford, MA  
Mechano-spectroscopy of Polymers with Nanometer Spatial Resolution

12:00-12:40

**Cheng Yan**, Southern University and A&M College, Baton Rouge, LA  
Optimizing Shape Memory Vitrimers: A Machine Learning Approach to Balancing High Glass Transition Temperature and Recycling Efficiency

12:40-13:40

Lunch Break

@ Commonwealth ~ 2nd Floor

**Chair: Ian A. Nicholls**, Linnaeus University, Sweden

- 13:40-14:00 **Rana Alimohammadzadeh**, Mid Sweden University, Sweden  
Sustainable Organocatalytic Modification of Biopolymers Such as Cellulose and Nanocellulose
- 14:00-14:20 **Koji Matsuoka**, Saitama University, Japan  
Use of Polymeric Compounds to Enhance the Biological Activities
- 14:20-14:40 **Ian A. Nicholls**, Linnaeus University, Sweden  
Hierarchical Nanostructuring of Biopolymers – Strategies and Applications
- 14:40-15:00 **Kei Toyota**, Panasonic Holdings Corporation, Japan  
Production of One-dimensional Organic-inorganic Hybrid Polymer Via the Sol-gel Reaction of 3-Glycidoxypropylmethylmethoxysilane on a Liquid-liquid Interface
- 15:00-15:20 **Anamaria Barrera Bogoya**, LCPM, Universite de Lorraine, France  
New Poly (ionic liquids) with different Alkyl Chains for CO<sub>2</sub> Capture
- 15:20-15:40 **Piyachat Chuysinuan**, Chulabhorn Research Institute, Thailand  
Injectable Eggshell-derived Hydroxyapatite-incorporated FibroinAlginate Composite Hydrogel for Bone Tissue Engineering
- 15:40-16:00 **Rathanawan Magaraphan**, Chulalongkorn University, Thailand  
Structure and Properties of PLA/Mevoh-clay Nanocomposite Processed through Candy-floss Spinning and Extrusion
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- 16:00-16:20 **Coffee Break** @ Salon D Grand Ballroom Foyer
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- 16:20-16:40 **Farzaneh Omidvarnia**, Technical University of Denmark, Denmark  
Mechanical Performance of 3D Printed Fiber-reinforced Polymer Composites
- 16:40-17:00 **John Tsavalas**, University of New Hampshire, Durham, NH  
Controlled Valence Multilobe Particles & Routes to Robust Particleparticle Linking During Self-assembly, Post-3D-printing
- 17:00-17:20 **Jianyong Ouyang**, National University of Singapore, Singapore  
Conducting Polymer Sensors for Food Processing and Digestion Monitoring
- 17:20-17:40 **Asiya Rezzouq**, Hassan II University of Casablanca, Morocco  
Enhancing Cellulose Acetate Films: Impact of Glycerol and Ionic Liduid Plasticisers
- 17:40-18:00 **Anindya Deb**, Indian Institute of Science, India  
Insights into the Behaviors of Polymer-based Structural Solutions in Lightweighting of Transportation Systems

**End of Day-2**

**Oral Presentations**

**Materials & Composites**

**Chair: Matthew J. Herman**, Los Alamos National Laboratory, Los Alamos, NM

- 08:50-09:10 **Matthew J. Herman**, Los Alamos National Laboratory, Los Alamos, NM  
Biologically Inspired Mechanical Reinforcement of Plastic Bonded Explosives
- 09:10-09:30 **Oukkass Saad**, Hassan II University of Casablanca, Morocco  
The Application of Activated Carbon in Extracting and Separating Methylene Blue, Alongside Acid Yellow 61, is Facilitated through the Use of an Inclusion Polymer Membrane
- 09:30-09:50 **Zafer Kazanci**, Queen's University Belfast, United Kingdom  
Energy Absorption and Compressive Analysis of 3D Printed Dualmaterial Auxetic Structures
- 09:50-10:10 **Fang Xie**, Imperial College London, United Kingdom  
Significantly Boosted Photoelectrochemical Water Splitting performance by Plasmonic Enhanced Semiconducting Oxide@MOF Composite Photoelectrodes
- 10:10-10:30 **Yahya Ahmed Ismail**, University of Calicut, India  
Mimicking Proprioception: Polyaniline/Hydrogel Hybrid Systems as Self sensing Macromolecular Motors
- 10:30-10:50 **Coffee Break** @ Salon D Grand Ballroom Foyer
- 10:50-11:10 **Rund Abu-Zurayk**, The University of Jordan, Jordan  
Mixed Matrix Membranes Based on Polyvinylidene Fluoride (PVDF)/Nanoclay Composites: Structure-properties-performance Relationship
- 11:10-11:30 **Cagatay Gungor**, Canakkale Onsekiz Mart University, Turkey  
Hybrid Combination and Characterization of PLA/PEG 4000 Nanofiber Prepared with the SBS Method and Calf Leather for the Improvement and Development of the Material Structure of Percussion Instruments Belonging to Traditional Music Culture
- 11:30-11:50 **Umar Raza**, University of Connecticut, Storrs, CT  
Chronic working Implantable Soft Electro-ionic Polymer Actuators
- 11:50-12:10 **Abderrahim Bouftou**, Hassan II University of Casablanca, Morocco  
Monitoring Tomato Sauce Freshness with Biodegradable Labels Containing Thymol and Red Cabbage Anthocyanin
- 12:10-12:30 **Doha Belfadil**, Hassan II University of Casablanca, Morocco  
Preparation and Characterization of Dialdehyde Starch by New Method in Acidic Conditions
- 12:30- **Lunch and Departures** @ Commonwealth ~ 2nd Floor

**End of Day-3**



## Delegates

**Chen Jian-Yi**, Industrial Technology Research Institute, Taiwan

**Sushant Roy**, ExxonMobil, Houston, TX

**Ryan Berry**, Authority Health, Detroit, MI

**Stephen Schmidt**, Braskem, Pittsburgh, PA

**Pashupati Pokharel**, Altria Client Services, Richmond, VA

**Joseph Zilberman**, ICL Group LTD., Israel

**Matt Warner**, Hexcel Corporation, Salt Lake City, UT

**Min Kyu Lee**, University of California (UCLA), Los Angeles, CA

**Enock Heyman**, Avery Dennison, Mentor, OH

**Hao Dang**, Boston Scientific, Marlborough, MA

**Rosangel Ramos Espinoza**, Boston Scientific, Marlborough, MA

**Jingjing Bi**, INVISTA, Longview, TX





07:50-08:00 Opening Remarks &amp; Introduction

### Keynote Presentations

**Chair: Emiliano Laudadio**, Polytechnic University of Marche, Italy

08:00-08:30



**Harry R. Allcock**, Penn State University, University Park, PA  
Extending the Possibilities of Polymer Synthesis by the use of Macromolecular Substitution

08:30-09:00



**Reinhold W. Lang**, Johannes Kepler University Linz, Austria  
Perspectives for an 'All-circular' Plastics & Carbon Economy

### Oral Presentations

09:00-09:20

**Giuseppina Raffaini**, Politecnico di Milano, Italy  
Molecular Dynamics Simulations of the Adsorption of Lysine-based Oligopeptides on Double-stranded DNA for Gene Delivery Purposes

09:20-09:40

**Emiliano Laudadio**, Polytechnic University of Marche, Italy  
An Efficient Delivery System Based on Poly Lactic-co-glycolic Acid for Antioxidant Nanoformulations

09:40-10:00

**Hemant Mittal**, Dubai Electricity & Water Authority, Research & Development Centre, United Arab Emirates  
Adsorption of Rhodamine B Dye Using N-isopropylacrylamide and Acrylic Acid-based Superporous Hydrogels-adsorption Isotherm and Kinetics Studies

10:00-10:20

**Sung Hee Joo**, MSU Denver, Denver, CO  
Bio-based Plastic Polymers in a Circular Economy

10:20-10:40

**Ricardo Acosta Ortiz**, Centro de Investigación en Química Aplicada, Mexico  
Development of Jute-epoxy Biocomposites Using the Epoxy/Thiol-ene Photopolymerization Technique

10:40-10:50

**Poster Presentation**  
**Hanan Fawaz Akhdar**, Imam Mohammad Ibn Saud Islamic University, Saudi Arabia  
Assessment of the Effect of Different Composites on the Photon and Neutron Shielding Capabilities of Polyurethane Using Geant4 Toolkit

10:50-11:10

Break

**Chair: Wen Zhong**, University of Manitoba, Canada

11:10-11:30

**Mariechristine Durrieu**, Bordeaux University, France  
Controlling Differentiation of Human Adult Stem Cells Using Bioactive Disordered Cues on Polymer Surfaces

- 11:30-11:50 **Severine A.E. Boyer**, Mines Paris PSL CNRS, France  
Revisit Model-experiment for High-pressure Solidification of Polymers
- 11:50-12:10 **Anima Bose**, University of Houston, Houston, TX  
An Approach of Functionalizing PTFE/Nafion Compatible Composite Membrane for Proton Exchange Membrane Fuel Cell
- 12:10-12:30 **Michal Rezanka**, Technica University of Liberec, Czech Republic  
Cyclodextrin Polymers as Sorbents for PFAS
- 12:30-12:50 **Robert Guidoin**, Universite Laval, Canada  
Glutaraldehyde Treated vs Decellularized Donkey Pericardium as Select Source to Manufacture Percutaneous Heart Valves: A Proof of Concept
- 12:50-13:10 **Assma El Kaddouri**, University of Lorraine, France  
A Coupled *Ex-situ/In-situ* Approach to Investigate Ionomer Membrane Performances and Durability for Fuel Cell Application
- 13:10-13:20 **Poster Presentation**
- Luisa Rodrigues Molina Dona**, Universidade Federal de Sao Paulo, Brazil  
The Use of Pectin as a Biomedical Application Biopolymer
- 13:20-13:40 **Maria Ott**, Martin-Luther-University Halle-Wittenberg, Germany  
How Transient Macromolecular Interactions Shape Pathways of Peptide Self-assembly

## Keynote Presentation

**Chair: Huiyan Li**, University of Guelph, Canada

13:40-14:10



**Vistasp Karbhari**, University of Texas at Arlington, Arlington, TX  
Effect of Organoclay Fillers on Durability of Pultruded Composites

## Oral Presentations

- 14:10-14:30 **Wen Zhong**, University of Manitoba, Canada  
Multifunctional Hydrogels Developed from Natural Resources
- 14:30-14:50 **Huiyan Li**, University of Guelph, Canada  
Intracellular Metal Enhanced Fluorescence for Highly Sensitive Cell Analysis Using a Hydrogel-based Microarray
- 14:50-15:10 **Gonzalo Quezada**, Universidad del Bio-Bio, Chile  
Use of Biopolymers has Candidate Flocculants in Thickeners in Mining Operations Using Molecular Simulation Approach
- 15:10-15:30 **Juliana Cardinali Rezende**, Federal University of ABC, Brazil  
The Analysis of the Transcriptional Profile of *Pseudomonas* sp. LFM046 in Different Culture Conditions for Biopolymers/PHAs Production
- 15:30-15:50 **Zachary Frome Burton**, Michigan State University, East Lansing, MI  
Origin of Life: tRNA is an Ordered RNA Polymer at the Inception of Life
- 15:50-16:10 **Emil P. Kartalov**, Naval Postgraduate School, Monterey, CA  
Neutrally Buoyant Ergonomic Segmented Glass-ceramic Composite Chocobar K4 Diving Suit with Superior Thermal Protection

16:10-16:20 Break

**Chair: Priyanka Sharma**, Western Michigan University, Kalamazoo, MI

- 16:20-16:40 **Javier Vallejo Montesinos**, University of Guanajuato, Mexico  
Study Concerning Nitrogenated Heterocycles Compounds Anchored to Titanium Dioxide Particles Used as Fillers in Several Polymer Matrices: Thermomechanical Behaviour
- 16:40-17:00 **Claudia Romero**, Instituto Politecnico Nacional, Mexico  
Starch Modification and its Characterization
- 17:00-17:20 **Ana Beatriz Morales Cepeda**, Tecnologico Nacional de Mexico, Mexico  
Silver Nanowires in the Xylem/Phloem of Plants to Improve Electrical Conductivity
- 17:20-17:40 **Priyanka Sharma**, Western Michigan University, Kalamazoo, MI  
Extraction and Analysis of Carboxycellulose Nanofibers from Untreated Plant Fibers Using Updated TEMPO-mediated Oxidation
- 17:40-18:00 **Laura Romero-Zeron**, University of New Brunswick, Canada  
Self-assembling of Xanthan Gum and Vermicompost Tea for Agricultural
- 18:00-18:20 **Dmitri Kilin**, North Dakota State University, Fargo, ND  
From Photodegradation and Photopolymerization to Photoinduced Charge Redistribution in Tightly Packed Polymer Models
- 18:20-18:40 **Takehisa Hanawa**, Tokyo University of Science, Japan  
Feasibility Study on the Application of Pectin to Pharmaceutical Additives
- 18:40-19:00 **Masafumi Yamato**, Tokyo metropolitan university, Japan  
Innovations in Nanoparticle-containing Gas Separation Membranes
- 19:00-19:20 **Satoru Tsukada**, Chiba University, Japan  
Metal-like Lustrous Films Based on Organic Oligomers Using Oligo(3-alkoxyselenophene)
- 19:20-19:30 **Poster Presentation**  
**Mircea Chipara**, University of Texas Rio Grande Valley, Edinburg, TX  
Polyethylene Oxide–polyvinylidene Fluoride Blends

**End of Day-4**

*We wish to see you at*  
**Polymers-2025**

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