2025

PROGRAM

INSTITUTE FOR POLYMER RESEARCH
CELEBRATING 41 YEARS OF OFFICIAL INSTITUTE STATUS
FORTY-SEVENTH ANNUAL SYMPOSIUM
ON POLYMER SCIENCE/ENGINEERING 2024
E7 7303-7363
Faculty Hall
University of Waterloo, Waterloo, Ontario
Wednesday April 30 and Thursday May 1, 2025

Wednesday April 30, 2025
(E7 7303-7363)

8:45 a.m.	**Open Symposium Portal**
8:50	**Welcome and Opening Remarks**
9:00 - 9:20	**Negin Bouzari (Prof. Shahsavan), Chem Eng, Waterloo** Novel Small-scale Robots for Medical Applications **(Winner of 2023 IPR Award for Academic Excellence in Polymer Science/Engineering)**
9:20 - 10:00	**Industry Speaker: Dr. Nicholas Lanigan, Davwire.** Formulation of Photocurable Resins for the Fabrication of Ferroelectrets
10:00 – 10:20	**5-Min. Mini Presentations** 1) **Periklis Alikiotis (Prof. Mekonnen)** Investigating the effects of ash content and loading of lignin as an additive to polyvinyl chloride (PVC) 2) **Tobechukwu Ohaka (Prof. Mekonnen)** Recyclable and Sustainable Natural Rubber Biocomposite Vitrimers Induced by Dynamic Anhydride-Epoxy Bonds 3) **Lauren DiLoreto (Prof. Lin)** Upcycling of Polyolefins into Stress-Responsive Materials 4) **Saba Karimi (Prof. Forrest)** Two relaxation mechanisms for rejuvenation of stable polystyrene glass
10:20 – 10:40	**Coffee**
10:40 – 11:00	**Mahnoor Mehmood (Prof. Forrest)** Characterization of Polymer Stable Glasses
11:00 – 11:20	**Ashna Rajeev (Prof. Zhao)** Nanochitin as a strength enhancing agent for paper-based packaging material

11:20 – 11:40	**Matthew Scarfo (Prof. Shahsavan)** Discretizing Alignment Domains of Microscale Liquid Crystal Elastomer Actuators using Magnetic Fields
11:40 – 12:00	**Lu Yin (Prof. Zhao)** Polypyrrole/Rubber Composite Latex as High-Performance Sustainable Conductive Coating
12:00 - 12:50	**Lunch**
12:50 – 1:30	**Academic presenter: Prof. Megan Roberts, Western** Nanocellulose for Precision Applications: Combatting Challenges Using Intentional Surface Chemistry Design
1:30 – 1:50	**Franklin Frasca (Prof. Duhamel)** Probing the Encounter Dynamics between the Side Chains of Small Multifunctional Macromolecules by Pyrene Excimer Formation
1:50 - 2:10	**<u>5-Min. Mini Presentations</u>** **5) Iris Samputu (Prof. Feng)** Dehydration of ethylene glycol and gases through the use of polymeric and novel polymer blend membranes **6) Jinxuan Zhang (Prof. Feng)** Interfacially crosslinked poly(vinyl alcohol)/poly(vinyl amine) composite membranes incorporated with silver for facilitated olefin/paraffin separation **7) Hossein Hipakchi (Prof. Mekonnen)** Direct Ink Writing for Conductive 3D-Printed Healthcare Sensors: Design and Fabrication **8) Jimmy Papazotos (Prof. Li)** Novel Polymer Semiconductor Design for Low Level Gas Detection
2:10 - 2:30	**Carlos Villafane (Prof. Kamkar)** Eco-Friendly Electrochemically Synthesized Graphene/Sodium Alginate Inks for 3D Printing Highly Conductive Hydrogels and Aerogels
2:30 – 2:50	**Junhao Hu (Prof. Schipper)** Harnessing Light: Exploring Pyrazine Polymers for Single-Molecule Organic Solar Cells
2:50 - 3:10	**Yonglin Wang (Prof. Li), Chem Eng, Waterloo** Development of High-Performance Organic Cathode Materials Based on Coordination Polymers for Lithium-Ion Batteries **(Winner of the 2023 IPR Award for Academic Excellence in Polymer Science/Engineering)**
3:10 - 3:40	**Coffee**

3:40 – 4:00	**Donghan Liu (Prof. Duhamel)** Interactions of Hydrophobically Modified PAMAM Dendrimers with Surfactant Aggregates Probed by Pyrene Excimer Formation
4:00 – 4:20	**Akliu Getnet (Prof. Mekonnen)** Lead free single and dual filler loaded nanocomposites for X-ray radiation shielding
4:20 – 4:40	**Kristijan Lulic (Prof. Duhamel)** Improving the Sensitivity of Pyrene Excimer Formation for Persistence Length Determination of Poly(alkyl methacrylate)s
4:40 – 5:00	**Evangelin Sridhar (Prof. Simon)** Kinetics of bio polyesters
5:00 – 5:20	**Hunter Little (Prof. Duhamel)** Using Time-Resolved Fluorescence to Gain New Insights into the Conformation of DNA Aptamers
5:20 – 5:40	**Autumn Cheon (Prof. Tam)** Sustainable Air Filtration Materials Using Biomacromolecular Nanomaterials
5:40 – 6:05	**5-Min. Mini Presentations** 9) **Noah Gallant** Characterizing the Size and Structure of Pyrene-Tagged SDS and DTAB Micelles 10) **Drew Davidson (Prof. Kamkar)** Protecting Firefighters from Cancer through Multifunctional Electrospun Nanocomposites 11) **Karthick Raj Selvam (Prof. Mekonnen)** Silk Nanofibers for Drug Delivery: A Solution Blow Spinning Approach 12) **Maggie Wong (Prof. Prince)** Engineering Biomimetic Strain-Stiffening into Polyacrylamide Hydrogels 13) **Dylan McQuarrie (Prof. Prince)** Leveraging Diels-Alder Adducts for Recyclable Thermosets
6:05 – 6:10	**Closing remarks**

Thursday May 1, 2025
(E7 7303-7363)

8:45 a.m.	**Open Symposium Portal**
8:50	**Welcome and Opening Remarks**
9:00 - 9:50	**Prof. Leonardo Simon, Chem Eng, Waterloo** Industrial Hemp and Development of Sustainable Materials
9:50 - 10:40	**Prof. Xianshe Feng, Chem Eng, Waterloo** Mass Transfer in Pervaporation, Perstraction and Sorption - A Unified Approach
10:40 – 11:00	coffee break
11:00 – 11:50	**Prof. Tizazu Mekonnen, Chem Eng, Waterloo** Engineered Polysaccharides and the Modification of Polysaccharides and Poly(lactic acid) for Sustainable Multiphase Polymer Development
11:50 – 11:55	**Closing remarks**