

Water Quality Research

February 23-24, 2025





60th Central Canadian Symposium on Water Quality Research

February 23-24, 2025

Toronto Metropolitan University

Symposium Objectives

The symposium seeks to unite experts and practitioners in water quality research and management to discuss the latest advancements in science, engineering, and policy.

The event fosters collaboration across universities, industry, government, and consulting sectors to promote innovative and impactful solutions for Canada's water quality challenges.

Conference Chair



Dr. Rania Hamza

Associate Professor, Toronto Metropolitan University

Conference Co-chairs and Organizing Committee



Dr. Martha Dagnev

Associate Professor,
Western University



Dr. Stephanie Gora

Assistant Professor,
York University



Dr. Ron Hofmann

Professor, University
of Toronto

Organizing Committee

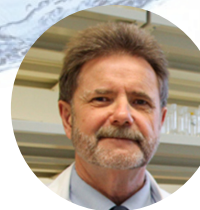
Rania Hamza, Martha Dagnev, Stephania Gora, Satinder Brar, Mandeep Rayat, Hussain Aqeel, and Farshad Dabbaghisouraki.

Keynote Speakers



Dr. Arthur Umble

Senior Vice President - Emeritus
Stantec Consulting Services, Inc.



Dr. Robert Andrews

Professor, Department of Civil & Mineral Engineering
University of Toronto

Sears Atrium, George Vari Engineering and Computing Centre,
245 Church St, Toronto, ON, M5B 1Z4

Pre-Conference Activities led by IWA-YWPs-Canada

The future of water/wastewater research and the intersection with operations and career implications

February 23, 1:00 - 3:00 pm

Research is a growing need for utilities to help them make decisions. As dollars and staff become more stretched, how can utilities organize themselves to ensure that they continue to leverage benefits from research? Is there an optimal method to engage staff throughout and outside a utility? What does that mean for careers in the water sector and how should the next generation prepare so they can add value to their respective organizations?



Session Chair: Samantha LeValley
Regional Co-director – Central International Water Association, Young Water Professionals



Panelist: Adriano Mena
Research & Innovation Program
Regional Municipality of York,
Public Works



Panelist: Dr. Steven N. Liss
Vice-President,
Research and Innovation
Toronto Metropolitan University



Panelist: Dr. Laura Yu
Regional Director, Government
Relations & Partnerships
Mitacs



Panelist: Prasoon Adhikari
Manager, Sanitary and Stormwater Utilities
Infrastructure Services Department
City of Kitchener



Panelist: Dr. Genevieve Peters
Director of Research
ECO Canada



Conference Networking February 23, 3:30 - 4:30 pm

Conference networking can be overwhelming! You've prepared your elevator pitch, researched key attendees, and now it's time to put yourself out there. But what if you struggle to start conversations? How do you network with other academics who don't share your expertise? What if you miss an opportunity to connect with someone important? In this session, you'll hear from experienced researchers about how to network and have an opportunity to establish relationships with fellow water quality experts that will grow throughout the conference.



Dr. Stephanie Gora
Assistant Professor,
York University



Brian Mahayie Waters
Geography Ph.D. Candidate,
York University

Time	February 24		
8:00	Sign up and Coffee The Courtyard Lounge		
8:30	Opening Remarks - Dr. Rania Hamza, Dr. Roberta Iannacito-Provenzano, Dr. Steven Liss, Dr. Stephen Waldman, Dr. Banu Örmeci, Dr. Elsayed Elbeshbishy Tecumseh Auditorium		
9:15	Keynote - Dr. Art Umble Tecumseh Auditorium		
	Technical Session - Chair: Adriano Mena Oakham Lounge Innovations in sustainable water management	Technical Session - Chair: Stephanie Gora Thomas Lounge Water quality Monitoring, Advanced Analytics, Drinking Water Treatment and Public Health	Technical Session - Chair: Parin Izadi Tecumseh Auditorium Advancing Wastewater Process Intensification: Innovations for a Sustainable Future
10:00	Effects of Smart Blue Roof Adoption on Stormwater Management Pond Performance, Afsana Alam Akhie (TMU)*	Evaluating UV-LEDs for Decentralized Rainwater Treatment in Peri-Urban Communities in Mexico, Karlye Wong (UofT)*	Intensification of the mainstream anammox process using an inverse fluidized bed bioreactor: process performance and kinetics, George Nakhla (WesternU)
10:15	Rainwater Harvesting Systems in Quebec: Water quality and system characterization, Niloufar Naserisafavi (Polytechnique Montreal)*	Exploring the Use of UV Disinfection for Drinking Water Safety in Humanitarian Settings, Patrick Di Falco (YorkU)*	
10:30	Innovative Solutions for Biofilm Removal: Using UV-AOP Technology to Mitigate Biofilm in Water and Wastewater Applications, Yiqian Wu (YorkU)*	Leaching of Organotin Compounds from Polyvinyl Chloride (PVC) Pipe, Juan Li (UofT)*	Aeration Strategy for BNR Simultaneous Nitrification Denitrification: STAR Control offers Flexibility, Mehran Andalib (EnviroSim)
10:45	Advancing reuse via cryopurification, Daria Popugaeva (University of Western Ontario & Core Geoscience Services Inc.)	Quantifying the impact of cryogenic landslides on lakes in the eastern Mackenzie Delta NT, Canada, Victoria Carroll (YorkU)*	Intensification of Ozone-Based Disinfection and AOPs with the MITO3X Technology: A Low-Capex Solution for Canadian Small and Remote Communities, Ted Mao (MW Technologies)
11:00	Advancing communication strategies on reuse, Stephanie Schouldice (City of Guelph/Royal Roads University)	Impact of silver-stabilized hydrogen peroxide on Salmonella enterica serovar Typhimurium interactions with Acanthamoeba castellanii, Stefania Conforti (TMU)*	Biological Aggregates in Low-Strength Wastewater Treatment: Lessons from 600 Days of Operation, Fatima-zahra Ezzahroui (TMU)*
11:15	Textile Wastewater Effluents: Impact on Ecosystem and Remediation Approaches, Adedapo Adeola (YorkU)	Revisiting the Choices of Probe Compound Used in Measuring the Hydroxyl Radical Scavenging Capacity of Water in UV/H₂O₂ System, Zhijie Nie (UofT)*	Enhancing Anaerobic Digestion Efficiency with IntensiCarb™: A Breakthrough in Solids Treatment, Domenico Santoro (USP Technologies)
11:30	Policy Perspectives On Water Reuse Implementation, Faisal Haq Shaheen (TMU)	Silver-Stabilized Hydrogen Peroxide: A Sustainable and Effective Solution for Hot Water Pathogen Control, Nate Clark (TMU)*	Machine Learning Applications for Sustainable Wastewater Treatment, Ahmed AlSayed (Veolia)
11:45	Panel Discussion	Panel Discussion	Panel Discussion
12:00	Lunch ** Tecumseh Auditorium		

*Student Presenting Authors

** CAWQ General Annual Meeting - Oakham Lounge



Time	February 24		
13:00	Keynote - Dr. Robert Andrews Tecumseh Auditorium		
	Technical Session - Chair: Indra Maharjan Oakham Lounge	Technical Session - Chair: Hussain Aqeel Thomas Lounge	Technical Session - Chair: Satinder Kaur Baur Tecumseh Auditorium
	Advancing Net Zero Wastewater Systems through Integration of Innovation and Resource Recovery	Emerging Contaminants and Microplastics	Wastewater as a Source of Water, Energy, and Nutrients
13:45	Anaerobic digestion: driving process intensification and biogas upgrading for sustainability, Bipro Dhar (UAlberta)	Accumulation of antibiotics in the environment: Have appropriate measures been taken to protect Canadian human and ecological health? Oluwatosin Aladekoyi (TMU)*	The Essential Use Concept: A Regulatory Approach to Manage PFAS in Wastewater, Patricia Hania (TMU)
14:00	Using Wastewater Energy Recovery to Decarbonize Toronto Western Hospital, Ed Rubinstein (Noventa Energy)	Closed-Loop Reverse Osmosis with VUV Photolysis for the Removal of Pharmaceuticals and PFAS from Water Systems, Ehsan K. Nazloo (Western U)*	Water Reuse and Recycling in Canada: Yuck Factor, Prosumers and Future Perspectives, Ratul Kumar Das (York U)
14:15	Durham Region's GHG Roadmap for Water and Wastewater Systems, Joseph Green (Durham Region)	Evaluating Fluoride Mass Balance and Foam Formation as Indicators of PFAS Destruction in Electrooxidation Treatment of Contaminated Leachate, Omar Mohamed (WesternU)*	Microfiber-Induced Effects on Wastewater Treatment and Aerobic Granule Formation in Sequencing Batch Reactors, Victoria Onyedibe (TMU)
14:30	Toronto Water's GHG Reduction Journey, Emily Zegers (City of Toronto)	Isolation of Microplastics in Drinking Water Using Density Separation, Wanzhen Chen (UofT)*	The Role of Soil Hydrogeology in Oxygen Availability and Nitrogen Removal Efficiency in Onsite Wastewater Soil Treatment Units, Sorour Sheibani (Polytechnique Montreal)*
14:45	Methane Monitoring at WWTPs: Choosing the Right Sensors for Emissions Monitoring, Omar Abdelrahman (TMU)*	The Role of Microplastic Biofilms in Disseminating Antibiotic Resistance: Insights from Metagenomics and Targeted Chemical Analysis, Maryam Zarean (YorkU)*	Enhancing Methane Production from Thickened Waste-Activated Sludge: Evaluating YDRO Bioaugmentation and Hydrothermal Pretreatment, Meagan Morrow (TMU)*
15:00	N2O Emissions in a Full-scale Wastewater Treatment Plant: Effects of Flow Models and Key Operational Parameters, Marwan El Saleh (TMU)*	Analyzing the potential of wastewater microorganisms to degrade or deteriorate cotton, cotton denim and polyester microfibers, Fatima Ahmed (TMU)*	Optimizing thermophilic biomethanation plant set up for municipal sludge treatment in Quebec City: Lesson learnt, Bikash Ranjan Tiwari (YorkU)
15:15	Improving Water Treatment Resilience and Sustainability with Biological Treatment, Hayat Raza (Continental Carbon Group)	Wastewater Surveillance for Tracking Temporal Dynamics of Beta-lactam Resistance Genes, Influenza A, and SARS-CoV-2 at two Wastewater Treatment Plants and a University Campus, Hassan Waseem (Carleton University)	Comparing Biomethane Production from Different Industrial Wastes: Effect of Substrate Type and Food- to- Microorganism (F/M) Ratio, Ahmed El Sayed (TMU)
15:30	Panel Discussion	Panel Discussion	Panel Discussion
15:45	Coffee and Posters		
16:15	3MTs - Chair: Farshad Dabbaghisouraki Tecumseh Auditorium		
17:00	Break for Student Awards Deliberations		
17:30	Awards and closing Tecumseh Auditorium		

*Student Presenting Authors



Poster Presentations

1. Algal Bacterial Granular Sludge: An innovative addition on the Aerobic Granular Sludge treatment system, **Nada Hosni**, TMU
2. Impact of Nutrient Limitation Conditions on Suspended Biofilms and Biomass and Associated Nitrous Oxide Emissions, **Bianca Lino Wozniak**, TMU
3. Comparing the adsorption to desorption capacity of aerobic granular sludge (AGS): Four per and polyfluoroalkyl substances (PFAS), **Ani Memuduaghan**, TMU
4. Adsorptive Removal of Long-Chain Perfluoroalkyl Carboxylic Acids Using Biochar: A Study on Efficiency and Predictive Modeling, **Sepideh Nasrollahpour**, York U
5. Digesting Data: How Machine Learning is Transforming Anaerobic Digestion, **Nesma Ahmed**, TMU
6. Enhanced subsurface remediation of BTEX through geothermal heating and bioremediation, **Ginelle Aziz**, York U
7. Biodegradation of Polycyclic Aromatic Hydrocarbons by Bacillus megaterium in Aquatic Environments, **Khyati Joshi**, York U
8. Detection of microplastics in wastewater sludge using Laser direct infrared imaging (LDIR) technique. **Juviya Mathew**, York U
9. Swan Lake Citizen Science Lab: Enhancing Water Quality by Connecting Science, Technology, Environment and the Community, **Peyman Naemi**, York U
10. Comparing Biomethane Production from Different Industrial Wastes: Effect of Substrate Type and Food- to- Microorganism (F/M) Ratio, **Ahmed EI Sayed**, TMU

NOTE: Grab a coffee and join us for a poster display at 15:45! Presenters will be available to share insights and answer your questions.



Three Minute Thesis (3MT) Presentations

1. Algal Bacterial Granular Sludge: An innovative addition on the Aerobic Granular Sludge treatment system, **Nada Hosni**, TMU
2. Impact of Nutrient Limitation Conditions on Suspended Biofilms and Biomass and Associated Nitrous Oxide Emissions, **Bianca Lino Wozniak**, TMU
3. Investigation of geothermal heating impacts on BTEX biodegradation in soil under cyclic fluctuating temperature, **Gurpreet Kaur**, York U
4. Nutrient Polishing of Municipal Wastewater: A Start-up Study Using a Novel Internally Illuminated Algal Photobioreactor, **Siena Ianni-Palarchio**, Western U
5. The Influence of Diet on the Uptake, Bioaccumulation, and Depuration of Microplastics in *Daphnia magna*, **Sejal H. Dave**, York U
6. Comparing the adsorption to desorption capacity of aerobic granular sludge (AGS): Four per and polyfluoroalkyl substances (PFAS), **Ani Memuduaghan**, TMU
7. Seasonal Water Access and Informal Markets: Insights from Freetown's Urban Communities, **Brian Waters**, York U
8. Exploring Operational Boundaries in Low Oxygen Activated Sludge Systems for Municipal Wastewater Treatment, **Fatima-zahra Ezzahraoui**, TMU
9. Quantifying the impact of cryogenic landslides on lakes in the eastern Mackenzie Delta NT, Canada, **Victoria Carroll**, York U
10. Enhancing Methane Production from Thickened Waste-Activated Sludge: Evaluating YDRO Bioaugmentation and Hydrothermal Pretreatment, **Meagan Morrow**, TMU
11. Digesting Data: How Machine Learning is Transforming Anaerobic Digestion, **Nesma Ahmed**, TMU
12. Assessment and Design of Treatment Alternative for a Wastewater Treatment Plant in Toronto, **Sarah Gardiner**, TMU
13. From Food to Fuel: Tailoring Microbial Diversity for VFA Production, **Reema Kumar**, York University.





Canadian Association on Water Quality (CAWQ)

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Thank You !



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IWA
the international
water association

YOUNG WATER
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