# 12th Western Canadian Symposium on Water Quality Research

**University of Alberta, Edmonton, Alberta, June 17, 2025**

**Venue: Electrical and Computer Engineering Research Facility (ECERF)**

# Agenda

**Supported by: Canadian Association on Water Quality (CAWQ); Faculty of Engineering, University of Alberta; IWA YWP Canada Chapter**

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| Start | End | Program | |
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| 8:00 | 8:45 | **Registration (Electrical and Computer Engineering Research Facility (ECERF) W2-090)** | |
| 8:45 | 9:15 | **Opening Remark (ECERF W2-090)**<br>**Moderator: Dr. Bipro Dhar** (Conference Chair)<br>**Dr. Samer Adeeb** (Chair, Civil and Environmental Engineering, UofA)<br>**Dr. Baiyu Zhang** (President, CAWQ)<br>**Dr. Elsayed Elbeshbishy** (Immediate Past-President, CAWQ)<br>**Hadi Mokarizadeh and Calvin Tae Hyun Chung** (IWA YWP) | |
| 9:15 | 10:00 | **Keynote (ECERF W2-090)**<br>IntensiCarb: A Vacuum-Driven Technology for Intensification of Anaerobic Digestion and Resource Recovery<br>**Dr. George Nakhla**, Western University, Canada | |
| 10:00 | 10:15 | Break | |
| 10:15 | 11:05 | **Session 1. Advanced Water and Wastewater treatment 1 (ECERF W2-090; Chair: Dr. Roopesh Syamaladevi)** | **Session 2. Emerging Contaminants: Fate, Transport and Mitigation 1 (ECERF W2-010, Chair: Dr. Xiaomeng Wang)** |
| 10:15 | 10:30 | **Invited Talk.** Prospects of Membrane Technology for the Treatment of Oil Sands Produced Water, **Dr. Mohtada Sadrzadeh**, University of Alberta | **Invited Talk.** PFAS in Wastewater Treatment: Understanding Fate, Uncovering Unknowns, and Advancing Removal, Dr. **Rania Hamza**, Toronto Metropolitan University |
| 10:30 | 10:45 | Energy Savings in heat Treated Mainstream Partial Nitrification (PN) Process, Dr. Niema Afroze, WSP Canada Inc. | Synergistic effect of thermal dewatering on the perfluoroalkyl and poly-fluoroalkyl substances (PFAS) removal via Electro-Fenton, Afrouz Yousefi, University of Alberta |
| 10:45 | 11:00 | Modelling the impact of sludge age and thermal hydrolysis pretreatment on the sewage sludge biodegradability and sidestream nitrogen removal, Amr Ismail, Toronto Metropolitan University | Unveiling the impacts of polycyclic musks as an emerging contaminant on aquatic organisms: Insights from a model organism—the zebrafish, Zhanika Gimeno, University of Alberta |
| 11:00 | 11:15 | Break | |
| 11:15 | 12:00 | **Keynote (ECERF W2-090)**<br>Harnessing Sunlight for the Next-Generation Water Treatment<br>**Dr. Frank Gu**, University of Toronto, Canada | |
| 12:00 | 1:30 | **(ECERF W2-090)**<br>**Lunch Break, Poster, and Networking Session** | |
| 1:30 | 2:30 | **Session 3. GHG Emission, Climate Resilience, and Sustainability (ECERF W2-090; Chair: Dr. Oliver Iorhemen)** | **Session 4. Advanced Water and Wastewater treatment 2 (ECERF W2-010; Chair: Dr. Chelsea Benally and Dr. Niema Afroze)** |

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| 1:30 | 1:45 | **Invited Talk.** Multi-Scale observations of GHG emissions in WWTP, **Dr. Elsayed Elbeshbishy**, Toronto Metropolitan University | **Invited Talk.** Challenges in the implementation of nanobubbles for wastewater treatment: a bench-scale study, **Dr. Rasha Maal-Bared**, CDM Smith |
| 1:45 | 2:00 | $N_2O$ Emissions in Full-Scale Wastewater Treatment: Role of Flow Modes and Operational Conditions, Marwan AlSaleh, Toronto Metropolitan University | Enhanced dissolved organic matter (DOM) removal in process intensified biofiltration, Adedamola A. Ali, University of Northern British Columbia |
| 2:00 | 2:15 | Biogas upgrading and desulfurization via microbial electrosynthesis system, Tae Hyun Chung, University of Alberta | Algal Bacterial Granular Sludge: Exploring Algae's Role in Extracellular Polymeric Substances and Aerobic Granular Sludge, Nada Hosni, Toronto Metropolitan University |
| 2:15 | 2:30 | $CO_2$ Electro-methanogenesis in Microbial Electrosynthesis Systems with Modified Stainless-Steel Electrodes, Dr. Simran Kaur Dhillon, University of Alberta | Effect of initial phosphorus concentration, impregnation type, and media particle size distribution on phosphorus removal efficiency of biofilters using iron hydroxide-activated wood-based media, S. Hamidou, Université Laval |
| 2:30 | 2:45 | Integrating Anaerobic Digestion and Hydrothermal Liquefaction for Sewage Sludge Management: A Techno-Economic Analysis, Harveen Kaur Tatla, University of Alberta | Performance Evaluation of textile processing wastewater treatment plant with the retrofit of influent temperature decrease evaluation, Mohammed Mahfuz Ahmed, University of Technology Sydney, Australia |
| 2:45 | 3:00 | Break | |
| 3:00 | 4:15 | **Session 5. Circular Economy: Energy and Resource Recovery (ECERF W2-090; Dr. Rasha Maal-Bared and Dr. Seyed Mohammad Mirsoleimani Azizi)** | **Session 6. Emerging Contaminants: Fate, Transport and Mitigation 2 (ECERF W2-010; Chair: Dr. Olubukola Alimi and Hayat Reza)** |
| 3:00 | 3:15 | **Invited Talk.** Direct lithium extraction from Canadian oilfield brine, **Dr. Xiaomeng Wang**, Natural Resources Canada, CanmetENERGY Devon | Vacuum-Driven Intensification of Anaerobic Digestion vs. Thermal Hydrolysis Process: Ammonia Recovery and Enhanced Toxicity Resilience, Dr. Ali Khadir, Western University |
| 3:15 | 3:30 | Ozone and hydrogen peroxide pretreatment of hydrothermal liquefaction aqueous from municipal sludge for enhanced downstream | Novel green fabrication of stable hydrogel beads from industrial waste lignin for efficient Pb (II) ion removal, Aurora Hu, University of Alberta |

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| | | biological valorization, Nahian Rahman, University of British Columbia | |
| 3:30 | 3:45 | Enhancing Methane Production from Municipal Sewage Sludge by Combining Hydrothermal Pretreatment with a Novel Bioaugmentation Technology, Meagan Morrow, Toronto Metropolitan University | Using Biochar and Granular Activated Carbon to Counteract Nanoplastics in Sludge Dark Fermentation, Monisha Alam, University of Alberta |
| 3:45 | 4:00 | Optimization of curdlan biosynthesis in the granule matrix during wastewater treatment in aerobic granular sludge systems, Dr. Resty Nabaterega, University of Northern British Columbia | Degradation Dynamics of Mater-Bi and Crystalline PLA during Anaerobic Co-Digestion of Household Organic Waste and Wastewater Sludge, and Phytotoxicity Assessment of Digestate, Mariastella Ferreri, Mediterranea University of Reggio Calabria, Italy |
| 4:00 | 4:15 | Enhanced treatment of rice-washing wastewater and bioelectricity production in microbial fuel cells with ethanol supplementation, Kharisrama Trihatmoko, Nagaoka University of Technology, Japan | Impact of aged and non-aged polyethylene microplastics on antibiotic resistance genes propagation and microbial communities during primary sludge fermentation, Romana Saila, University of Alberta |
| 4:15 | 4:30 | Boosting Biogas Production and Phosphorus Recovery in Anaerobic Digestion using Nanobubbles, Dr. Anqi Mou, University of Alberta | Characterization of Polyethylene Microplastics Following Aerobic and Anaerobic Bio-Aging, Maha Dassouki Dit Tahan, Middle East Technical University, Türkiye |
| 4:30 | 5:15 | **(ECERF W2-090)**<br>**Poster and Networking Session** | |
| 5:15 | 5:30 | **(ECERF W2-090)**<br>**Closing Remark and Award Ceremony** | |

Note. Speakers underlined will be considered for the Philip H. Jones Award

# Poster Presentations (ECERF W2-090)

1. Effects of Amendments on the Anaerobic Bioremediation of Organohalides and Petroleum Hydrocarbons in Contaminated Soil and Groundwater, Sydney Kennedy-Flynn, University of Alberta
2. Evaluating the Effectiveness of Commercial Bioremediation Products on Petroleum and Chlorinated Hydrocarbons in Soil and Groundwater Under Sequential Aerobic–Anaerobic Conditions, Rachel Graham, University of Alberta
3. Enzymatic Indicators of Microbial Resilience to Temperature Shock in Planted and Unplanted Constructed Wetlands Treating Domestic Wastewater, Bridget Ataa Fosua, University of Northern British Columbia
4. Aquatic Methane Exposure Trials: A Novel Method, Abbey MacDonald, University of Alberta
5. Applying Nanobubbles for Boosting High-solids Anaerobic Digestion, Samiullah, University of Alberta
6. Long-term Optimization of High-solids Anaerobic Digestion for Process Intensification, Anindya Amal Chakrabarty, University of Alberta
7. Immune cell bioassays identify receptor-mediated inflammatory effects of Oil Sands Process Waters and Naphthenic Acids: Implications for water quality assessment, Sunanda Paul, University of Alberta
8. Examination of a demonstration pit lake using microbial toxicity and immunotoxicity cell-based assays, Nora Hussain and Marj Gem Bunda Fajunio, University of Alberta
9. Correlations Between Winter Parameters and Springtime Total Organic Carbon in the North Saskatchewan River, Sharafi Ferdaus, University of Alberta
10. Optimization-Based Estimation of Water Quality Index using Principal Component Analysis with Standalone and Hybrid Modeling Techniques, Ajaz Ahmad Mir, University of Alberta
11. Physicochemical Properties of Fat, Oil, and Grease (FOG) Deposits in Sewers: From Experimental Analysis to Mitigation Strategies, Xinzai Peng, University of Alberta
12. Optimization of micro-Fourier Transform Infrared Spectroscopy and Data Analysis Technique for Enhanced Detection of Microplastics in Environmental Samples, Ridwan Olaide Alabi, University of Alberta
13. Hydrothermal Liquefaction of Sludge for Biocrude Production with Integrated Anaerobic Digestion of Byproducts, Parisa Niknejad and Simran Kaur Dhillon, University of Alberta
14. Characterization and antibiofilm properties of Plasma-Activated Nanobubble Water, Prithviraj V, University of Alberta
15. Plasma-Activated Water Spray: An Effective Technique for Microbial Biofilm Elimination, Negar Ravash, University of Alberta
16. Plasma activated water mist: a promising surface disinfection technology, Shivani Sonkar, University of Alberta
17. Fat to Fuel: Optimizing Beef Tallow Anaerobic Digestion Using Nanobubble Water, Alsayed Mostafa, University of Alberta

Note. All poster presenters will be considered for the Best Poster Awards