**Farshad Dabbaghi**

Coordinator

Welcome to the inaugural edition of the One WATER Institute Newsletter! We're excited to share our recent achievements, upcoming events, and highlights of ongoing research. Together, we are fostering a collaborative community dedicated to advancing water sustainability and environmental health.

- CO2 Injection Simulation

Ashmore, N., Krol, M., Gilfillan, S., Van De Ven, C., Mumford K., and Molnar, I., (2024) "Simulation of Bench-Scale CO2 Injection Using a Coupled Continuum-Discrete Approach" accepted Science of the Total Environment.

- Thaw Impacts on Northern Lakes

Thienpont, J.R., Hoskin, G.N., Kokelj, S.V., O'Hagan, C., Pisaric, M.F.J., Smol, J.P., Stewart, E., and Korosi, J.B. (2025) A framework for understanding the impacts of thaw-driven disturbance regimes on northern lakes. Permafrost and Periglacial Processes.

- Barrier Beaches and Wetlands

Hoskin, G.N., Do, P.H.P., Coleman, K.A., Thienpont, J.R., and Korosi, J.B. (2024) Influence of barrier beach dynamics on ecological indicator taxa in north-central Lake Ontario coastal wetlands. Journal of Great Lakes Research 50: 102437.

2. Achievements

Congratulations to Rebecca Gasman, a One Water researcher, for receiving the prestigious Weston Family Award for Northern Research. Her PhD work explores cyanobacteria blooms in northern lakes, with a strong focus on collaboration with Indigenous communities such as Sambaa K'e First Nation.



We are proud to share that Khyati Joshi won 3rd place in the poster presentation competition at the 57th Canadian Mineral Processors (CMP) Conference, held from January 21 to 23, 2025, in Ottawa. Her poster, "Valorization of Oil Sand Tailings for Critical Metal Recovery: What Bioleaching Could Bring?", was recognized for its innovative approach to sustainable mineral processing. Congratulations to Khyati on this well-earned achievement!



Recent Publications & Research Highlights

1. Research Papers

- Modelling Bisulfide Transport

Md Abdullah, A., Rashwan, T., Molnar, I., Behazin, M., Keech, P., and Krol, M (2024) "Modelling Key Reactive Processes Relevant to Bisulfide Transport Through Highly Compacted Bentonite", accepted to Results in Engineering

- BTEX Biodegradation under Anoxic Conditions

Kaur, G., Verma, S., Krol, M. and Brar, S. (2024) "Analysis of BTEX biodegradation by Microbacterium esteraromaticum and Bacillus infantis under anoxic conditions using different electron acceptors", Submitted to International Biodeterioration & Biodegradation.

Projects and Community Engagement

1. Engaging the Community: Citizen Science Lab Launch



On January 6, 2025, One WATER researchers collaborated with Friends of Swan Lake (FOSL) to kick off the Swan Lake Citizen Science Lab (SLCS Lab). This initiative uses cutting-edge tools like drones, AI, and virtual reality to monitor water quality, biodiversity, and environmental health. Community involvement is central, with task forces focusing on monitoring, data science, communication, and engagement. Together, we're building a transformative model for environmental stewardship.

2. Thermal and Optical Mapping of Swan Lake

In November 2024, the SLCS Lab conducted its first drone-based thermal and optical mapping of Swan Lake in Markham. Using advanced imaging technologies, the project captured over 1,500 images to monitor pollution, temperature changes, and habitats. This innovative effort blends science and community engagement to protect Swan Lake's biodiversity and ecological health.



Swan Lake Park, flight path and image points.



Drone mapping operation



Drone used for thermal and ortho mapping

Upcoming Events

1. Seminar: Discovering Microplastics - Biophotonic Insights with Prof. Chorvatova

Join us for the next One WATER Seminar Series, featuring Prof. Alzbeta Marcek Chorvatova, an expert in cellular biophotonics. Prof. Chorvatova will explore advanced biophotonic techniques like FLIM, FTIR, and Raman spectroscopy to detect microplastics and study their ecological interactions.

Don't miss this opportunity to learn about cutting-edge research in aquatic environments!

Register here:

<https://research.apps01.yorku.ca/machform/view.php?id=2371>

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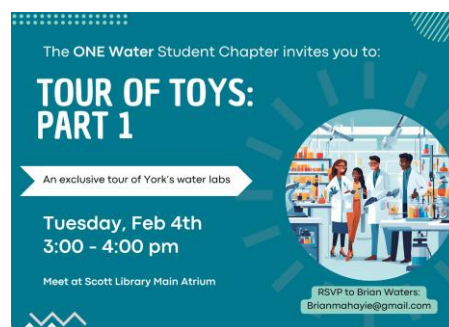
2. Tour of Toys: Part 1

An exclusive tour of York's advanced water labs organized by the One WATER Student Chapter.

- RSVP: Brianmahayie@gmail.com

3. 60th Central Canadian Symposium on Water Quality Research (CAWQ Conference- February 23–24, 2025)

Join us for the 60th CAWQ Symposium, a premier event focused on water quality research, featuring expert panels, student competitions, and keynote speakers.



One WATER Seminar Series With Prof. Alzbeta Marcek Chorvatova

Determination of microplastics and their interaction with living organisms by biophotonic methods

Summary: The widespread use of plastics threatens human health and the environment, as plastics break down into micro- and nanoplastics. However, methods to detect them in aquatic environments, especially in the presence of organic matter, are still lacking. Custom-prepared colloids of polyethylene terephthalate (PET), polystyrene (PS), and polylactic acid (PLA) are tested using a range of biophotonic methods, including fluorescence microscopy, fluorescence lifetime imaging (FLIM), FTIR, and Raman spectroscopy. We compare experimental approaches to detect microplastics in complex aquatic systems and study their interactions with *Chlorella* sp., marking an important step in improving detection methods and understanding ecological impacts.

31 January, 2025
10:00 AM - 11:30 AM

314 York Lanes

Refreshments will be served

Register Here

Prof. Alzbeta Marcek Chorvatova, DSc
Professor of biophysics, International Laser Center SCET, Bratislava, Slovakia, and University of St. Cyril and Methodius, Trnava, Slovakia. MSc (Comenius University, Slovakia), PhD in Physiology (Claude Bernard University Lyon 1, France). Post-doctoral research at: Shiraz University (Canada) and Liverpool University (UK). Expert in cellular biophotonics with a focus on fluorescence microscopy applications in biomedical and environmental studies.

49 articles, 22 proceedings, 7 textbooks, 50 citations, Web H-index 15, Scopus H-index 19

60TH CENTRAL CANADIAN SYMPOSIUM ON WATER QUALITY RESEARCH

February 23-24, 2025

Feb. 23 @ SEARS ATRIUM
George Van Engineering & Computing Center
245 Church St, Toronto, ON M5B 1S4

Feb. 24 @ STUDENT CENTER
Toronto Metropolitan University
55 Gould Street, Toronto, ON M5B 1E9

ABSTRACT SUBMISSION TIMELINE
Authors are requested to submit abstracts online through the CAWQ website.
Submission deadline: **January 7, 2025**
Acceptance notification: **January 20, 2025**
Note: all presenters will be required to register to attend this symposium.

CONFERENCE CHAIRS AND COMMITTEE

Dr. Rania Hamid Conference Chair	Dr. Martha Begovic Conference Co-Chair	Dr. Stephanie Gora Conference Co-Chair	Dr. Ronald Holman Conference Co-Chair

TMU Students will receive FREE registration.

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Brian Waters

Student Association Chair

Brian Waters is a researcher and community development specialist with over five years of field experience in Freetown, Sierra Leone, where he focuses on practical solutions to water insecurity. He combines insights from political ecology, systems thinking, and global health to explore the social and environmental challenges affecting water access in urban informal settlements. Brian holds dual master's degrees in Urban Planning and Agricultural Economics from the University of Illinois, giving him a versatile skill set for designing and implementing effective resource management strategies. Through his interdisciplinary background, he strives to develop sustainable approaches that enhance water security and resilience in rapidly growing cities.

If you're interested in getting involved with the student section, please reach out to Brian.

If you're interested in collaborating on One WATER Executive initiatives, especially the newsletter, please reach out to us at onewater@yorku.ca.