MSc position: Detecting and characterizing nanoplastics in drinking water sources

We invite applications for one MSc position to participate in an ongoing (since 2021) collaborative research project, "Microplastics fingerprinting at the watershed scale: from sources to receivers" ("Microplastics Fingerprinting" for short) (project website: https://uwaterloo.ca/microplastics-fingerprinting-research-project/). This project is funded by the NSERC funding program "Plastics science for a cleaner future" (https://www.nserc-crsng.gc.ca/professors-professeurs/rpp-pp/plastics-plastiques_eng.asp).

Understanding environmental nano- and micro- plastics (nano/microplastics) pollution and their associated health impacts and subsequently working to reduce their emission to the environment is now a major priority for Canada and other governments around the world. The main goals of the Microplastics Fingerprinting project at the University of Waterloo are to (1) advance the detection, quantification, and characterization of nano/microplastics in the environment and in drinking water sources, and (2) develop the assessment and modeling tools needed to predictively understand the sources and fate of different types of microplastics. In turn, the research will inform science-based risk assessments, governance approaches and adaptive management designed to reduce and prevent the environmental and health impacts of nano/microplastics.

The MSc student will be guided by a team of researchers from the University of Waterloo in the departments of Chemistry, Biology, Earth Sciences, Civil and Environmental Engineering, and Mechanical and Mechatronics Engineering, as well as collaborators from government and industry partner organizations.

MSc position description:

The MSc student will quantify and characterize nanoplastics in bottled and tap water. They will work to validate methods for the quantification of nanoplastics in water and then apply these methods to real bottled water samples. The methods used will include: Raman (micro)spectrocscopy to analyze particle surface chemistry, total organic carbon (TOC) analysis for nanoplastic concentrations, and zeta potential and hydrodynamic diameter analysis using multi-angle dynamic light scattering for effective particle charge and size. The overall goal of the MSc student's research will be to characterize the amounts of nanoplastics in drinking water (bottled and tap water) and their physico-chemical properties. These results can inform decision makers about the potential health impacts of nanoplastics in drinking water.

Applicants must have (or expect to soon complete) a degree in chemistry, earth/environmental sciences, geochemistry, biology, civil/environmental engineering, or a related field. Preference will be given to candidates with strong quantitative and writing skills and demonstrated experience in one or more of the following areas: analytical chemistry, vibrational spectroscopy techniques, surface chemistry techniques.

Application instructions:

In your application email, please include "Nanoplastic-MSc_YourName" in the subject line and attach a single PDF file that contains:

- Your motivation for applying to the position and your research interests
- Your curriculum vitae
- Copy of transcript(s) (unofficial transcripts will be accepted at the application stage)
- Contact information for up to 3 references

The University of Waterloo regards equity and diversity as an integral part of academic excellence and is committed to accessibility for all employees. As such, we encourage applications from women, persons with disabilities, Indigenous peoples (First Nations, Metis and Inuit), Black and members of racialized groups, individuals in the LGBTQ2+ communities, and others who may contribute to the further diversification of ideas.

If you have any questions regarding the application process and eligibility, or a request for accommodation during the selection process, please contact Stephanie Slowinski (seslowin@uwaterloo.ca) and Anita Ghosh (a9ghosh@uwaterloo.ca). Please submit your application package electronically as a single pdf file to Anita Ghosh (a9ghosh@uwaterloo.ca).

Closing date: Applications will be reviewed as they are received. The positions will remain open until filled. **We thank all applicants for their interest, however, only those individuals selected for an interview will be contacted.**