



Seminar Series

Winter 2020

Alexander Hall
Room 265

Thursday,
February 6

12 noon

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Environmental Nuclear Magnetic Resonance: A Powerful Tool for Unique Insights into Contemporary Problems in Environmental Chemistry

'Nuclear Magnetic Resonance (NMR) is arguably one of the most important analytical tools for the study of molecular-level processes in the chemical, material, and biophysical sciences; however, its potential as a tool to explore molecular-level processes in the environmental sciences is often overlooked. At its beginning, modern environmental chemistry was focused in large part on the identification and distribution of highly toxic or impactful compounds in the environment (e.g. chlorinated pesticides, CFCs, Heavy metals, etc.) that were displaying immediate and acute environmental consequences. While some of those problems remain today, many of the contemporary problems faced by environmental chemists are more subtle in their scope and impact and as such require different tools and approaches than those used in the past. This includes the non-targeted analysis of unknown and emerging contaminants, and the development of a more accurate relationship between the occurrence of harmful compounds in the environment and their actual impact on ecosystems. In this talk I will discuss the development of novel NMR-based approaches to help provide unique insights into challenging contemporary environmental problems, including the exploration of unknown and emerging environmental contaminants in groundwater, the behaviour and impact of perfluoroalkyl substances in soils, and the application of benchtop NMR as a practical tool for environmental analysis.