

## **ABSTRACT**

### **Environmental isotopes in aquitard research: are we finding solutions for nuclear waste isolation?**

Nuclear is one of the greenest and safest technologies available for energy production, although it still lacks widespread public endorsement. This may be largely because of fears over the accumulating high-level waste, which now amounts to about 250,000 tonnes globally. Nuclear agencies throughout the world have spent decades studying aquitards for isolation of nuclear waste in deep geological repositories. Over this time, the field of isotope geochemistry has developed important tracers and geochronometers to reconstruct the history of aquitard porewaters and gases. This talk presents the development of these tools, their role in assessing the integrity of aquitards for nuclear waste isolation, and where we are today in resolving the issue.

## **BIOGRAPHY**

Ian Clark is a Professor in the Department of Earth and Environmental Sciences at the University of Ottawa. Ian completed a Bachelor's of Science degree in earth sciences at the University of Waterloo followed by a Master's of Science degree in hydrogeology working with Peter Fritz on geothermal waters. Following five years working as a consultant with Piteau and Associates in Vancouver, he went on to complete his doctoral degree at the Université de Paris-Sud (Orsay) in isotope hydrogeology and paleoclimatology with Professor Jean Charles Fontes. Since joining the faculty at uOttawa, Professor Clark has worked to build up their analytical capabilities for geochemistry, noble gases, stable isotopes and radioisotopes. The new Advanced Research Complex (ARC) hosts the Lalonde AMS Laboratory with Canada's only accelerator mass spectrometer for radiocarbon and other trace radionuclides in the environment. Ian leads a group of graduate and undergraduate students undertaking research on isotopes in diverse hydrogeological environments, from groundwater resources, carbon cycling and permafrost hydrology to the dispersion of radionuclides in the environment and the isolation of nuclear waste.