



# BIGS: BTEX Isotopic fractionation for Gas Storage in aquifers monitoring

## *Seed Funding*

**Groundwater quality management** is a major concern when **storing natural gas in aquifers**. One of the promising indicators concerns the monitoring of the natural bio-attenuation of volatile organic tracers, such as BTEX, by measurements of the isotope ratios of  $d^{13}C$  and  $dD$ . However, it requires a **robust and precise measurement chain** and an interpretation framework that is still under debate.

This is what motivated researchers from two laboratories hosted at UPPA, **LFCR** and **IPREM**, associated with an industrial partner, **Storengy**, to elaborate the BIGS project. Its main idea is to **quantify the possible fractionation**, *a priori* weak, of  $d^{13}C$  and  $dD$  of BTEX due to physical mechanisms (solubility and diffusion) in storage conditions.

To achieve this goal, the research program will combine isotope analysis and original experiments, based on natural samples collected under *in situ* conditions, molecular simulations and thermodynamic modeling. The aim is to **verify that isotopic fractionation** is above all an **indicator of the biodegradation of BTEX**.

## Project Team

Isabelle Le Hécho, Lecturer-researcher, IPREM

Romain Vermorel, Guillaume Galliero, Hervé Carrier, LFCR, Maxime Enrico (Post-doc E2S), David Dequidt, Storengy