

## Seminar

### **TERAHERTZ TECHNOLOGY APPLIED TO GEOSCIENCES**



**Federico Sanjuan**

**19 March 2026, 2 p.m**

**Salle de séminaire du LAMA (1er étage),  
Bâtiment 21, rue du lac de la Thuile, Technolac**



**Seminar Overview:** The seminar will focus on the application of THz technology to geosciences, a pioneering research direction we have developed over the past five years. We will present results on oil shales, rocks of major scientific and industrial interest both as unconventional hydrocarbon resources and as caprocks critical for CO<sub>2</sub> injection and geological storage.

We will present THz imaging of organic matter distribution, highlighting its sensitivity to compositional contrasts at the sub-millimeter scale. The characterization of THz dielectric permittivity anisotropy and its relationship to rock fabric and lamination will also be addressed, demonstrating the capability of THz waves to probe structural organization and preferred mineral orientation. Furthermore, we will show how THz techniques enable the imaging of early-stage thermal transformations, offering new insights into organic matter evolution and thermally induced microstructural changes. Additional applications to be presented include fracture detection in reservoir rocks as limestone, dolomite as well as the use of THz measurements for assessing rock porosity. These results illustrate the strong potential of THz technology as a non-destructive, high-resolution tool for advancing petrophysical characterization and improving our understanding of complex geological materials.