

MINERALS AND ENVIRONMENTAL MATERIALS PLATFORM

A multi-technique platform dedicated to the synthesis, structural characterization and/or qualitative chemical composition analysis of inorganic oxide materials devoted to a wide range of applications (geoscience, environmental science, cultural heritage, mineralogy)

SCIENTIFIC EXPERTISE

- Materials identification
- Glass and ceramics synthesis
- Trace element analysis and quantification in liquids (down to 10 ppb for a large amount of elements)
- Samples observation without preparation (stereoscopic microscope, ESEM)

APPLICATIONS

- Waste water treatment
- Cultural heritage conservation
- Minerals
- Environmental hazards

TRACK RECORD

- Academic research
- Industrial projects

PUBLICATIONS

Anne Perez & al. Geochimica et Cosmochimica Acta, Elsevier, 2016

List of publications of the LGE laboratory

CONTACT

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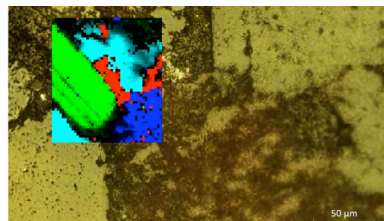
- Micro-Raman spectroscopy
- ICP-OES analysis
- XRD
- ESEM
- LA (laser ablation) ICP-OES
- Ionic Chromatography
- High temperature furnace under controlled atmosphere

SERVICE DESCRIPTION

The « Minerals and Environmental Materials » platform offers the possibility to synthesize, prepare, and/or characterize inorganic oxide samples in various fields : (geoscience, environmental science, cultural heritage, mineralogy).

The synthesis can be performed in two high temperature furnaces (one muffle furnace and a vertical furnace under controlled atmosphere) with platinum, alumina or graphite crucibles depending on the temperature range. Preparation includes resin embedding, polishing, and a diamond saw for macroscopic (cm) samples.

Depending on the requirements, the samples can be characterized by different methods detailed below.



Raman mapping of a sandstone sample : light blue : quartz, red : goethite, green : mica, dark blue : orthoclase

OFFERS

- ICP-OES: Analysis of a large amount of chemical elements down to 10 ppb in liquids (2 min per sample)
- LA-ICP-OES: Qualitative chemical composition of homogeneous and heterogeneous samples down to 10 μm . Ablation in selected areas. Micro-destructive technique.
- μ -Raman: 1 μm spot. Laser Nd:YAG at 532 nm. Mapping possible for polished samples (resolution of 1 μm).
- XRD: standard X-ray powder diffraction.
- Synthesis and preparation: high temperature furnace up to 1600°C, polishing tools, diamond saw, stereoscopic microscope
- ESEM: environmental scanning electron microscope (minimal sample preparation and possibility to observe hydrated samples or to perform in-situ experiments)