

Labex MATISSE

Axe 1 Biomineralization

« Biomineralization mechanisms and electronic transfers associated with bacterial sulfate reduction »

Becq Aline
IMPMC, LCMCP



cellule électrochimique à 3 électrodes inoculée avec de l'eau du lac Pavin à la profondeur du pic de

Hosting laboratories, teams and and thesis supervisors names:

- IMPMC, Geobiology, Jennyfer Miot and Olivier Beyssac
- LCMCP, Christel Laberty Robert

Research project (10 lines)

This thesis aims at studying electron transfers associated with the activity of sulfate reducing bacteria. For this purpose we focus on a natural setting: the water column of a modern meromictic (i.e. permanently stratified) and ferruginous lake: lake Pavin (Massif Central, France). Natural samples collected from the deep anoxic part of this lake are studied. Electro-activity (i.e. the capacity to transfer electrons towards electrodes) of these water samples is explored in electrochemical cells, with the aim to discriminate the contribution of microorganisms (and especially sulfate reducing bacteria) from the contribution of abiotic processes. In particular, the potential role of (bio)minerals will be investigated. We aim at combining electrochemical measurements with mineralogical and microbiological characterizations, down to the nanometer- or molecular-level. Our study would potentially provide new insights into the natural electroactive microbial diversity and processes associated with this activity.

scientific results & impacts

- First inoculations of electrochemical cells with lake Pavin's water

Main key facts

- Poster presentation at the Biomineralization School organized by Labex MATISSE (1-5 december 2014)
- Poster presentation at the UPMC ED398 Doctoral School Days (8-9 april 2015)
- Poster presentation at the IMPMC PhD student Day (16 april 2015)