Postdoctoral research associate in metamorphic petrology

Job offer from the institut de physique du globe de Paris | CNRS UMR 7154

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| **Researcher in** | Metamorphic petrology |
| **Duration** | 30 months |
| **Affectation** | Geomicrobiology |
| **Salary** | 2727.65€ brut |
| **Date of publication** | 19/12/2023 |
| **Starting date** | 01/04/2024 |
| **Location** | IPGP |

### The institut de physique du globe de Paris

A world-renowned geosciences organisation, the IPGP is associated with the CNRS and an integrated institute of the Université Paris Cité. Bringing together more than 500 people, the IPGP studies the Earth and the planets from the core to the most superficial fluid envelopes, through observation, experimentation and modelling.

The research aeras are structured through 4 main unifying themes: Interiors of the Earth and Planets, Natural Hazards, Earth System and Origins.

The IPGP is in charge of labelled observation services in volcanology, seismology, magnetism, gravimetry and erosion. And the IPGP's permanent observatories monitor the four active French overseas volcanoes in Guadeloupe, Martinique, Réunion Island and Mayotte.

The IPGP hosts powerful computing resources and state-of-the-art experimental and analytical facilities and benefits from first-class technical support. The IPGP provides its students with geosciences training that combine observation, quantitative analysis and modelling, and that reflects the quality, richness and thematic diversity of the research conducted by the IPGP teams.

### Team Department

The postdoctoral research associate will be part of the geomicrobiology team of IPGP. This interdisciplinary group brings together (micro-)biologists, biogeochemists, spectroscopists and petrologists to develop innovative methods for imaging at micro- and nanoscale of bio-organo-mineral interfaces in rocks (terrestrial and extraterrestrial). The team's research focuses on the deep cycle of organic carbon, the characterization of microbial ecosystems in extraterrestrial or extreme environments, and the understanding of how these microbial communities interact with their immediate environment. In particular, the team combines field approaches, petrology, spectroscopy, microscopy, molecular biology and bioinformatics to understand how carbon and hydrogen transfers between the planet's interior and its surface impact the development of biological systems (e.g. hydrothermalism), as well as the influence of microorganisms on mineral formation or dissolution (stromatolites, hydrothermal vents, caves, deep subsurface).

### Missions

> Presentation of the missions within the context

The postdoctoral research associate will focus on the identification and characterization of carbonaceous compounds and associated mineralogy (notably Fe-, S-, and radionucleide bearing phases that are keys for H2 production and life sustenance) in metamorphic rocks composing the Mont Avic massif (including samples from both the mine galleries and the surrounding area). The aim is to reconstruct the metamorphic history of carbonaceous compounds from their formation and storage at depth during alpine subduction, to their transfer and devolatilization toward the surface during alpine collision. The postdoctoral research associate will (*i*) apply our suite of high-resolution techniques to quantify the abundance of abiotically-reduced C phases *vs* biologically-derived carbonaceous matter in the studied samples and (*ii*) determine the metamorphic microhabitats of these phases to determine which processes can lead to their devolatilization and the formation of H2 and CH4 during alpine orogeny.

> Number of agents: 1

> Position of responsibility: The postdoctoral research associate is expected to take part of the supervision of Licence or Master interships.

> This project is part of the ANR JCJC CARBioNIc

### Activities

> Description of the activities : Field geology, petrological characterization of metamorphic samples (thin section observations, SEM, EPMA analyses), thermodynamic quantification (Perplex) and spectroscopic characterization of organic compounds (Raman, FTIR, SNOM…).

### Expected Skills

> Good background in metamorphic petrology

> Computer tools like Perplex

> Some experience of carbonaceous matter characterization at micro scale.

> Capacity for interdisciplinary and international teamwork and excellent communication skills will be taken into account.

### Obligations and risks

> Full-time position in IPGP

> Field work in the Alps during summer are expected

### Training and experience required

> The successful applicant should hold a PhD in a relevant discipline (e.g., Earth Sciences, Geochemistry, and Chemistry)

### How to apply

> CV and cover letter

> 01/02/2024

> Contacts: Further details of the position can be found from Dr. Baptiste Debret (debret@ipgp.fr) and Dr. Bénédicte Ménez (menez@ipgp.fr).