

Titre: Doctoral Student SNSF in Isotope Geochemistry

Identifiant de demande de recrutement **20476** - Publié - (Doctorant-e) - (Géosciences et environnement) - (Temps plein) - (Faculté des géosciences et de l'environnement) - (Corps intermédiaire)

Introduction

UNIL is a leading international teaching and research institution, with over 5,000 employees and 17,000 students split between its Dorigny campus, CHUV and Epalinges. As an employer, UNIL encourages excellence, individual recognition and responsibility.

Presentation

We invite applications for a **4-year PhD position in Isotope Geochemistry** to work conjointly within the Institute of Earth's surface dynamic and the Institute of Earth Sciences. The Center of Advanced Surface Analysis (CASA) is a joint facility between UNIL and EPFL and hosts a SIMS instrument (<https://swissims.com/>) and a NanoSIMS.

This interdisciplinary research project will couple microbiology and isotope geochemistry to investigate the formation, preservation and alteration of the pyrite paleo-environmental proxy. We will investigate the influence of subsurface microorganisms on S in sediment by combining micro-scale and bulk rock approaches. Once the mineral species will be characterized, multi-S isotope analyses by SIMS and NanoSIMS will be conducted to contribute insights into the current and historic importance of coupled reductive and oxidative S cycling. The PhD project will be co-supervised by Prof Jasmine Berg and Prof Johanna Marin-Carbonne.

Job information

Expected start date in position : 01.04.2023 or upon agreement

Contract length : 1 year, renewable maximum 4 years

Activity rate : 100%

Workplace : Lausanne Mouline (Geopolis building)

Your responsibilities

Sulfur redox cycling exerts a significant impact on the global organic carbon reservoir and the oxidation state of the atmosphere. Microbial metabolisms involving sulfur are thought to be extremely ancient, thus playing an important role in shaping the surface chemistry of early Earth. These ancient metabolic reactions are known to leave stable isotope signatures in mineral byproducts such as pyrite, along with organic sulfur compounds, enabling us to trace their origin and extent in the environment. Despite recent evidence that S cycling in terrestrial environments is important, multiple S isotopes have not been systematically studied there, mostly because the small size and amount of pyrite precipitated prevents bulk isotopic analyses of sulfide. Fortunately, cutting-edge techniques such as secondary-ion mass spectrometry (SIMS) can resolve S and C isotope distribution at the microscale and have opened a new window for S isotope analyses within minerals and organic matter. The project will consist of measuring multi S isotope composition in sediments of three different freshwater systems from the Swiss Alps as well as experimental products from microbial cultivation by combining bulk and SIMS technique.

We value curiosity, creativity, and the drive to discover new things. You are expected to have a strong mastery of the English language. Possible collaborations include work on international projects in South Africa, Israel and the Swiss Alps.

Your qualifications

- MSc degree (or equivalent) in geoscience, geochemistry, or related domain.
- Strong background in redox chemistry
- Experience in isotope analyses is a plus.
- Excellent written and spoken English skills. French in an asset, but not required.
- Able to work both independently and collaboratively in an international, interdisciplinary environment

What the position offers you

We offer a nice working place in a multicultural, diverse and dynamic academic environment. Opportunities for professional training, a lot of activities and other benefits to discover.

Contact for further information

Prof. Johanna Marin-Carbonne
johanna.marincarbonne@unil.ch

Prof. Jasmine Berg
jasmine.berg@unil.ch

Your application

Deadline : 30.11.2022

We look forward to receiving your online application in PDF format including the following documents :

- Cover letter specifying your interest for this position and previous related experience
- Curriculum Vitae with contact information for at least two professional references

Only applications through this website will be taken into account.

We thank you for your understanding.

Additional information

UNIL is committed to equal opportunities and diversity.

www.unil.ch/egalite

UNIL supports early career researchers.

www.unil.ch/graduatecampus