

Titre: Phd position on isotope characterization of sulfurbearing organic compounds

Introduction

UNIL is a leading public institution of higher education and research in Switzerland. It is composed of seven faculties for a total of approximately 17'000 students and employs around 5'000 researchers, teachers and technical staff. The hosting laboratory is part of the Earth Science Institute within the Faculty of Geosciences.

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NCCR Genesis

The National Centre of Competence in Research NCCR Genesis is a research infrastructure project funded by SNSF focusing on exploring the emergence of life in the Universe. This interdisciplinary research infrastructure brings together physicists, earth and planetary scientists, chemists and biologists to understand the conditions and the mechanisms that enable life to emerge. Developing reliable methods to detect reliable traces of life (biosignatures) – whether through remote sensing or direct onsite measurements – requires significant innovation. These challenges demand close collaboration across physics, biology, chemistry and the earth sciences. NCCR Genesis does not aim to provide answers in all fields, but to drive innovative research and achieve decisive progress.

Details on NCCR Genesis are available on its website <https://nccr-genesis.ch>.

NCCR Genesis is deeply committed to equality, diversity and inclusion. Our aim is to cultivate a respectful and fair work culture with equal access to professional development and support for all. We strongly encourage applications from under-represented groups.

Presentation

We are pleased to announce a fully funded PhD position focusing on the development of potential new biosignature based on sulfur-bearing organic compounds. The PhD student will compile a suite of modern and ancient terrestrial, extraterrestrial, and (abiotic) laboratory-generated samples and will analyze these materials using several techniques to investigate their isotopic and structural properties. The resulting dataset will be used to assess which isotopic and structural properties are unique to biotic systems, thus providing a foundation and framework for the future detection of possible biosignatures on exoplanets.

Hosted at the University of Lausanne (UNIL), the position is funded as part of an NCCR collaborative research project between Professor Marin Carbonne and Professor Hemingway.

Job information

Expected Start: 01.11.2026 or upon mutual agreement

Contract length: 1+1+2 years (maximum 4 years)

Activity rate: 100 %

Workplace: Institute of Earth Sciences, University of Lausanne

Your responsibilities

The project aims to establish new quantitative constraints on the speciation and isotopic composition of sulfur-bearing organic compounds as potential biosignatures. The PhD student will examine a range of carbon- and sulfur-bearing compounds sourced from hydrothermal environments, chondrites, asteroids, and Archean samples to characterise their isotopic and structural diversity. To evaluate the biosignature potential of site-specific C and S isotope

compositions, the project will combine Raman spectroscopy, synchrotron-based techniques (SR-XRF and XANES), secondary ion mass spectrometry (SIMS), and Orbitrap mass spectrometry applied to both natural and experimentally produced organic-bearing samples. The PhD student will be co-supervised by Prof. Marin-Carbonne (UNIL) and Prof. Hemingway (ETH Zurich) and will closely collaborate with several international colleagues, primarily Dr. Labidi (IPGP, Paris, France). Twenty percent of the role will involve teaching assistance, supervising master's students and helping in the laboratory.

Your qualifications

- ☐ MSc degree in Geochemistry, Geology, Earth Sciences, or related field
- ☐ Strong background in geochemistry, sedimentology, or geobiology
- ☐ Experience with microscopy, isotope and geochemical analysis preferred
- ☐ Commitment to research based on experimental approaches

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.

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Contact for further information

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Professor Jordon Hemingway jordon.hemingway@eaps.ethz.ch

Your application

Deadline : 31.08.2026

Please send your full application document as a single PDF file containing :

- ☐ CV including research experience
- ☐ Statement of research interests and motivation letter (maximum 2 pages)
- ☐ Academic transcripts from your MSc degree (in English or French)
- ☐ Contact information for 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:

- equality, diversity and inclusion within its community;
- ensuring an open and respectful environment that is conducive to personal development;
- offering working conditions that facilitate work-life balance;
- supporting early career researchers.

unil.ch/equality

unil.ch/families

unil.ch/graduatecampus