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PhD Student in geomicrobiology
"Combining microbiology and biogeochemical modelling to develop a sustainable exploitation of resources from deep geothermal fluids"

The Laboratory of Microbiology of the University of Neuchâtel (LAMUN) is offering a PhD position starting on **February 1st, 2025** or by agreement:

Project summary – This PhD position is part of an interdisciplinary project aiming at combining experimental work and biogeochemical modelling to evaluate the use of microbial-based biotechnologies to improve resource exploitation within the geothermal energy operation context. Two aspects will be considered: the recovery of critical raw materials (CRM) and the prevention of silica- and/or carbonate-scaling. This requires to describe the biogeochemical characteristics of the fluids in Switzerland, to understand how microbial activity can be used to change the solubility of selected elements (CRMs and/or Ca, Mg, Si). For this, biogeochemical modelling will be combined to the generation of experimental proof-of-concept data in order to improve the biogeochemical modelling for different fluid compositions. Eventually, by combining experimental work and biogeochemical modelling in an iterative loop, the project aims at obtaining a predictive tool to estimate the potential of extraction rates of selected CRM and scaling prevention for the different types of geothermal fluids occurring in Switzerland.

The project is a collaboration between the LAMUN (Profs Saskia Bindschedler and Pilar Junier) and the Rock-Water Interaction group (PD Dr Christoph Wanner) from the University of Bern and is funded by the Swiss Federal Office of Energy (SFOE). The PhD student will work at the LAMUN in Neuchâtel but is expected to collaborate with the project partners at Unibe.

Specific tasks of this position

- To collect and analyze data on microbial communities associated to the geothermal fluids
- To exchange data with the partner at Unibe to feed the biogeochemical models
- To run experiments in batch and in a bioreactor to assess the impact of selected microbial activities on elemental solubility
- To integrate modelling data to design new experimental validation tests
- To participate to the practical teaching for bachelor and master students
- To present research findings at national and international conferences
- To publish the results in scientific journals

Your profile

- MSc in microbiology, biogeosciences, environmental sciences or similar
- Previous experience in laboratory work with microorganisms
- Skills in molecular biology from sample processing to data analyses
- Basic skills in modelling tools are a desirable
- Innovative, team-oriented, independent, flexible with great communication skills
- Willingness and capacity to work in a team
- A very good level of English (spoken and written), French and/or German skills are an advantage

What we offer

- Opportunity to do a PhD in an interdisciplinary and applied topic and in collaboration with other Swiss institutions
- Combination of lab work and modelling

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- Attractive working environment with flexible working conditions

Please contract Dr Saskia Bindschedler, group leader at the LAMUN, for further enquiries.

To apply, please compile the following documents into a single PDF to be sent by e-mail to Saskia.bindschedler@unine.ch AND pilar.junier@unine.ch no later than Dec 15, 2024:

- cover letter
- curriculum vitae
- contact details of two referees

The University of Neuchâtel is committed to providing non-discriminatory working conditions. We take gender balance and diversity seriously in our hiring decisions.