



Postdoctoral Research Associate position

Area: reactive transport during carbon storage in seafloor basalts

Duration: Up to 3 years, depending on progress and funding

Start date: January 2020 (negotiable)

Salary: ≥\$45,000/year plus benefits – negotiable based on funding, qualifications, and experience

Application Deadline: Evaluation of applications will begin on November 29, 2019

Applications are invited for a Postdoctoral Research Associate position funded for up to 3 years by the Pacific Institute for Climate Solutions working on a joint project between the Universities of Calgary, British Columbia, and Victoria. The project is aimed at understanding the processes governing CO₂ storage in oceanic basalts. More information about the scale and scope of the project may be found here: <https://www.uvic.ca/news/media/2019+solid-carbon-partnership+media-release>. The successful candidate will employ a reactive transport modeling approach to assess the feasible rates of CO₂ injection at Ocean Networks Canada's Cascadia Basin site in the eastern Pacific Ocean, and adapt this approach to the evaluation of other prospective sites globally. Hydrogeologic and reactive transport modeling of the associated processes will be the primary focus, with additional work effort dedicated to performing fluid-rock reaction experiments at conditions matching those in the study area to calibrate the modelling efforts.

The successful candidate will have a PhD in the geosciences or a closely related field, including but not limited to geology, geochemistry, or hydrogeology. Experience using hydrogeological and/or reactive transport models is imperative. Familiarity with performing water-rock interaction experiments will be viewed favorably. The position requires excellent communication and interpersonal skills, intellectual independence, and a willingness to explore unfamiliar aspects of the geosciences.

The successful candidate will be working under the supervision of Drs. Benjamin Tutolo and Rachel Lauer at the University of Calgary and Dr. Laurence Coogan at the University of Victoria, in collaboration with Dr. Gregory Dipple at the University of British Columbia and other members of the "Solid Carbon" project partnership team. They will have routine access to the University of Calgary's Advanced Research Computing cluster and hydrogeologic, geochemical, and reactive transport modeling software as well as an extensive suite of experimental and analytical tools for performing and characterizing water-rock-CO₂ interaction experiments.

Major Duties/Responsibilities:

- Simulate the fate of injected CO₂ under a wide range of pumping scenarios and hydrological conditions in close collaboration with the project's engineering team
- Simulate leakage scenarios and develop recommendations for detection in close collaboration with the project's technological acceptance team
- Use the model results to parameterize a simplified model of CO₂ injection and storage that can be used as a preliminary tool for screening other areas of the ocean basins, and work with team members to develop this into an open access web tool
- Perform fluid-rock reaction experiments to parameterize and calibrate the reactive transport models
- Present and report research results in peer-reviewed journals in a timely manner
- Co-supervise undergraduate students' complementary research projects
- Maintain a safe, collegial, interactive, and welcoming research environment

Qualifications:

- A PhD in geoscience or a related field, preferably within the last three years
- Firm grasp of hydrogeology and aqueous geochemistry
- Experience with hydrogeological and/or reactive transport modeling
- Excellent written and oral communication skills

Application details:

Applications, consisting of a single PDF file combining the four documents listed below, should be emailed directly to Dr. Benjamin Tutolo (benjamin.tutolo@ucalgary.ca). Please also direct any inquiries about the position to Dr. Tutolo.

Required documents:

- 1) A 1-page cover letter expressing interest in this position
- 2) A CV with a list of all publications
- 3) A 1-page research statement summarizing previous research experience
- 4) The names and contact information of at least two referees with knowledge of your research and academic experience

More information about ongoing work in our research groups at the University of Calgary and the University of Victoria may be found at: www.lauer-geofluids.xyz ,
www.geoscience.ucalgary.ca/reactive-transport/ and web.uvic.ca/~lacoogan/Site/Laurence_Coogan.html

The University of Calgary recognizes that a diverse staff/faculty benefits and enriches the work, learning and research experiences of the entire campus and greater community. We are committed to removing barriers that have been historically encountered by some people in our society. We strive to recruit individuals who will further enhance our diversity and will support their professional success while they are here.