



Postdoctoral and graduate student positions available: Geo-processes in Mineral Carbon Storage (GMCS)

Postdoc and graduate student positions are available in theoretical, computational, and experimental geomechanics for study associated with the new center on *Geo-processes in Mineral Carbon Storage* ([GMCS](#)), funded through the Energy Frontier Research Centers (EFRC) program by the Office of Basic Energy Sciences, US Department of Energy. The objective of GMCS is to develop an understanding of the key geo-processes, occurring across multiple scales, that is necessary to achieve a successful mineral carbon storage operation. This will require cohorts of engineers and scientists, from across the spectrum of geomechanics, geochemistry, porous media flow, reactive transport, and sensing technologies, to work in concert towards the common mission of developing the fundamental science and engineering capability that will lead to realizing the full potential for permanent subsurface storage of CO₂ via mineralization.

Researchers will (i) contribute to the theoretical modeling of crack propagation driven by reactive fluids, considering dissolution and precipitation mechanisms; (ii) conduct numerical simulations to assess the evolution of the transport properties of a fractured porous rock caused by injection of a reactive fluid; and (iii) implement a laboratory setup and perform experiments to study the poromechanical and ultrasonic properties of specimens subjected to the flow of water-dissolved CO₂. The laboratory facilities supporting the work include the Waves & Imaging Laboratory (<https://bojanguzina.org/waves-imaging-lab/>), the W. David Lacabanne Rock Mechanics Laboratory (<https://cse.umn.edu/cege/research-facilities-civil-engineering-building>), Earth Sciences X-ray Computed Tomography Laboratory (<https://xraylab.esci.umn.edu>), and Porous Media Flow Visualization Laboratory (<https://kang-research-group.esci.umn.edu>).

Successful candidates for the postdoc positions should have a PhD in applied mathematics, civil engineering, earth sciences, or a related field. The initial appointment is for one year and is renewable for up to four years. Expertise in at least one of the following disciplines is expected: fracture mechanics, poromechanics, reactive porous media flow, or wave mechanics; knowledge of geochemistry would be beneficial but is not required. Also of importance are communication skills and ability to work with the senior investigators, other postdocs, and graduate students.

Applicants for the postdoc positions should submit a statement of interest, 2-page CV, and contact information of three references to Emmanuel Detournay detou001@umn.edu, Bojan Guzina guzin001@umn.edu, Department of Civil, Environmental and Geo- Engineering, and Peter Kang pkkang@umn.edu, Department of Earth and Environmental Sciences, University of Minnesota. Applicants for graduate assistantship positions should complete the UMN graduate school application <https://choose.umn.edu/apply/>