

The Lamont-Doherty Earth Observatory of Columbia University located in Palisades, New York, invites applications for a **Postdoctoral Research Scientist** position focusing on modeling fluid transport and geochemical controls on carbon mineralization in ultramafic systems (e.g ophiolites). These systems may provide large-scale repositories for safe, permanent storage of CO₂ to combat climate change. Research is needed to understand and optimize reactive flow in dynamically brittle media at both lab and field scale and accurately assess CO₂ storage capacities.

This postdoctoral researcher will work collaboratively with a team of researchers at Lamont Doherty and Columbia University on a continuing project to advance technologies for CO₂ injection including:

- Develop or use computational models to understand fundamental physics of reactive flow of mixed water-CO₂ systems in poro-elastic-plastic-brittle materials to evaluate and optimize “reactive-cracking” processes that may enhance permeability during to mineral carbonation.
- Calibrate the theory against ongoing laboratory experiments.
- Extend the models to understand field-scale implementation of CO₂ storage demonstration projects in ultramafic reservoirs.

Qualifications

Candidates should have completed or be nearing completion of a PhD in computational mathematics, civil or petroleum engineering, geochemistry, geological sciences or related disciplines, and have demonstrated competence in modeling geological reservoirs and/or coupled fluid-solid mechanics in large-deformation poro-elastic-plastic media. Excellent communication, interpersonal and organizational skills, independent judgment, and demonstrated ability to conduct and publish high-quality research are required.

Prior work with carbon mineralization is desirable, as well as an understanding of geochemical, thermodynamic and fluid processes involved with ultra-mafic rock systems. Any questions about the position may be directed to Marc Spiegelman at mspieg@ldeo.columbia.edu.

Initial appointment will be for 1 year, with eligibility for renewal for up to 2 additional years contingent on performance and funding.