

*Centre for Earth Evolution and Dynamics (CEED), University of Oslo*

## Postdoctoral fellowships in solid Earth geophysics, mineralogy and geochemistry

The Centre for Earth Evolution and Dynamics (CEED), University of Oslo invites applications for three postdoctoral fellowships (2-3 year terms). More information about CEED and the positions can be found at:

[www.mn.uio.no/ceed/english/](http://www.mn.uio.no/ceed/english/)

[www.mn.uio.no/ceed/english/about/vacancies/index.html](http://www.mn.uio.no/ceed/english/about/vacancies/index.html)

[www.earthworks-jobs.com/geoscience/oslo16111.html](http://www.earthworks-jobs.com/geoscience/oslo16111.html)

### **Computational mineralogy and geochemistry**

To strengthen the deep Earth materials group, we seek a postdoctoral research fellow in computational mineralogy and geochemistry (density functional theory and molecular dynamics). We investigate the phase relations, material properties, chemical exchange and heat and mass transfer in the lower mantle and near the core-mantle boundary. Our current projects include atomistic simulations of crystal chemistry, Fe-spin state, phase relations and physics of bridgmanite and post-bridgmanite in the systems  $\text{MgSiO}_3\text{-FeSiO}_3$ ,  $\text{MgSiO}_3\text{-FeAlO}_3$  and  $\text{MgSiO}_3\text{-Al}_2\text{O}_3$ , melting relations in the system  $\text{CaO-MgO-SiO}_2$  and diffusion of noble gases in bridgmanite. We would like to expand these efforts to other minerals in the lower mantle and to the equilibrium and potential chemical exchange between the deep mantle and outer core, especially in the aftermath of the Hadean magma oceans.

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### **Mantle geodynamics**

This project is to constrain the role of viscosity anisotropy for the dynamics of mantle convection. The asthenosphere accommodates shear between the upper mantle and the tectonic plates, and is composed of anisotropic olivine fabrics that permit deformation more easily in some directions than others. This postdoc will be responsible for developing methods to incorporate viscosity anisotropy into numerical models of upper mantle dynamics, and for testing these models against available seismological and geophysical datasets. Applicants should have (1) experience in the development and use of numerical modeling codes for mantle dynamics applications, (2) familiarity with geodynamic processes and seismological datasets for the mantle, and (3) a record of successfully communicating research results via publications and conference presentations.

Contact person: Clint Conrad ([c.p.conrad@geo.uio.no](mailto:c.p.conrad@geo.uio.no))

### **North Atlantic geodynamics**

This project aims to study the geodynamic evolution of the North Atlantic by investigating the interactions between the Iceland plume, the mantle and the lithosphere from the Eocene. 3D numerical modelling of the thermo-mechanical and magmatic evolution of the region will be conducted in the first step. Model predictions of spatio-temporal surface evolution will be tested against a multitude of geological and marine geophysical observations. The project will be conducted together with ETH (T. Gerya) and U. Utrecht (W. Spakman).

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