UNIVERSITETET I OSLO

Jobbnorge ID: 150857
Deadline: 8/25/2018
Website: http://www.uio.no/
Scope: Fulltime
Duration: Engagement

Postdoctoral Research Fellowship in Computational Mineralogy and Geochemistry

Job description

A Postdoctoral Research Fellowship (SKO 1352) is available at Centre for Earth Evolution and Dynamics, a Norwegian Centre of Excellence. The fellowship period for is 3 years. Note that no one can be appointed for more than one specified period at the same institution. The application deadline is 25. August 2018. The starting date for this position is Autumn 2018.

Project description

To strengthen the deep Earth materials group, we seek a postdoctoral research fellow in computational mineralogy and geochemistry (first principles atomistic simulation by DFT, using mainly the VASP platform). We focus on the phase relations, material properties, chemical exchange and heat and mass transfer in the lower mantle and outer core. Developing new and improved methodologies is an important aspect of the efforts. Our ultimate objective is to put tighter constraints on the structure, materials, physical properties and dynamics of the lower mantle and outer core, and in particular on the D"-zone, the outermost stagnant core (E'-layer) and the convecting outer core.

Projects which are partly completed include the crystal chemistry, cation ordering, Fe-spin state, electric conductivity and phase relations of bridgmanite and post-bridgmanite in the systems $MgSiO_3$-$FeSiO_3$, $MgSiO_3$-$FeAlO_3$ and $MgSiO_3$-Al_2O_3, the substitution mechanisms and partitioning of Al between β-stishovite and seifertite, the melting relations in parts of the system CaO-MgO-SiO_2 and the diffusion rates of He and Ne in bridgmanite and ferropericlase.

We would like to expand the efforts to the equilibrium state and potential chemical exchange between the Hadean basal magma ocean and the outer core. The liquidus phase relations in the Fe-Si-O system (and possibly the Fe-Mg-O and Fe-Al-O systems) at pressures and temperatures of the Hadean to the present outer core are of special interest and importance.

An additional activity, aimed at addressing the structure, composition and dynamics of lower mantle lithologies, is to use the BurnMan code or other programs to develop density and seismic velocity profiles for fertile peridotite, subducted harzburgite and basalt, candidate LLSVP-materials, as well as $MgSiO_3$-dominated and highly refractory and viscous bridgmanitic domains at different thermal gradients. We would also like to use atomistic simulations to determine the partitioning of selected trace elements between silicate melt and the minerals bridgmanite, ferropericlase and Ca-perovskite and between silicate and metallic melts. Based on experience and interest, the postdoctoral fellow may take charge of one or more of the suggested projects.

Qualification requirements

The Faculty of Mathematics and Natural Sciences has a strategic ambition of being a leading research faculty. Candidates will be selected in accordance with this, and expected to be in the upper segment of their class with respect to academic credentials. The main purpose of post-doctoral research fellowships is to qualify researchers for work in top academic positions within their disciplines.

- The candidates must have a PhD or other corresponding education equivalent to a Norwegian doctoral degree in atomistic simulations in the fields of inorganic materials science (chemistry, physics or Earth science) at the start of employment.
- Strong curiosity, motivation and career ambitions to unravel the mineralogy, structure, dynamics and evolution of the Earth are essential.

We offer

- salary NOK 483 700 - 560 700 per year depending on qualifications in position as Postdoctoral Research Fellow (position code 1352)
- a professionally stimulating working environment
- attractive welfare benefits and a generous pension agreement, in addition to Oslo’s family-friendly environment with its rich opportunities for culture and outdoor activities

How to apply

The application must include

- Application letter
- Statement of research experience and research interests
- CV (summarizing education, positions, pedagogical experience, administrative experience and other qualifying activity)

- Copies of educational certificates and university transcripts
- A complete list of publications
- Names and contact details of 2-3 references (name, relation to candidate, e-mail and telephone number)

The application with attachments must be delivered in our electronic recruiting system. Foreign applicants are advised to attach an explanation of their University's grading system. Please note that all documents should be in English (or a Scandinavian language).

In assessing the applications, special emphasis will be placed on the documented, academic qualifications, the project description (whenever this is required in the call for applicants), and the quality of the project as well as the candidates motivation and personal suitability. Interviews with the best qualified candidates will be arranged.
It is expected that the successful candidate will be able to complete the project in the course of the period of employment.

Formal regulations

Please see the guidelines and regulations for appointments to Postdoctoral fellowships at the University of Oslo.

No one can be appointed for more than one specified period at the same institution. According to the Norwegian Freedom and Information Act (Offentleglova) information about the applicant may be included in the public applicant list, also in cases where the applicant has requested non-disclosure.

The University of Oslo has an agreement for all employees, aiming to secure rights to research results etc.

The University of Oslo aims to achieve a balanced gender composition in the workforce and to recruit people with ethnic minority backgrounds.

Contact information

Professor Reidar G. Trønnes, r.g.tronnes@nhm.uio.no

For technical questions about the electronic recruitment system, please contact Helene Jansen h.b.jansen@mn.uio.no

About the University of Oslo

The University of Oslo is Norway's oldest and highest rated institution of research and education with 28 000 students and 7000 employees. Its broad range of academic disciplines and internationally esteemed research communities make UiO an important contributor to society.

Centre for the Earth Evolution and Dynamics (CEED) is a Norwegian Centre of Excellence that provides a stimulating and well-funded research environment. The main goal of the centre is to develop a model that explains how mantle processes drive plate tectonics and trigger massive
volcanism and

associated environmental and climate changes throughout Earth's history.
The centre explores the distribution and history of tectonic plates in time and space, and examines the driving mechanisms that steer all stages of the 'Wilson Cycle', and aims to establish the links between Earth's interior, crust and oceans, atmosphere and biosphere. CEED endeavors to also unravel similarities and differences of our planet with earth-like planetary bodies.
The centre was established in 2013 and consists of ca. 70 full time and part time professors and researchers, PhD Research Fellows and Postdoctoral Research Fellows.

Additional information

Place of service:

Problemveien 7 0313 Oslo (Oslo Municipality)