UNIVERSITETET I OSLO

Jobbnorge ID: 280126
Deadline: 6/15/2025
Website: http://www.uio.no/
Scope: Fulltime
Duration: Engagement

Researcher in Experimental Characterization of Lower-Crustal Seismogenic Faults

About the position

Position as Researcher available at the Njord Centre, Department of Geosciences, University of Oslo, UiO

The position is for a period of 24 months.

Starting date no later than 10.01.2026.

More about the position / Project description

Applicants are invited for a 2-year position as Postdoctoral Researcher in Experi-mental Characterization of Lower-Crustal Seismogenic Faults to be based at the Njord Centre, Department of Geosciences, University of Oslo (UiO). The preferred start date of the position is November 1st, 2025, and the position shall start no later than January 10th, 2026. The position is part of the project “CONTINENT - Conditions for earthquake nucleation in the lower crust” funded by the Research Council of Norway and hosted at the Njord Centre of the University of Oslo. The research will be carried out in collaboration with the University of Leeds and the University of Cambridge.

The researcher will characterize the damage zone of exhumed, pseudotachylyte-bearing lower-crustal seismogenic faults within anorthosites and gabbros by means of nano-indentation mechanical tests. The tests will be performed at the Friction Lab at University of Oslo. The objectives of the tests are (1) to measure elastic modulus, hardness and fracture toughness in rocks characterized by different degrees of earthquake-induced damage, and (2) to determine the creep parameters and the yield strength of pseudotachylyte-bearing fault cores. Grainscale local variations of elastic modulus, hardness and fracture toughness will be mapped as a function of mineral composition, grain size, crystallographic orientation, and degree of lattice distortion using the scanning mode of the nano-indentation testing. The micro- and nanoscale structure of the indented sites will be analyzed before and after the experiments with scanning- and transmission electron microscopy techniques, including high-angular resolution electron backscatter diffraction (HR-EBSD) at the Gold-schmidt Lab, the Norwegian national infrastructure for the advanced characterization of solid Earth materials. The results of nanoindentation will be compared with the results of triaxial tests of bulk-rock elastic properties and fracture toughness performed at the University of Leeds, to assess the potential for upscaling results from nanoindentation to bulk-rock properties, and any related grain-scale effect.

The end goal of this project is to develop, via experimental testing and advanced material characterization, quantitative models of the process underlying the repeated generation of pseudotachylytes in lower-crustal seismogenic faults, and of their subsequent ductile overprint during post- and interseismic stages. To this end, collaborations with experts in fracture mechanics and in numerical modelling are available within the CONTINENT project and in the Njord centre.

The successful candidate will have the opportunity to spend research visits in Leeds during the project to perform triaxial experiments and electron microscopy analysis in collaboration with Prof D. Healy and Prof. S. Piazolo. The postholder will be en-couraged to develop a leadership role within the project, present internal progress reports, present and discuss results at national and international conferences, write up findings for publication in peer-reviewed journals, and suggest planning for further work. In addition, the postholder will have the opportunity to engage with outreach activities aimed at creating high-quality educational content (e.g., videos, websites) about earthquakes and rock deformation.

Qualifications

The Faculty of Mathematics and Natural Sciences has a strategic ambition of being a leading research faculty. Candidates for these fellowships will be selected in accordance with this, and expected to be in the upper segment of their class with respect to academic credentials.

- Applicants must hold a degree equivalent to a Norwegian doctoral degree in Earth Sciences, Mineral Physics, or Material Sciences. Doctoral dissertation must be submitted for evaluation by the closing date. Only applicants with an approved doctoral thesis and public defence are eligible for appointment.
- Fluent oral and written communication skills in English.

The following qualifications will count in the assessment of the applicants:

- Strong background in rock mechanics and in deformation processes of Earth materials
- Documented experience with rock deformation experiments or mechanical testing at the PhD level
- Documented experience, at the PhD level, with a range of scanning- and transmission electron microscopy (SEM and TEM) techniques applied to geological materials (e.g., EBSD, FIB-SEM, EDS, STEM imaging)

- Computational skills (e.g. Matlab, Python)
- Previous experience, at the PhD level, in one of the following fields: (1) fracture mechanics, (2) analysis of fault zone structure, (3) metamorphic petrology and thermodynamic modelling of phase equilibria
- Proven ability to present and discuss results at national and international conferences, and to write up findings for publication in peer-reviewed journals

Personal skills

- Teamwork skills, as well as the ability to work independently
- Enthusiasm, personal drive, and ability to take initiative
- Management and organizational skills
- Attention to detail
- Flexibility, ability to handle pressure and meet deadlines

We offer

- Exciting and meaningful tasks in an organization with an important societal mission, contributing to knowledge development, education, and enlightenment that promote sustainable, fair, and knowledge-based societal development.
- A pleasant and stimulating work environment.
- Good welfare schemes.
- Oslo's family-friendly surroundings with their rich opportunities for culture and outdoor activities.
- Opportunity of up to 1.5 hours a week of exercise during working hours.
- A workplace with good development and career opportunities.
- Membership in the Statens Pensjonskasse, which is one of Norway's best pension schemes with beneficial mortgages and good insurance schemes.
- Salary in position as Researcher, position code 1109 in salary range NOK from 579 700 - 685 000, depending on competence and experience. From the salary, 2 percent is deducted in statutory contributions to the State Pension Fund.

Read more about the benefits of working in the public sector at Employer Portal.

Inclusive worklife and diversity at UiO

Inclusion and diversity are a strength. The University of Oslo has a personnel policy objective of achieving a balanced gender composition. Furthermore, we want employees with diverse professional expertise, life experience and perspectives.

If there are qualified applicants with disabilities, employment gaps or immigrant background, we will invite at least one applicant from each of these categories to an interview.

We hope that you will apply for the position.

Application

Your application should include:

- Cover letter (statement of motivation, summarizing scientific work and research interest)
- CV (summarizing education, positions, pedagogical experience, administrative experience and other qualifying activity)
- Copies of educational certificates, academic transcript of records and letters of recommendation
- A complete list of publications and up to 5 academic works that the applicant wishes to be considered by the evaluation committee
- Names and contact details of 2-3 references (name, relation to candidate, e-mail and telephone number)

Application with attachments must be submitted via our recruitment system Jobbnorge, click "Apply for the position".

When applying for the position, we ask you to retrieve your education results from Vitnemålsportalen.no. If your education results are not available through Vitnemålsportalen, we ask you to upload copies of your transcripts or grades. Please note that all documentation must be in English or a Scandinavian language.

In assessing the applications, special emphasis will be placed on the documented, academic qualifications, as well as the candidates motivation and personal suitability.

It is expected that the successful candidate will be able to complete the project in the course of the period of employment.

General information

The best qualified candidates will invited for interviews.

Applicant lists can be published in accordance with Norwegian Freedom of Information Act § 25. When you apply for a position with us, your name will appear on the public applicant list. It is possible to request to be excluded from this list. You must justify why you want an exemption from publication and we will then decide whether we can grant your request. If we can't, you will hear from us.

Please refer to Regulations for the Act on universities and colleges chapter 3 (Norwegian) and Rules for the use of research posts SKO 1108, 1109, 1110 and 1183 at UiO.

The University of Oslo has a transfer agreement with all employees that is intended to secure the rights to all research results etc.

University of Oslo

The University of Oslo is Norway's oldest and highest rated institution of research and education with 26 500 students and 7 200 employees. Its broad range of academic disciplines and internationally esteemed research communities make UiO an important contributor to society.

Njord is a cross-disciplinary Geology-Physics center hosted by the Faculty of Mathematics and Natural Sciences at the University of Oslo. We focus on the fundamental physics of geological processes related to: transport and reactions in deformable porous media, fracturing and fragmentation processes, interface dynamics during geophysical flows, and intermittency and pattern formation in geological systems far from equilibrium.

We conduct research on earth systems that range in scale from atoms to continents and apply methods where fieldwork, numerical modelling, experiments and theory act in concert.

The center includes the Oslo-branch of PoreLab, which is a Center of Excellence (CoE), the former CoE, Physics of Geological Processes (PGP) and several externally financed projects. There are 10 professors and associate professors at the center, in addition to doctoral research fellows, postdoctoral fellows, researchers and technical and administrative staff - in total about 55 persons.

Additional information

Contact persons:

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- For questions regarding Jobbnorge, please contact Karoline Hanssen , HR Consultant
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Place of service:

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