

Post-doctoral researcher in computational modelling of gas-induced fractures in low-permeability porous media

Department/faculty: Faculty Civil Engineering and Geosciences

Level: Doctorate

Working hours: 36-40 hours weekly

Contract: 18 months

Salary: 3389 - 4274 euros monthly (full-time basis)

Faculty Civil Engineering and Geosciences

The Department of Geoscience and Engineering (<https://www.tudelft.nl/en/ceg/>) encompasses 5 sections: Applied Geology, Applied Geophysics and Petrophysics, Geo-Engineering, Resource Engineering, and Petroleum Engineering. Within the department there is considerable scope and encouragement for inter-disciplinary research.

The Section of Geo-Engineering (www.tudelft.nl/ceg/gse) has 9 full-time and 5 part-time academic staff, and 25 PhD and post-doctoral researchers. Areas of expertise include soil mechanics, dykes and embankments, foundation engineering, underground space technology, engineering geology, and geo-environmental engineering.

The department is part of the Faculty Civil Engineering and Geosciences (www.tudelft.nl/ceg). The Faculty Civil Engineering and Geosciences is committed to outstanding international research and education in the field of civil engineering, applied earth sciences, traffic and transport, water technology and delta technology. The research covers global social issues and is closely connected to education as well as the work of a wide range of knowledge institutions. CEG is convinced that Open Science helps to realise these goals and supports its scientists in integrating Open Science in their research practice. The Faculty of CEG comprises 28 research groups in the following seven departments: Materials Mechanics Management & Design, Engineering Structures, Geoscience and Engineering, Geoscience and Remote Sensing, Transport & Planning, Hydraulic Engineering and Water Management.

Job description

The post-doctoral researcher will push the boundaries of existing understanding of coupling between gas flow in low permeability porous media and fracturing process, through the development of theoretical models and numerical tools. It is anticipated that the researcher will need to develop models which include discrete pathways in a heterogeneous (continuum) material. Challenges exist in simulating the development of the discrete pathways and the impact of the heterogeneity on the macroscopic behaviour. The simulation tools developed will be based on existing finite element tools for multiphase flow and mechanics, which require novel additions to include discrete pathways. Close collaboration with experimentalists is expected.

The intention is that the post-doctoral researcher will work in close collaboration with a PhD student. The post-doctoral researcher will be expected to contribute to the supervision.

This position is part of the European Joint Research Programme in the management and disposal of radioactive waste (EURAD) funded by the European Commission. TU Delft is involved in the work package focusing on gas transport processes in natural and engineered clay materials.

Requirements

You should have a PhD in computational (geo-)mechanics, or a related discipline, with ideally a strong track record and interest in fracturing and fluid flow in fractures. Knowledge of simulation of heterogeneous materials would be an asset. Excellent written and oral communication skills are required.

Conditions of employment

The TU Delft offers a customisable compensation package, a discount for health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged. Coming to Delft Service organizes diverse events for new international employees and their accompanying partners, like Partner Career Workshops and Dutch Culture Workshops. Located on campus are the International Children's Centre and an international primary school which are subject to availability as well as several bilingual schools in the nearby surrounding. Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities.

Information and application

For more information about this vacancy you can contact Dr. Anne-Catherine Dieudonné, assistant professor, via a.a.m.dieudonne@tudelft.nl or tel: +31 (0)15 27 86134, or Dr. Phil Vardon, associate professor, via p.j.vardon@tudelft.nl or tel: +31 (0)15 27 81456.

To apply, please send:

- A cover/motivation letter explaining your interest, qualification for the position, and approach to the research;
- A Curriculum vitae;
- A list of publications;
- An abstract of your PhD thesis in English;
- Two selected publications;
- The names and contact information of two referees.

The duration of the postdoctoral researcher position will be for one and a half year (18 months).

Please e-mail your application in one single PDF entitled Lastname_CITG19.55pdf before 11th October to Recruitment-CITG@tudelft.nl.

TU Delft creates equal opportunities and encourages women to apply.