

Id:



20250331

Arkitektur och samhällsbyggnadsteknik, doktorand inom Characterisation of the micromechanics of quick clays

PhD student position in Characterisation of the Micromechanics of Quick Clays

We are looking for a PhD candidate fascinated by the response of quick clays that can change from solid to liquid with small environmental perturbations. We want to be able to understand how a changing environment will affect the stability of quick clays, and the probability of triggering catastrophic failures. We offer access to unique experimental facilities and computational tools developed by our research team for addressing a timely societally relevant problem.

Project overview

The aim is to unravel the mechanisms, and time scales involved at particle scale, for the formation and failure of quick clays. A novel combination of miniaturised thermal-hydro-mechanical experiments and particle level modelling will be pursued to unravel the unique mechanisms that make quick clays so hazardous and at the same time so special. The originality of the experiments is in the combination of X-ray based scattering and imaging methods to monitor the changes at the particle scale during testing.

Research environment

Geotechnics research at the [Department of Architecture and Civil Engineering](#) focuses on the characterisation and modelling of complex geomaterials, particularly natural clays. Our work bridges fundamental understanding with advanced modelling and testing capabilities, applied to real-world engineering challenges.

We are internationally recognised for our expertise in experimental testing and numerical modelling of natural clays at both laboratory and field scale. We are active members of the **ALERT Geomaterials** network and other international committees. Our diverse and international team of over 15 full-time researchers offers a stimulating and supportive environment to learn and grow.

Your profile

Required qualifications:

- Undergraduate degree in Engineering, Physics or Mathematics with strong emphasis on Image Analysis and/or Geomechanics
- Fluency in spoken and written English
- Willingness to learn Swedish, as necessary for providing teaching support at undergraduate level
- Genuine interest in investigating the fundamental response of quick clays using X-ray based experimental methods and fundamental modelling
- Experience in programming

Merits:

- Understanding of the mechanics of colloid systems
- Experience with performing laboratory experiments
- Ability to work with large data sets (> 500 GB)
- Numerical modelling

Main responsibilities

- Independent research and research training (80% of time)
- Support for education and activities within the research area and department (20% of time)
- Potential for international collaborations and secondments
- Opportunities for PhD, pedagogical and language courses both nationally and internationally (e.g. Nordic Five Tech and ALERT Geomaterials)

Contract terms

- The position is a four-year appointment, with the possibility of extension up to five years through teaching (maximum 20%)

What we offer

- Fully funded PhD position from the start
- Starting salary of 34,550 SEK/month (valid from 25 May 2025)

We offer a great opportunity for a highly motivated PhD candidate to join our team working at the forefront of investigating sensitive natural (quick) clays. Based in a beautiful Nordic city with close access to nature, you will benefit from a competitive salary with full social benefits and work-life balance. You will work in a collaborative environment with strong ties to both academia and industry. As part of our team, you will benefit from our unique experimental and computational facilities for testing & modelling natural clays and access to data on natural slopes in Western Coast of Sweden. These state-of-the-art resources empower you to conduct cutting-edge research with great societal impact.

We offer an ambitious international research environment for young researchers to grow, with ample opportunities for skill and career development. The latter include opportunities in teaching, supervision and proposal writing as well as engagement with industry and public bodies.

If Swedish is not your native language, Chalmers offers Swedish courses to help you settle in.

Discover more

Find more general information about doctoral studies at Chalmers [here](#).

How to apply

The application should be written in English be attached as PDF-files, as below. Maximum size for each file is 40 MB. Please note that the system does not support Zip files.

CV: (Please name the document: CV, Family name)

- CV
- Other, for example previous employments or leadership qualifications and positions of trust.

Personal letter: (Please name the document as: Personal letter, Family name)

1-3 pages where you:

- Introduce yourself
- Describe your previous experience of relevance for the position (e.g. education, thesis work and, if applicable, any other research activities)
- Describe your future goals and future research focus

Other documents:

- Copies of bachelor and/or master's thesis.
- Attested copies and transcripts of completed education, grades and other certificates.

Use the button at the foot of the page to reach the application form.

Please note: The applicant is responsible for ensuring that the application is complete. Incomplete applications and applications sent by email will not be considered.

Application deadline: 15 August, 2025

For questions about the research project, please contact:

Professor Jelke Dijkstra
jelke.dijkstra@chalmers.se
+46 70 7722120

For questions about the recruitment process, please contact:

Professor Minna Karstunen
minna.karstunen@chalmers.se
+46 70 7722144

**** Chalmers declines to consider all offers of further announcement publishing or other types of support for the recruiting process in connection with this position. ****

Chalmers University of Technology in Gothenburg conducts research and education in technology and natural sciences at a high international level. The university has 3100 employees and 10,000 students, and offers education in engineering, science, shipping and architecture. With scientific excellence as a basis, Chalmers promotes knowledge and technical solutions for a sustainable world. Through global commitment and entrepreneurship, we foster an innovative spirit, in close collaboration with wider society. Chalmers was founded in 1829 and has the same motto today as it did then: Avancez – forward.
