Jobbnorge ID: 213257
Deadline: 12/10/2021
Website: http://www.uis.no/
Scope: Fulltime
Duration: Fixed Term

PhD Fellowship in Carbon Capture and Storage Technology

Job description

The University of Stavanger invites applicants for a PhD Fellowship in Carbon Capture and Storage Technology (CCS) at the Faculty of Science & Technology, Department of Energy and Petroleum Engineering. The position is vacant from January 2022.

This is a trainee position that will give promising researchers an opportunity for academic development through a PhD education leading to a doctoral degree.

The hired candidate will be admitted to the PhD program in Science and Technology. The education includes relevant courses to about six months of study, a dissertation based on independent research, participation in national and international research environments, relevant academic communication, a trial lecture and public defence. Read more about the PhD education at UiS on our website.

The PhD Fellow will be affiliated with the following project “Rock-based Geopolymers for Zonal Isolation of CCS Wells - Improvement and Characterization”.

The appointment is for three years with research duties exclusively.

The position is jointly funded by the University of Stavanger and ACT3 (Accelerating CCS Technologies) Program, as part of Horizon 2020. Tight collaboration between UiS, IFE, Delft University of Technology (TU Delft), and Heriot-Watt University is expected.

Research topic

Climate change is a fact that urges immediate action and requires applied research. Carbon Capture and Storage (CCS) is a viable option, which has shown its potential. Wellbore integrity is the core for a safe and reliable CCS process to securely store the captured CO2 underground with an eternal perspective. Portland cement, which is the prime material used for zonal isolation, contains up to 60% CaO. Exposure of this CaO to CO2 and H2S may lead to a series of reactions that can cause deterioration of the cement. In addition, production of Portland cement is considered to contribute up to 8% of the global CO2 emission.

Rock-based geopolymers are known as low calcium content products with less environmental impact and up to 80% lower CO2 emissions. These products can resist acidic environments due to a combination of their low permeability and their low calcium content. The main objective of this project is to modify the microstructure of rock-based geopolymers developed at the University of Stavanger and test their performance when exposed to CO2 under conditions typically encountered by wellbore seals during the underground storage of CO2.

Hence, the objective of the study includes:

- Reviewing and summarizing main minerals (formed in geopolymers) that can survive acidic environment.
- Engineering and normalizing chemical composition of the precursors to yield the minerals identified in the previous step.
- Characterization of the modified rock-based geopolymers to control pumping time, setting time and mechanical properties of the samples.
- Exposure of geopolymers to CO2 saturated environment at different time intervals and characterization of the exposed samples.
- Understanding the mechanisms involved in the improved performance of the geopolymers when exposed to CO2.

Project proposal

As an applicant, you must prepare a preliminary project proposal (approx 1000 words) for a doctoral project within the project described above, which explains the problem, relevance, theoretical and methodological approach. Your preliminary project proposal will be included in the application assessment.

During the first three months of the employment period, the project proposal will be further developed in cooperation with your supervisors and completed for the final project description.

Qualification requirements

We are looking for applicants with a strong academic background who have completed a five-year master degree (3+2) within within chemistry, geochemistry, petroleum engineering, preferably acquired recently; or possess corresponding qualifications that could provide a basis for successfully completing a doctorate.

To be eligible for admission to the doctoral programmes at the University of Stavanger both the grade for your master's thesis and the weighted average grade of your master's degree must individually be equivalent to or better than a B grade. If you finish your education (masters degree) in the fall of 2021 you are also welcome to apply.

It is considered an advantage if you have:

- authored or co-authored publication(s) in international conferences or journals
- experience in either in chemistry, well cementing, laboratory activities, material science, reology, fluid mechanics or elasticity theory

Applicants with an education from an institution with a different grade scale than A-F, and/or with other types of credits than sp/ECTS, must attach a confirmed conversion scale that shows how the grades can be compared with the Norwegian A-F scale and a Diploma Supplement or similar that explains the scope of the subject that are included in the education. You can use these conversion scales to calculate your points for admission.

Emphasis is also placed on your:

- motivation and potential for research within the field
- professional and personal skills for completing the doctoral degree within the timeframe
- ability to work independently and in a team, be innovative and creative
- ability to work structured and handle a heavy workload
- having a good command of both oral and written English

Requirements for competence in English

A good proficiency in English is required for anyone attending the PhD program. International applicants must document this by taking one of the following tests with the following results:

- TOEFL - Test of English as a Foreign Language, Internet-Based Test (IBT). Minimum result: 90
- IELTS - International English Language Testing Service. Minimum result: 6.5
- Certificate in Advanced English (CAE) og Certificate of Proficiency in English (CPE) from the University of Cambridge
- PTE Academic - Pearson Test of English Academic. Minimum result: 62

The following applicants are exempt from the above requirements:

- Applicants with one year of completed university studies in Australia, Canada, Ireland, New Zealand, United Kingdom, USA
- Applicants with an International Baccalaureate (IB) diploma
- Applicants with a completed bachelor's and / or master's degrees taught in English in a EU/EEA country

We offer

- a PhD education in a large, exciting and socially important organisation
- an ambitious work community which is developing rapidly. We strive to include employees at all levels in strategic decisions and promote an informal atmosphere with a flat organisational structure.
- salary in accordance with the State Salary Scale, l.pl 17.515, code 1017, NOK 491 200 gross per year with salary development according to seniority in the position. A higher salary may be considered in special cases. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.
- automatic membership in the Norwegian Public Service Pension Fund, which provides favourable insurance- and retirement benefits
- favourable membership terms at a gym and at the SIS sports club at campus
- employment with an Inclusive Workplace organisation which is committed to reducing sick leave, increasing the proportion of employees with reduced working capacity, and increasing the number of professionally active seniors
- "Hjem-jobb-hjem" discounted public transport to and from work
- as an employee in Norway, you will have access to an optimal health service, as well as good pensions, generous maternity/paternity leave, and a competitive salary. Nursery places are guaranteed and reasonably priced
- relocation programme
- language courses: On this page you can see which language courses you may be entitled to (look up "language courses" under employment conditions)

Diversity

University of Stavanger values independence, involvement and innovation. Diversity is respected and considered a resource in our work and learning environment. Universal design characterises physical and digital learning environments, and we strive to provide reasonable adjustments for employees with disabilities.

You are encouraged to apply regardless of gender, disability or cultural background.

The university aims to recruit more women within the subject area. If several applicants are considered to have equal qualifications, female applicants will be given priority.

Contact information

More information on the position (and project description) can be obtained from Associate Prof. Mahmoud Khalifeh, tel: +4751832130, e-mail: Mahmoud.khalifeh@uis.no or Øystein Arild, tel: +4747672710, e-mail: oystein.arild@uis.no

Information about the appointment procedure can be obtained from HR advisor Margot A:treen, tel: +4753831419, e-mail: rekruttering@uis.no.

Application

To apply for this position please follow the link "Apply for this job". Your application letter, relevant education and work experience as well as language skills must be registered here. In your application letter, you must state your research interests and motivation for the position.

The following documents must be uploaded as attachments to your application:

- project proposal, a project proposal template can be found here.
- CV with a full summary of your education and experience
- references, certificates/diplomas and other documentation that you consider relevant
- Diploma Supplement or similar and a confirmed conversion scale if this is required
- documentation on competence in English if this is required
- publications or other relevant research work

Applications are evaluated based on the information available in Jobbnorge at the application deadline. You should ensure that your application shows clearly how your skills and experience meet the criteria which are set out above and that you have attached the necessary documentation.

The documentation must be available in either a Scandinavian language or in English. If the total size of the attachments exceeds 30 MB, they must be compressed before upload.

Please note that information on applicants may be published even if the applicant has requested not to be included in the official list of applicants - see Section 25 of the Freedom of Information Act. If your request is not granted, you will be notified.

UiS only considers applications and attachments registered in Jobbnorge.

General information

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants, and the acts relating to Control of the Export of Strategic Goods, Services and Technology. Candidates who by assessment of the application and attachment are seen to conflict with the criteria in the latter law will be prohibited from recruitment to UiS.

Employment as PhD Fellow is regulated in "Regulations concerning terms and conditions of employment for the posts of post-doctoral research fellow and research fellow, research assistant and resident".

Your qualifications for the position, based on documentation registered in Jobbnorge, will be assessed by an internal expert committee. Based on the committee's statement, relevant applicants will be invited to an interview before any recommendations are made. References will also be obtained for relevant candidates. More about the hiring process on our website.

The appointee will be based at the University of Stavanger, with the exception of a stay abroad at a relevant centre of research.

It is a prerequisite that you have a residence which enables you to be present at/available to the academic community during ordinary working hours.

The position has been announced in both Norwegian and English. In the case of differences of meaning between the texts, the English text takes precedence.

UiS - challenge the well-known and explore the unknown

The University of Stavanger (UiS) has about 12,000 students and 1,900 employees. The university has high ambitions. We strive to have an innovative and international profile, and be a driving force in knowledge development and in the process of societal change. Our common direction is driven by consideration for sustainable change and equitable social development, through new ways of managing natural resources and facilitating better cities and local communities. Energy, health and welfare, learning for life are our focus areas.

In constant collaboration and dialogue with our surroundings, regionally, nationally and internationally, we enjoy an open and creative climate for education, research, innovation, dissemination and museum activities. Academic life at the University of Stavanger is organised into six faculties comprising various departments/schools and National Research Centres, as well as the Museum of Archaeology. We are a member of the European Consortium of Innovative Universities. The university is located in the most attractive region in the country with more than 300,000 inhabitants. The Stavanger region has a dynamic labour market and exciting cultural and leisure activities.

Together with our staff and students we will challenge the well-known and explore the unknown.

The Faculty of Science and Technology offers study programs at bachelor, master and doctoral level. The faculty has established close cooperation on research with NORCE (Norwegian Research Centre AS) and the regional industry. A number of master's and doctoral theses are made in collaboration with the industry. The faculty has established research collaborations with universities in the US and Europe, and has developed several academic environments that are at the forefront internationally. The faculty has about 2,800 students and approximately 400 employees at the Department of Electrical Engineering and Computer Science, Department of Structural Engineering and Materials Science, Department of Mathematics and Physics, Department of Energy and Petroleum Engineering, Department of Energy Resources and the Department of Safety, Economics and Planning.

Department of Energy and Petroleum Engineering carries out research and offers study programs at all levels in Drilling Technology, Natural Gas Technology, Petroleum Engineering and Energy Technology. The department has established close research collaboration with the Norwegian Research Centre AS (NORCE) and the oil industry. The department focuses on internationalization, with development of English lingual study programs and high mobility among academic staff and students. There are currently 90 employees including research fellows and postdocs, and 750 students at the department.

Additional information

Place of service:

Ullandhaug 4036 Stavanger (Stavanger Municipality)