

PhD studentship available in: 'The development of improved technologies for sealing leaky wells'

Centre for Ground Engineering and Energy Geosciences, Department of Civil and Environmental Engineering, University of Strathclyde

In collaboration with: The Precourt Institute for Energy, Stanford University, USA

Applications are invited for a PhD studentship to investigate the development and use of new technologies for sealing leaky wells. Reliable well-sealing is critical to public and regulatory acceptance within several sectors of the energy industry; including shale-gas extraction, conventional gas production, geological storage of carbon dioxide and geological disposal of radioactive wastes. Leaky wells can arise from faulty well design, poor construction practices or from the cement grout, which forms the seal between the well casing and the host rock, becoming damaged or degraded over time. At present, poor well integrity can be reliably detected using ultrasound techniques, but there is no dependable method for subsequent repair.

Researchers at the University of Strathclyde are at the forefront of developing new grouting technologies for use as barriers to fluid flow. This PhD will investigate, through micro-to-macro scale laboratory experiments, the application of two new grouting technologies currently under investigation at Strathclyde, for use in well-seal repair: microbially induced calcite precipitation, in which bacteria are stimulated to precipitate calcium carbonate for sealing fractures; and colloidal silica, in which suspensions of silica nanoparticles can be destabilized to form an amorphous gel.

The proposed project will be in collaboration with researchers at Stanford University, and the successful applicant will spend a significant period at Stanford University, during the course of their PhD. The project will be supervised by Prof Becky Lunn and Dr Grainne El Mountassir at the University of Strathclyde. The successful applicant will be a member of the Centre for Ground Engineering and Energy Geosciences, in the Department of Civil and Environmental Engineering at Strathclyde. The Centre is a dynamic multidisciplinary forum for young researchers and currently holds over £4M of ongoing research projects in ground engineering, funded through UK Research Council, European Community and industrial sources. The successful applicant will join a team of over 10 PhD and Postdoctoral Researchers working on different aspects of ground barrier technologies.

Applications are welcome from students with first or upper second class undergraduate degrees, or masters qualifications, in the areas of civil engineering; chemical engineering; mechanical engineering; petroleum engineering; geology; hydrogeology; geosciences; or another relevant field of study.

The scholarship covers home tuition fees, a standard stipend of £14,296 per year for 36 months and research expenses.

Applications should be submitted by **May 16th**. Please email your CV and cover letter to Rebecca.lunn@strath.ac.uk and lisa.lyons@strath.ac.uk.

Award eligibility: Applicants should be a home or EU fee-paying student. Eligibility for home/EU fees can be found at <http://www.strath.ac.uk/pgrfunding/eligibility/>

REF UK TOP 20 RESEARCH-INTENSIVE UNIVERSITY

THE UK UNIVERSITY OF THE YEAR WINNER

THE UK ENTREPRENEURIAL UNIVERSITY OF THE YEAR WINNER