



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin



Fully funded PhD Studentship available

Environmental Nanomineralogy group.
Department of Geology. Trinity College Dublin.

Supercritical CO₂ REactivity in polymineraleic-fluid systems (SCORE)

Applications are invited from suitably qualified candidates for a full-time PhD (Structured PhD programme) on “Supercritical CO₂ REactivity in polymineraleic-fluid systems (SCORE)”. The SCORE project is funded by iCRAG, the SFI Research Centre in Applied Geosciences.

Project background and description

The interaction of Ca-Mg-Fe bearing rocks with CO₂ is a recommended technology to promote carbon capture and storage (CCS) via mineral trapping. Although much has been learned during the last decades about the CCS under basaltic reservoirs, the physicochemical relationships between water, dissolved ions and growing crystals in complex multicomponent systems are not well understood at the micro- and nanoscale and at the fundamental level. SCORE will follow a bottom-up experimental approach to study the formation mechanisms and kinetics of carbonate minerals at the atomic and nanoscale to evaluate the effect of multicomponent solutions and polymineraleic systems during CCS under supercritical CO₂ conditions. Results will allow predicting carbon uptake and reaction behaviour for large field sequestration projects.

The successful candidate will:

- Carry out laboratory-based experiments at hydrothermal and supercritical CO₂ conditions to study the outcome of carbonation reactions.
- Use and develop state-of-the-art experimental technology to characterise solid samples at the micro and nanoscale using a conventional laboratory (spectroscopic, microscopic and solid-state) techniques.

Requirements

Applications are invited from students who can demonstrate a solid background in experimental geochemistry and mineralogy. Passion for laboratory work and keen interest

and self-motivation for solving problems is essential. Candidates must have an excellent, relevant geoscience PhD degree.

Award

The successful candidate will be enrolled for a 48-month (Structured) PhD programme in the School of Natural Sciences, Trinity College Dublin. The PhD student will be based at Trinity College Dublin (Museum Building, Geology Department, School of Natural Sciences) and carry out experimental laboratory work in Trinity Technology and Enterprise Center. S/he will also be required to travel to present results at international conferences or other meetings, as well as to participate in outreach activities, some of them in conjunction with the Centre for Research in Applied Geosciences (iCRAG).

The Fellowship provides University fees and a stipend of €18,500 per annum over four years. Funds for project costs are also provided.

Start date: September 1st, 2022.

Further Information

Dr. Juan Diego Rodriguez-Blanco.

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Application Procedure

Please submit:

- CV (including information for 2-3 referees).
- Cover Letter (this can include: a description of why you want to undertake a PhD; how your previous experiences have prepared you for the research project that you are applying for; what your passions are within or outside of academia).

Closing date: 31st July 2022 at 5pm (local) Irish time