PhD Scholarships - Two PhD Students for ARC Discovery project
(full time, three years)

Project Title: Geological sequestration of carbon dioxide in deep saline aquifers
Funding Body: Australian Research Council

Two bright, motivated and enthusiastic students are sought for an exciting new project that will probe the long-term geomechanical and flow behaviour of typical rock units in deep saline aquifer carbon dioxide (CO₂) sequestration.

The project will offer the students invaluable research training in an important aspect of engineering for a future, carbon-constrained world.

Worldwide, deep saline aquifers offer vast potential for storage of carbon dioxide. If effective methods to inject and store CO₂ in these reservoirs can be developed, humanity will have a powerful tool for significantly reducing greenhouse gas emissions from fossil fuel sources.

However, a number of uncertainties exist surrounding the injectability of CO₂ and the stability of deep saline reservoirs for this exciting new initiative. An important question that remains concerns the process of dissolution and precipitation of the material that forms the saline aquifer (reservoir rock and sealing/capping rocks) with long-term exposure to CO₂ and the manner by which these processes will influence long-term evolution in mechanical and flow behaviour of the rocks and thus injectability and stability.

To address this question, the Department of Civil Engineering, Monash University, will appoint two new PhD Students (funded by ARC Discovery scheme) to perform experimental and numerical simulation of the injection and storage process in deep saline aquifer CO₂ sequestration. With the guidance of experienced research supervisors and access to a well-equipped, world-class laboratory, the PhD Students will be expected to develop an innovative experimental testing and numerical modelling programme that will explore the expected long-term fate of deep saline aquifer CO₂ sequestration reservoirs.

Applicants should have a Bachelor’s degree with Honours and/or a Master’s degree in Civil/Mining Engineering and/or Geology/Geochemistry. Applicants need also have demonstrated capacity for research and independent thinking. They should possess expertise in two or more of the following areas: rock mechanics, porous flow, basin geology, aqueous geochemistry, laboratory testing and numerical modeling. Strong written and oral communication skills are essential.

For further information, please contact A/Prof Ranjith, Department of Civil Engineering, Building 60, Monash University, Melbourne, VIC 3800, Australia (Tel: 03-9905 4982; Fax: 03-9905 4944, email: ranjith.pg@monash.edu). Applications should include: (1) a cover letter specifying interests, qualifications and experience as it relates to the research project; (2) a curriculum vitae, which should include any publications, copies of academic transcripts, and (3) names and contact details of three Referees. Applications should be sent to A/Prof Ranjith by mail or email.