The Geoenergy and Geostorage (GEGS) Research Group at UNSW's School of Minerals & Energy Resources Engineering is seeking a highly motivated PhD candidate to join our world-class team investigating CO2 geostorage in deep saline aquifers. This project, part of an Australian Research Council Discovery Project Grant and a collaboration between UNSW and ANU, focuses on developing advanced methods to understand and model CO2 storage processes.

The successful candidates will work under the supervision of Prof. Christoph Arns on one of three distinct yet interconnected PhD projects:

- **Geomechanical and Geochemical Processes in CO2 Geostorage**
  - **Focus:** Advanced characterization of microscopic mechanisms affecting CO2 storage efficiency
  - **Key areas:** Micro-CT imaging, sample deformation dynamics, dissolution and deposition, pore-scale changes

- **Dynamic Wettability Characterization for CO2 Geostorage**
  - **Focus:** Complex interplay between fluid-rock interactions, surface morphology, and wettability evolution
  - **Key areas:** NMR and micro-CT techniques, time-dependent and mineral-specific wettability changes

- **Computational Modelling for CO2 Geostorage**
  - **Focus:** Multi-scale modelling techniques bridging pore-scale phenomena and core-scale behaviour
  - **Key areas:** CFD simulations, Lattice Boltzmann Methods, pore network models, upscaling methodologies

We are seeking exceptional candidates with the potential for excellence in research. The ideal applicant will have:

- A strong academic record from a top-tier university
  - For undergraduate applicants: Outstanding grades in relevant fields (geosciences, engineering, physics, chemistry, computational sciences, or applied mathematics); participation or achievements in relevant domestic or international competitions will be a significant advantage
  - For Master's degree holders: A solid academic performance and ideally some research output (e.g., conference presentations, publications) in relevant fields
- Demonstrated passion for geomechanics, rock physics, or related areas
- Excellent analytical and problem-solving skills
- Strong communication abilities and teamwork potential

While we welcome applications from candidates at different career stages, please note that this is a highly competitive opportunity. Before applying, we encourage you to critically assess your qualifications against these criteria:

1. Is your academic performance in the top 10% of your cohort?
2. Do you have relevant research or industry experience that sets you apart?
3. Can you demonstrate a clear alignment between your skills/interests and this project?

We strongly recommend that only candidates who can confidently answer "yes" to at least two of these questions submit an application. To express your interest, please submit your CV, academic transcripts, and a brief statement of research interests to c.arns@unsw.edu.au. We encourage applications from candidates with diverse academic backgrounds who are excited about tackling complex geoscience challenges with environmental implications.