POSITION DESCRIPTION

Position Title:	Postdoctoral Research Fellow in Reservoir Engineering (Early Career Researcher)
Organisation Unit:	University of Queensland Energy Initiative
Position Number:	3035722
Type of Employment:	Fixed Term, Full-Time for 2 years
Classification:	Research Academic – Level A

THE UNIVERSITY OF QUEENSLAND

The University of Queensland (UQ) contributes positively to society by engaging in the creation, preservation, transfer and application of knowledge. UQ helps shape the future by bringing together and developing leaders in their fields to inspire the next generation and to advance ideas that benefit the world. UQ strives for the personal and professional success of its students, staff and alumni. For more than a century, we have educated and worked with outstanding people to deliver **knowledge leadership for a better world**.

UQ ranks well within the top 100 universities worldwide, measured through a number of major independent university rankings: the Academic Ranking of World Universities, Times Higher Education World University Rankings, US News Best Global Universities Rankings, QS World University Rankings and Performance Ranking of Scientific Papers for World Universities, and is indeed in the top 50 in some of these rankings. Over the past 3 years for which audited data are available UQ has attracted the highest (2013) or second highest (2012, 2014) amount of research funding of any Australian university.

UQ has an outstanding reputation for the quality of its teachers, its educational programs and employment outcomes for its students. Our students remain at the heart of what we do. The UQ experience –the UQ Advantage – is distinguished by a research enriched curriculum, international collaborations, industry engagement and opportunities that nurture and develop future leaders. UQ has a strong focus on teaching excellence, winning more national teaching excellence awards than any other in the country and attracting the majority of Queensland's highest academic achievers, as well as top interstate and overseas students.

UQ is one of Australia's Group of Eight, a charter member of edX and a founding member of Universitas 21, an international consortium of leading research-intensive universities.

Our 50,000-plus strong student community includes more than 13,000 postgraduate scholars and more than 12,000 international students from 144 countries, adding to its proud 230,000-plus alumni. The University has about 7,000 academic and professional staff and a $1.7 billion annual operating budget. Its major campuses are at St Lucia, Gatton and Herston, in addition to teaching and research sites around Queensland and Brisbane city. The University has six Faculties and four University-level Institutes. The Institutes, funded by government and industry grants, philanthropy and commercialisation activities, have built scale and focus in research areas in neuroscience, biomolecular and biomedical sciences, sustainable minerals, bioengineering and nanotechnology, as well as social science research.

UQ has an outstanding track-record in commercialisation of our innovation with major technologies employed across the globe and integral to gross product sales of $11billion+ (see http://uniquest.com.au/our-track-record).

UQ has a rapidly growing record of attracting philanthropic support for its activities and will have further success in this area as an important strategic aim going forward.

Organisational Environment

Come and join an exciting multi-disciplinary research group that is working on solving some of the world's trickiest energy and environmental problems. The University of Queensland Energy Initiative is initiating a project on a new Carbon Storage evaluation trial, which will advance Australia's understanding of its capacity to permanently store carbon dioxide in geological formations. The acquisition of critical, flow-test data in suspended (non-hydrocarbon bearing) oil and gas exploration wells, provides the Project with a highly cost effective means to increase the understanding of aquifer properties and how CO_2 plumes behave. Importantly, it will do this in a real, Australia basin-specific location which has been identified by previous CCS studies as having "high potential". This first, Australian, dynamically calibrated, regional storage assessment will be integrated with industrial CO_2 supply scenarios and known surface and sub-surface constraints, to deliver the first full, techno-economic assessment of dynamic storage capacity which rate-matches the source and sink conditions. It is expected that such an exercise in 'basin management' will lead to improved resource assessment methodology and knowledge of how costs can be minimised by careful choice of development sequence. A parallel social science program will work on establishing CCS in the context of future energy choices, including the development of regulator and teacher capacity and the development of social baseline methodologies.

The position is hosted at the University of Queensland, consistently ranked in the top 50 universities globally and well recognised for its excellent research environment. The city of Brisbane is located in a sub-tropical climate on Australia's north eastern coast with excellent public transport and a world renowned relaxed lifestyle. The leadership team has an international track record of delivering world class carbon capture and storage research projects.

Further information on the UQ Energy initiative may be accessed via https://energy.uq.edu.au/.

The position will be located in the University's Engineering, Architecture, and Information Technology Faculty (EAIT). Information about the Faculty may be accessed on the Faculty's web site at https://www.eait.uq.edu.au

Information for Prospective Staff

Information about life at UQ including staff benefits, relocation and UQ campuses is available at - http://www.uq.edu.au/current-staff/working-at-uq

The University of Queensland Enterprise Agreement outlines the position classification standards for Levels A to E.

DUTY STATEMENT

Primary Purpose of Position

To work in a multidisciplinary research team of geologists, engineers, geophysicists and modellers to trial new lower cost rapid evaluation techniques that assess commercial carbon storage viability. You will be working with senior academics, other postdoctoral fellows and post graduate students to deliver high impact science outcomes. This position will provide the key technical scientific horsepower to drive the building, attribution and simulation of a fit for purpose multi-phase dynamic model of the Precipice Sandstone and Evergreen Formation (reservoir-seal pair).

The research work will include significant consultation with experts in the School of Earth Sciences and School of Chemical Engineering, and will be conducted in partnership with technical experts in the Coal Industry and Government. Duties will also include providing support and coordination of PhD students working on theses related to the project.

Duties

Duties and responsibilities include, but are not limited to:

Research

- Develop and design appropriate research methodologies for well test experiments to evaluate dynamic carbon storage capacity of the Precipice Sandstone in the Surat Basin. Modelling and calibration with field trials will be conducted to evaluate best practice.
- Develop and design appropriate research methodologies for multiphase dynamic modelling of sub-basin scale impacts from commercial carbon storage.
- Apply cutting edge reservoir engineering approaches to simulate multiphase, density and reactive geochemistry processes.
- Contribute to an integrated analysis of the storage capacity and containment security of potential Surat Basin commercial scale carbon storage.
- Advise and direct PhD students working on components of the overall project
- Contribute to project reporting so that the project communicates comprehensively and regularly and that the achievement of milestones is effectively communicated,
- Prepare board papers, research reports and draft journal articles
- Deliver research presentations to various audiences

Teamwork

- As a motivated and enthusiastic individual you will work as an integral part of a diverse project team and contribute to the overall performance of the team,
- You will participate in the mentoring and supervision of PhD students that are working on the team
- You will liaise closely with the project Chief Investigator and with academics in Earth Sciences, Engineering and other UQ Schools/Institutes.

Engagement

- Establish and maintain close working relationships with stakeholders within the community, coal industry companies and all levels of government, where relevant,
- Engage with fellow researchers in the University of Queensland faculties and collaborating research institutions.

Other

Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including:

- the University's Code of Conduct
- requirements of the Queensland occupational health and safety (OH&S) legislation and related OH&S responsibilities and procedures developed by the University or Institute/School
- the adoption sustainable practices in all work activities and compliance with associated legislation and related University sustainability responsibilities and procedures
- requirements of the Education Services for Overseas Students Act 2000, the National Code 2007 and associated legislation, and related responsibilities and procedures developed by the University

Organisational Relationships

The position will report to the Project Chief Investigator.

SELECTION CRITERIA

Essential

- The applicant should be within 5 years of completing a PhD in petroleum engineering (certain career interruption situations may allow adjustment to the 5 year criteria).
- Detailed understanding of technical aspects of well test design and modelling.
- Detailed knowledge of reservoir simulation processes including multi-phase flow, CO_2 dissolution, density driven processes and reactive transport processes,
- Detailed knowledge of reservoir simulation software such as Eclipse, CMG Gem and TOUGH React.
- Experience in designing and conducting research or related data gathering processes,
- Experience in collating, analysing and interpreting quantitative and qualitative research data or other similar information,
- Experience in well test interpretation and design including well test modelling.
- Experience in reservoir dynamic simulation including the incorporation of a static geological model, upscaling properties, history matching, calibration and validation.
- Experience in modelling multi-phase flow that incorporates density effects, capillary effects, dissolution, and reactive transport.
- Experience in designing and conducting research or related data gathering processes,
- Experience in collating, analysing and interpreting research data or other similar information,
- The ability to work both collaboratively in a team and independently to a high level of professionalism,
- An ability to engage with a diverse set of stakeholders,
- Demonstrated ability to manage a program of work to meet milestones,
- Commitment to following safe work practices,
- High levels of personal integrity and transparency, particularly in contentious settings.
- Strong inter-personal communication skills and an ability to relate to stakeholders with competing interests and views,
- Well-developed written communication skills,

Desirable

- Ability to grow and develop personal research expertise, demonstrated by an emerging profile in research with an increasing degree of autonomy,
- Knowledge of the Surat Basin geology in Queensland
- Knowledge of Carbon Storage Projects globally
- Excellent time management skills

Qualification Verification

An appointment to this position is subject to the verification of the highest academic qualification from the conferring institution.

The University of Queensland values diversity and social inclusion.

Employment opportunities are not limited by race, ethnicity, religion, disability, age, sexuality, gender or other protected attributes. Applications are encouraged from Aboriginal and Torres Strait Islander peoples. For further information please contact our Indigenous Employment Coordinator at: atsi_recruitment@uq.edu.au