POSITION DESCRIPTION

Position Title: Postdoctoral Research Fellow/Research Fellow
Organisation Unit: Centre for Coal Seam Gas
Position Number: NEW
Type of Employment: Full Time, Fixed Term for 2 years with extension to 3 years, subject to funding & performance.
Classification: Academic Level B

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 in the world’s top universities, as measured by several key independent ranking, including the Performance Ranking of Scientific Papers for World Universities (45), the US News Best Global Universities Rankings (52), QS World University Rankings (51), Academic Ranking of World Universities (55), and the Times Higher Education World University Rankings (60). UQ again topped the nation in the prestigious Nature Index; and secured a greater share of Australian Research Council grants in 2016 ($24.5 million) than any other university nationally.

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**

Australia’s onshore natural gas industry has expanded rapidly with the establishment of a new Coal Seam Gas-Liquefied Natural Gas industry in Queensland. In this evolving environment, The University of Queensland recognised a need for a coordinated access point to address the community, government and industry challenges.

The Centre for Coal Seam Gas (CCSG) was established in 2012 to conduct and support research and education within onshore gas, creating a scientific energy platform.

The Centre conducts research and supports education in key discipline areas including economics, business, petroleum engineering, geosciences, water, ecology and social sciences. The Centre also provides independent advice to industry and government on policy or business-relevant matters, leadership on scientific and technical issues as well as strategic planning.

Led by the Centre Director, the Centre is managed by a core team who oversees its operations. Central to the team are five professorial research chairs who cover the areas of geoscience, petroleum engineering, groundwater and social performance.

The Centre draws on the extensive research and educational capabilities across UQ’s schools and institutes and collaborates with industry and research organisations, nationally and internationally.

For more information about the Centre, please visit: [https://ccsg.centre.uq.edu.au](https://ccsg.centre.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](http://www.uq.edu.au/current-staff/working-at-uq)
DUTY STATEMENT

Primary Purpose of Positions

The primary duties of the position are to –

- perform research and project management including modelling, development and testing of new algorithms and/or processes
- report results to industry and academia in the area of graded particle injection (GPI).

Duties

Duties and responsibilities include, but are not limited to:

Research

- Conduct research and publish scholarly papers in high-quality refereed international journals, books and conference proceedings;
- Actively seek and gain research funding from internal and external sources including the Commonwealth research granting agencies, the state government and industry;
- Develop a program of fundamental, applied and contract research in GPI including:
  - Develop mathematical and simulation models for particle transport;
  - Develop algorithms and computational code for GPI prediction and/or optimisation and/or control;
  - Coordinate and assist with the design and implementation of laboratory experiments or field trials for validation of the modelling results;
- Present regular research seminars within the group and within the School/Faculty and to external stakeholders;
- Build collaborative research projects within the Centre, internationally and, if relevant to the area of research, centres and institutes.

Teaching and Learning

- Contribute to the effective supervision of undergraduate and postgraduate coursework student thesis and design courses;
- Supervisor HDR students;
- Assist the teaching team in the delivery of practical classes, tutorials, and lectures and mark assessment.

Service and Engagement

- Perform a range of administrative functions in the Centre including:
  - Manage and report weekly work for the CCSG;
  - Prepare reports for key stakeholders such as Industry partners;
  - Effectively source and recommend the purchase of materials and equipment in accordance with UQ policy;
- Contribute to the processes that will enable the academic team to manage the work of the CCSG as directed by the supervisor;
- Foster the Centre’s relations with industry, government departments, professional bodies and the wider community;
• Demonstrate the ability to develop and contribute to an inclusive culture.

Safety
• Conduct inductions, prepare risk assessments, and ensure users of laboratories and equipment have been thoroughly trained.

Other
Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including but not exclusive to:
• 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 of 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 is directly supervised by Dr Christopher Leonardi, School of Mechanical and Mining Engineering. The position also reports to the Director of the Centre for Coal Seam Gas, Professor Andrew Garnett and the Professor of Well Engineering & Production Technology, Professor Raymond Johnson, School of Chemical Engineering.
SELECTION CRITERIA

**Essential**

- PhD (or thesis submission) in mechanical engineering, petroleum engineering or related field such as applied physics or mathematics;
- Demonstrated record of research in the field of the PhD and an established track record of publications in high quality journals;
- National recognition in the area of expertise;
- Demonstrated contribution toward the effective supervision of students (honours, masters and PhD) and participation in teaching of coursework students;
- Demonstrated engagement in independent and/or team research projects;
- Developed industry liaisons and professional contacts;
- Ability to take on a chief investigator role in applications for external funding.
- Demonstrated high level of drive and enthusiasm;
- Demonstrated ability to work collaboratively with colleagues, administrative, and technical staff;
- Demonstrated high level interpersonal, written and verbal communication skills;
- Demonstrated ability to prioritise own workload, work independently and meet deadlines;
- Ability to:
  - develop mathematical models for complex fluid-particle systems.
  - design and implement HPC code for fluid-particle problems.
  - prepare effective reports on designs, modelling, lab and field results.

**Desirable**

- Detailed understanding of and experience working with the lattice Boltzmann method (LBM) for fluid mechanics and the discrete element method (DEM) for particle mechanics.
- Demonstrated expert knowledge in the area of unconventional gas production technologies, particularly hydraulic fracturing.

**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 inclusion and actively encourages applications from those who bring diversity to the University. Please refer to the University’s Diversity and Inclusion webpage ([http://www.uq.edu.au/equity](http://www.uq.edu.au/equity)) for further information and points of contact if you require additional support.

This role is a full-time position; however flexible working arrangements may be negotiated.

Accessibility requirements and/or adjustments can be directed to the contact person listed in the job advertisement.