POSITION DESCRIPTION

Position Title: Postdoctoral Research Fellow – Energy Storage
Organisation Unit: School of Chemical Engineering
Position Number: NEW
Type of Employment: Full-Time, Fixed Term for 2 years with possible extension (up to 2-3 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 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://uniquést.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

The School of Chemical Engineering is an international leader in the chemical engineering field and has an excellent international reputation, which has been built over four decades at the University.

With 35 academic staff, including 20 professors, the School provides quality programs and leadership in chemical engineering education, research and development, and expert consulting to support the process industries. The School conducts undergraduate teaching in the disciplines of chemical, biological, environmental and metallurgical engineering and teaches into postgraduate programs in growing fields including integrated water management and energy studies. The School's project centered curriculum was recently chosen in a RAE & MIT study as one of six global exemplars in leading engineering education. UQ Chemical Engineering was ranked in the top 16 worldwide in the 2012 QS rankings for chemical engineering and was the top ranking school in Australia. It was also given the highest score for chemical engineering in Australia in the recent ERA study.

Information about the Faculty and the School may be accessed on the Faculty's web site at http://www.uq.edu.au/chemeng

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

DUTY STATEMENT

Primary Purpose of Position

A postdoctoral research fellow is required for a two-year appointment with possible extension, to work on a multi-disciplinary research project funded by Australian Research Council, focusing on fundamental study on charge storage mechanism and transport kinetics of sodium ions in batteries and capacitors using computational methods. The successful candidate is expected to work closely with other experimental research staff and PhD students to share research results. This research fellow will also be participating in supervising a PhD candidate. Research experience on computational modeling and simulation of charge transport phenomena in both solid and liquid phases related to rechargeable batteries and electrochemical capacitors is essential.

Duties

Duties and responsibilities include, but are not limited to:
Research
- Perform research on investigating sodium-ion storage mechanism and transport phenomena using computational techniques.
- Liaise with National Computational Merit Allocation Scheme for using computational resources.
- Be responsible to choose computer software and purchase software licenses if needed.
- Work closely with other research staff/PhD students and participate in PhD supervision.
- Write and edit scientific works and publish high-quality reports and scholarly papers.
- Build links to academic colleagues with expertise in the project areas.
- Work with team members to supervise honours and masters students.
- Participate in lab management.
- Work with team members to write research proposals for funding.
- Identify IP arising from research and facilitate its protection through established University procedures.

Teaching and Learning
- Involvement in supervision of research students at undergraduate and postgraduate levels.
- Participation in class-room teaching if needed.

Community Service
- Foster relations with industry, government departments, professional bodies and the wider community.
- Promote research outcomes at workshops, news papers, and meetings.

Administration
- Work with Project Leader in day-to-day management of the project and reporting requirements.
- Contribute, as required, to the processes that enable staff to manage research projects and meet project targets.

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 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 reports to Prof George Zhao (george.zhao@uq.edu.au), Director and Project Leader, Clean Energy and Water Research Program, School of Chemical Engineering.
SELECTION CRITERIA

Essential

- PhD in Applied Mathematics, Physics, Physical Chemistry, or related scientific field, such as Materials Science and Electrochemistry.
- Knowledge and skills in computational methods/techniques for modelling and simulating charge transport and storage mechanism in sodium-ion capacitors and batteries.
- Knowledge on transport phenomena at interface and in nanopores.
- Knowledge on colloidal science, nanoscience, and electrochemistry.
- Skills in collecting, organization and quantitative analysis of research results.
- Demonstrated skills and capability of writing scientific papers in English.
- Ability to work in a multi-disciplinary team, while taking the leading role in a specific project.
- Ability to work collaboratively with colleagues.
- Ability to actively participate in discussion and debate in English.
- Ability to work under pressure.

Desirable

- Ab initio or classical molecular dynamics
- Implicit/continuum solvent models
- Molecular interactions, particularly dispersion forces
- Free energies of ions in solution
- Thermodynamics and statistical mechanics of liquids
- Knowledge of porous carbon materials
- Capability of getting research projects funded.

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.