POSITION DESCRIPTION

Position Title: Research Fellow (CRC-P Diesel from Waste)
Organisation Unit: School of Chemical Engineering
Position Number: NEW
Type of Employment: Full-Time, Fixed Term for 3 years
Classification: Research 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

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

We deliver quality programs and leadership in chemical engineering education, research and development, and expert consulting to support the process industries. Undergraduate teaching within the School focuses on the disciplines of chemical, biological, environmental and metallurgical engineering and postgraduate programs are available in growing fields including water, sustainable energy and petroleum engineering.

The School’s project-centered curriculum was recently recognised as an international exemplar of engineering education. Worldwide, UQ Chemical Engineering was ranked 33rd in the QS World University Rankings 2017 for chemical engineering. We also received the highest score for chemical engineering in Australia in the Excellence in Research for Australia study (2015). Central to the School’s success are our staff, specifically the academic, research and professional staff. They are engaged in pioneering teaching and research crossing traditional disciplinary boundaries, mindful of their role in addressing the big challenges that lie ahead.

As the School enters an exciting phase of building on recent successes in individual industry-linkages and international-research partnerships we are interested in new staff to join us on this journey to further increase our local and international impact in learning and discovery in chemical engineering.

The School recognises and values equity and diversity, and encourages applications from any individual who meets the requirements of this position regardless of gender, sexuality, race, ethnicity, religion, disability, age or other protected attributes. The School strives to provide an inclusive working environment, and along with the University, is committed to supporting staff with family and caring responsibilities by providing policies, programs and initiatives to help balance work and family responsibilities.

For more information about the School, please visit: 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

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

Primary Purpose of Position

The primary role of the Research Fellow will be to undertake detailed chemical characterisations of reaction kinetics and chemical transformations and on that basis propose process modifications for optimisation of a new catalytic depolymerisation pilot facility, which will be located at UQ’s Pinjarra Hills campus; the Research Fellow will be assigned the role of Project Chemist.

The Research Fellow will in particular be responsible for characterising the relationship between feedstocks and outputs in this process, in particular the effects of different catalyst and feedstock combinations, as well as understanding the mechanisms of any synergistic interactions and of pretreatment strategies on product outputs. Additionally, the Fellow will be expected to provide input into novel catalyst design (to be undertaken by our industrial partners). The Research Fellow will be responsible for data collection, data management and reporting outcomes to the CRC-P team, including Eco Fuel Innovations – the main industry partner.

Duties

Duties and responsibilities include, but are not limited to:

Research

- Characterise the chemistries of the catalytic depolymerisation process;
  - Undertake extensive analyses to characterise kinetics and mechanisms of material transformations under CDP;
  - Identify synergistic or inhibitory interactions of feedstocks;
  - Characterise effects of catalyst type on kinetics and mechanisms of transformations;
  - Characterise effects of different pretreatment strategies on kinetics and mechanisms of transformations;
- Conduct both bench top and pilot scale experimentation;
  - Develop rapid screening assessments and undertake robust experimental design at bench scale to identify best combination approaches for pilot scale testing;
  - Use an iterative bench/pilot testing program to ensure that the small scale adequately models the pilot for robust transfer;
- Play a leading role in presenting state-of-the-art developments in the field of catalytic depolymerisation;
- Report to team leader and project stakeholders on a regular basis, and effectively summarise findings and progress;
- Present results at meetings with domestic/international partners;
- Publish journal articles individually as well as with other team members [after appropriate consideration to protecting IP, as per project agreement];
- Work with colleagues in the development of new joint research projects with the objective of attracting external funding;
Teaching and Learning

- Provide supervision of masters and PhD students engaged in the project.

Engagement

- Foster relations with industry (including international partners), government departments, professional bodies and the wider community;
- Contribute to the work of the School of Chemical Engineering.

Administration

- Maintain meeting records and minutes and provide regular project updates to the CRC-P team;
- Any other duties as directed by your supervisor.

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 the Project Leader A/Prof. Steven Pratt, School of Chemical Engineering.

SELECTION CRITERIA

Essential

- PhD or equivalent research experience in chemistry/chemical engineering or closely related discipline.
- Knowledge of diesel characteristics, and methods for characterising diesel properties.
- Knowledge of properties of catalysts for pyrolysis and methods for characterising same.
- Extensive hands-on knowledge in one or more of the following chemical and materials characterization techniques: (GC-MS, NMR, TEM, EDXRF, TGA, DSC,
DMA, SEM, XPS, IR, Raman, XRD, etc.); Prefer extensive knowledge in GC/MS and pyrolysis GC/MS.

- Experience in the characterisation of complex liquid and solid organic mixtures.
- Drivers licence for travel between Pinjarra Hills and St. Lucia campuses.
- An ability to establish effective relationships and to represent and promote academic discipline at a university and wider community level, including industry, government and professional bodies.
- Evidence of a contribution to research, including successful external grant applications.
- Ability to work collaboratively with colleagues in a multidisciplinary environment.
- High-level communication and presentation skills.
- A high level of autonomy, drive, enthusiasm and time management skills.

Desirable

- Knowledge of catalytic depolymerisation.
- Experience in statistical experimental design (response surface, Taguchi etc.)
- Developed industry liaisons and professional contacts.
- Experience in liaising and collaborating with external agencies to develop co-operative research initiatives.

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.

Applications are particularly encouraged from Aboriginal and Torres Strait Islander peoples. For further information please contact our Australian Indigenous Employment Coordinator at: atsi_recruitment@uq.edu.au

Applications are also encouraged from women.

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