PhD Scholarships: Fuel from wastes

The opportunity: Industry-linked PhD projects to develop catalytic depolymerisation for production of diesel from wastes. We are seeking PhD candidates to join a unique multi-disciplinary team at the School of Chemical Engineering at The University of Queensland in association with Eco Fuel Innovations.

Remuneration: Tax-free stipends of $30,000 per annum for 3 years. Also a possibility of a tuition fee waiver. Applicants will be expected to apply for a UQ Graduate School Scholarship.

The research program: Solid waste is considered to be a key feedstock for the chemical industry in transitioning to a circular economy. Catalytic depolymerisation (CDP) of solid wastes is a strongly emerging technology for converting waste into diesel. However, the CDP has a number of technical challenges leading to higher energy and material costs than is optimum, limiting its broader commercial uptake. This research program will assess the environmental footprint and technical feasibility of industrial scale CDP, and deliver chemical and processing strategies to both increase the energy efficiency of the process and limit catalyst fouling, delivering improved commercial feasibility for full scale market adoption.

PhD Research: There are THREE PhD topics:
- PhD1: Understanding catalyst performance and longevity in mixed waste catalytic depolymerisation [correlating catalyst structure and surface chemistry with efficiency of conversion plus fouling propensity].
- PhD2: Environmental footprint of catalytic depolymerisation [mass and energy inventory analysis, leading to assessment of environmental footprint as a function of feedstock mix and preparation].
- PhD3: CDP for syndiesel electricity generation [drivers and barriers for application: economic opportunity, social licence, political considerations].

The applicants: You should have a very good Honours or Masters degree, or equivalent in engineering, chemistry or a relevant discipline. It is essential that you can clearly demonstrate research potential, and an ability to thrive in a multi-disciplinary team. An interest in high quality research leading to industry innovation is also essential.

Information about the company: Eco Fuel Innovations Pty Ltd was established to commercialise CDP technology to efficiently convert a variety of feedstocks to a high quality diesel. They operate a pilot facility in China and will soon run demonstration plants in Australia and overseas.

Research environment at UQ: The University of Queensland is one of the top universities in Australia and is in the top 100 in the world. The School of Chemical Engineering www.chemeng.uq.edu.au is renowned for its world-class engineering education, pioneering research, and high quality graduates.

HOW TO APPLY: To discuss the role contact Associate Professor Steven Pratt (School of Chemical Engineering) s.pratt@uq.edu.au or Dr Bronwyn Laycock (School of Chemical Engineering) b.laycock@uq.edu.au