Newcastle University PhD Studentship award

Title
Chemicals and Fuels from Photocatalytic CO\textsubscript{2} Valorisation Using Intensified Reactor Technology

Value of award
100% of International tuition fees paid

Number of awards
1

Start date and duration
September 2019 for 3 years

Application closing date
8\textsuperscript{th} February 2019

Overview
Climate change is caused by emission of greenhouse gases, in particular CO\textsubscript{2}, and is one of the main environment challenges facing our planet. Chemical engineers have a preponderant role in mitigating the effects of CO\textsubscript{2} emissions, and significant advancement has been made in the development of CO\textsubscript{2} capture systems. Currently, the most likely destination of the CO\textsubscript{2} is underground storage in depleted oil and gas reservoirs. With the uncertainty associated with the risks of this geoengineering approach, alternative approaches are being sought, particularly in CO\textsubscript{2} valorisation rather than just storage. One of the CO\textsubscript{2} valorisation techniques involves its application as a raw material in making useful products via photo-catalysis.

In this project, we will first develop metal oxide photo-catalysts capable of using sunlight which will then be applied in photocatalytic reduction of CO\textsubscript{2} in selected intensified photo-reactors. In particular, we will be looking at conversion of CO\textsubscript{2} into useful fuels and chemical building blocks, such as methane, methanol and formates, driven by UV and visible light, at ambient temperatures and pressures, to develop an efficient, continuous flow, sustainable process based on process intensification concepts.

Further details about the project can be found here

Sponsor
Faculty of Science Agriculture and Engineering and Chinese Scholarship Council (CSC)

Name of supervisor(s)

- Dr Kamelia Boodhoo, School of Engineering
  https://www.ncl.ac.uk/engineering/staff/profile/kameliaboodhoo.html#background
- Dr Fernando Russo Abegão, School of Engineering
  https://www.ncl.ac.uk/engineering/staff/profile/fernandorusso-abegao.html#background
- Dr Elizabeth Gibson, School of Natural and Environmental Sciences
  https://www.ncl.ac.uk/nes/staff/profile/elizabethgibson.html#background
Eligibility Criteria
You must be a citizen and permanent resident of the People’s Republic of China at the time of application.
The ideal candidate will have a background in chemical engineering or a related discipline with strong experimental skills. A good knowledge of CFD modelling is also desirable.

How to apply
You must apply through the University’s online postgraduate application system. Apply here. To do this please ‘Create a new account’. All relevant fields marked with a red asterisk must to be completed.

The following information will help us to process your application. You will need to:
• Insert the programme code 8030F in the programme of study section
• Select PhD Chemical Engineering (full time) - Chemical Engineering as the programme of study
• Insert the studentship code CSC1807 in the studentship/partnership reference field
• Attach a covering letter and CV. The covering letter must state the title of the studentship, quote reference code CSC1807 and state how your interests and experience relate to the project
• Attach degree transcripts and certificates and, if English is not your first language, a copy of your English language qualifications

Contact
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