Departments of Chemical Engineering and Chemistry

Research Associate in Circular Chemicals

Job Ref: REQ260354

School/Department summary:

The projects will be based in the Departments of Chemical Engineering (School of AACME) and Chemistry (School of Science), boasting state-of-the-art laboratories and facilities, a welcoming open-plan working environment, and an experienced, interdisciplinary supervision team.

Project Description:

We are looking for two talented researchers in the areas of catalysis and reaction engineering, to develop new catalytic pathways to selectively upgrade biooils and waste CO_2 into chemical platforms such as methanol, olefins and functionalised oxygenates. The two 30-month positions are funded through CIRCARB (Circular and Biogenic Carbon Pathways for a Sustainable Future), a £6M strategic investment from EPSRC, involving academics from Aston University, Loughborough University and University of Edinburgh (Loughborough expertise to support £6million programme to replace fossils fuels | Media Centre | Loughborough University).

CIRCARB will develop new pathways and materials to eliminate the use fossil fuels across the chemical, construction and plastic sectors. You will be closely working with a multidisciplinary team of researchers and key industrial partners to generate real-life impact from technologies developed within the lab.

Job Description

Job Family and Grade: Specialist and Supporting Academic Grade 6

Job Purpose

The two post holders will work closely together to develop catalytic pathways to selectively upgrade biooils (from thermochemical conversion of waste biomass) and waste CO_2 into chemical intermediates such as methanol, olefins and functionalised oxygenates. You will propose and explore new reaction pathways; design, synthesise and characterise novel catalysts; and develop equipment and analytical methods to study their application under industrially relevant conditions. You are also expected to contribute and support wider cross-cutting activities, such as feedstock mapping, digital carbon passports, policy and standards development. There will be potential opportunities for secondments and research exchanges with industrial and other academic partners.

The successful candidates will have strong backgrounds in the design, synthesis and characterisation of heterogenous catalysts for applications such as catalytic cracking, deoxygenation and CO_2 activation. Experience in reactor design and commissioning, process simulation, industry engagement and multidisciplinary working are of strong benefit.

To be considered, applicants need to provide an up-to-date CV (4 pages maximum) together with a covering letter that clearly outlines their suitability for the role, within their application.

Job Duties

- To undertake detailed review of the literature to identify and propose suitable approaches for upgrading biooils and/or CO_2 into chemical intermediates.
- To engage closely with industrial and academic project partners to agree and review project plans and key deliverables.
- To develop and implement novel methods for the synthesis, characterisation and testing of catalysts.
- To specify, design and supervise the construction of reactors and other key equipment.
- To engage and support cross-cutting project activities through active participation in events, workshops, outreach and other activities.
- Be responsible for conducting the day to day running of the project.
- To formulate detailed plans for the project based on broad guidance from the project team.
- To feed back to the project team on progress, to make recommendations for next steps.
- Write up regular progress reports and present outcomes to all investigators and collaborators.
- Travel to attend meetings and make presentations both within the project partners working group and to external stakeholders.
- To support the project team by enhancing relationships with existing collaborators and by assisting the establishment of relationships with new collaborators.
- To write research papers suitable for publication in high quality academic journals.
- To attend and contribute to conferences.
- To contribute to project promotion and public engagement events.
- Contribute ideas for new research and enterprise directions.
- Always maintain confidentiality and ensure that intellectual property (IPR) agreements are not violated.
- To assist the academic staff in the project team with the supervision of undergraduate MSc and PhD project work and day-today supervision and support of other researchers.
- Engage in training programmes in the University (or elsewhere) that are consistent with the needs and aspirations of the project and those of the Department.

Points To Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility outlined in the document.

Organisational Responsibility

Reports to the: Work Package Lead, Reader/Professor in Chemistry or Chemical Engineering
Direct Reports: N/A
Budget Responsibilities: Manage individual project budget ~£40k over 2.5 years
Structure Chart: N/A

Person Specification

Your application will be assessed based on the essential and desirable criteria listed below.

Applicants are strongly encouraged to explicitly demonstrate how they meet each essential (and desirable) criteria at the application stage. The criteria that you need to demonstrate in your application will be listed as Stage 1 in the table below.

Stages of assessment are as follows:

1 – Criteria measured at Application
2 – Criteria measured at Test/Assessment Centre/Presentation
3 - Criteria measured at Interview

Essential Criteria:

Area	Criteria	Stage
Experience	Background in Chemistry, Materials Science, Chemical Engineering or related subject	1
	Experience in heterogenous catalysis, testing and characterisation	1,3
	Authoring original work for academic journal papers, conference papers or technical reports	1
Skills and abilities	In-depth understanding of heterogenous catalyst design, synthesis and characterisation	2,3
	Ability to work across multiple fields and readily understand new and challenging concepts	3
	Working knowledge of specific analytical methods related to catalyst characterisation and product analysis, including GC, XRD, NMR, SEM	2,3
	Good written and oral communication skills	1,2,3
	Able to manage time and tasks effectively to meet project deadline and prioritise workload with minimum supervision	1,3
	Able to build and maintain effective working relationships with academic colleagues, students, and external partners to support collaborative research and communication of findings.	3
	Ability to write project reports and make technical presentations to industrial and academic research groups	1,2,3
	Knowledge of relevant Health & Safety issues	3
Training	A willingness to undertake further training as appropriate and to adopt new procedures as and when required	1,3
Qualifications	PhD (or near completion) in Chemistry, Material Science, Chemical Engineering or related subject	1
Other	Uphold and actively contribute to the University's commitment to Equity, Diversity and Inclusion.	1,3

Desirable Criteria:

Area	Criteria	Stage
Experience	Experience of designing, constructing and commissioning reaction equipment	1,3

	Experience of working within multi-disciplinary and multi-institutional research consortia	1,3
	Developing proposals for funding from external agencies	1,3
	Working in a high-quality academic research environment	1
	Experience of teaching and / or supervision of students in relevant areas	1,3
Skills and abilities	Authoring original work, in the highest quality refereed academic journals	1
	Solid knowledge and understanding of synthetic organic chemistry and chemical transformations.	1,3

Conditions of Service

The appointment will be subject to the University's Terms and Conditions of Employment relevant to the job grade.

Shared University Responsibilities

As a member of the Loughborough community, you are expected to:

- Take reasonable care of yourself, others and the environment, and to prevent harm by your acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Sustainability Policies & Procedures.
- Support and contribute to the University's commitment to principles of equity, diversity and inclusion (EDI) while carrying out all duties, behaving in a manner that treats others with dignity and respect and upholds every persons right to lawful freedom of expression, freedom of speech and academic freedom. Further information about EDI at Loughborough and our strategic aims is available on our website.

Our Purpose, Vision, and Values

Our purpose, Vision and Values underpin all that we do and shape how we work together at Loughborough.

We're proud to promote our values: **Adventurous**, **Collaborative**, **Creative**, **Authentic** and **Responsible**. Our people bring these values to life every day, and they are central to the positive and supportive culture that makes Loughborough unique.

If you join us, you'll be encouraged to bring these values to life in your own work and contribute to the positive, supportive culture that makes Loughborough unique.

Read more about our **vision and values**.

Our Accreditations

Athena SWAN Bronze Award

We strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a Bronze Athena SWAN award which recognises the importance of support for women at all stages of their academic career.

We are proud to be a Race Equality Charter Member. The Charter aims to improve the representation, progression and success of all minority ethnic staff and students within higher education and address issues of racism within higher education institutions (HEIs).

We are proud to be a Disability Confident Employer and have adopted a proactive approach to employing disabled people and to creating a more diverse workforce. We ensure that our recruitment processes are inclusive and accessible. We guarantee to offer an interview to all applicants who have declared themselves with a disability, provided they meet the essential criteria for a role. We proactively anticipate and provide reasonable adjustments and support existing employees who acquire a disability or long-term condition to thrive in the workplace.

We are a real living wage employer, and our Living Wage Employer Mark shows our commitment to paying our staff according to the cost of living.

We are proud supporters of the City of Sanctuary movement and delighted to be recognised as a University of Sanctuary. This national network brings together, university staff, lecturers, academics and students, who together work to make Higher Education institutions place of safety, solidarity and empowerment for people seeking sanctuary.

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.