Wolfson School of Mechanical, Electrical and Manufacturing Engineering

Loughborough University

Post Doctoral Research Associate: Scalable Electrochemical Cells and Stacks for Energy and Fuel Conversion

REQ250196

Job Description

Job Grade: Post Doctoral Research Associate (Grade 6)

Job Purpose: Reporting to the Hydrogen Fuels and Energy Engineering Group Leader, the successful candidate will develop electrolysers and fuel cells suitable for integration with intermittent renewable energy sources. The focus of the role is to advance the efficiency and durability of scalable electrolyser and fuel cell prototypes with a focus on non-critical materials. This includes conceptualising, implementing and characterising effects of novel cell architectures and components for electrochemical reactions in predominantly alkaline conditions.

Job Duties:

Research

- To conduct experimental research on predominantly alkaline based electrolysers and fuel cells covering materials development, device testing and system integration.
- To design and build test rigs for prototyping electrolyser and fuel cells and short stacks.
- To conduct, develop and implement experimental protocols for testing the performance and durability of the electrolysers and fuel cells and related short stacks.
- To analyse and interpret data generated from experiments.
- To collaborate with colleagues and collaborating partners from academia and industry and contribute to high quality research on scalable electrolyser and fuel cell technologies.
- To present experimental progress and publish findings in peer reviewed journals and at conferences.

General, technical

- To perform risk assessments, develop method statements and implement safe working practices.
- To manage technical equipment and provide training to other users as required.
- To contribute to the development of research proposals and grant applications for project funding.
- To ensure that a safe working environment is always maintained through compliance with Health and Safety at Work Regulation and the University's Operational Procedures.
- To provide knowledge transfer to students, other staff members and/or industrial partners

General and administrative

- To engage in continuous professional development and participate in training as required.
- To assist the academic staff in the School with the supervision of undergraduate MSc and PhD project work and day-to-day supervision and support of other researchers.
- To participate in outreach projects relating to the group's activities.
- To carry out specific duties as may be reasonably requested by the group leader and that are commensurate with the nature and grade of the post.

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 entailed.

Special Conditions

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equity, Diversity and Inclusion policy and procedures at all times. Duties must be carried out in accordance with relevant Equity, Diversity and Inclusion legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Belonging and Inclusion and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to Professor Sonya Calnan, Wolfson School of Mechanical, Electrical and Manufacturing Engineering.

Person Specification

Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

1 – Application
2 – Test/Assessment Centre/Presentation
3 – Interview

Essential Criteria

Area	Criteria	Stage
Experience	Research or professional experience in development and innovation of electrochemical devices such electrolysers, fuel cells and flow batteries	1,2, 3
	Relevant experience in an academic and/or industrial environment e.g. via (post)doctoral research, or previous employment	1, 3
	Strong knowledge of electrochemical testing methodologies, analytical techniques, performance and stability evaluation	1,2,3
	Proven track record of rigorous research including scientific publications in peer reviewed journal papers and conference presentations or at least one patent filed on electrochemical devices	1, 2,3
	Hands on experience in at least two of the following membrane assembly fabrication, design and construction of cells and stacks, long term and /accelerated stress testing	1,2,3
Skills and abilities	Proven ability to plan and execute experiments	1, 3
	Ability to produce written research reports	1, 3
	Demonstrable ability to work with efficiency and accuracy to deadlines	3
	Professional manner with excellent interpersonal and communication skills	3
	Ability to show initiative and work independently but also make a full contribution as a team player	3
	Ability to use initiative to learn and apply new techniques or methods	3
Training	Willingness to undertake further training as appropriate, both internally and externally	3
Qualifications	PhD in Chemistry, Chemical/Process/Electrochemical Engineering, or other relevant; area	1
Other	To observe the University's Equal Opportunities policy at all times	3
	To comply with Health and Safety regulations	3
	Commitment to maintain confidentiality, where relevant, at all times	3

Desirable Criteria

Area	Criteria	Stage
Experience	Experience with Multiphysics multiscale modelling using COMSOL or equivalent	1, 23
	Experience working with sensitive chemical reagents	1,3
	Product analysis using gas chromatography, mass spectrometry and/or infra-red spectroscopy	1,2,3
	Experience in coding with MATLAB, C++/Python or equivalent	1,3

Area	Criteria	Stage
Skills and abilities	Understanding of current Health and Safety legislation, risk management and COSHH regulations	1, 3
	Willingness to travel	3
	Ability to work in a team and strong interpersonal skills	1
	Ability to organise time, plan and work independently	1

Conditions of Service

This is a FULL-TIME position for 37 hrs per week and FIXED TERM for 24 months. Salary will be on Research Grade 6, £35,116 to £45,413 per annum, at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's normal Terms and Conditions of Employment for Technical staff, details of which can be found http://www.lboro.ac.uk/services/hr/a-z/conditions-of-service.html.

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which are available at http://www.lboro.ac.uk/services/hr/a-z/family-leave-policy-and-procedure---page.html.

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html

In addition, the University is supportive, wherever possible, of flexible working arrangements.
We also strive to create a culture that supports equity 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. For further information on Athena SWAN http://www.lboro.ac.uk/services/hr/athena-swan/.

Applications

The closing date for receipt of applications is **15 April 2025. Please accompany your application with ONE document which includes:**

- a cover letter briefly describing your qualifications and motivation for this position.
- a curriculum vitae.
- a list of your publications highlighting your self-selected top 2 and/or relevant achievements e.g. patent, or contributions to collaborative projects.