

Research Associate in Development of Water-Based Lubricants for Electric Vehicles

Underpinning research for aqueous lubrication in electric vehicle applications

Job Ref: REQ260064

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

Project Description

Increasing demand for the electrification of vehicles brings challenges and provides opportunities to develop the design of the components and systems required to provide mobility. One opportunity is to move away from the traditional lubricants used in combustion engines and transmissions towards those that have potential to be both more efficient and environmentally sustainable. Loughborough University, in collaboration with University of Sheffield, Imperial College London and a number of industrial partners, is leading a recently funded (UKRI/EPSRC) project to explore the capability of high-performance water-based lubricants for electrified vehicles.

Job Description

Job Grade: Specialist and Supporting Academic Research Grade 6

Job Purpose

The successful candidate will be researching novel water-based lubricants and conducting experiments exploring the role of friction, wear, cooling, and tribo-dynamics, in their performance in the presence of electric currents. The work will also involve surface/material/chemical analysis and material formulation. They will also take a role in managing the project progress and liaising with industrial and academic partners.

Job Duties

- To become familiar with the current state-of-the-art in water-based lubricants.
- To conduct experimental research on the tribological performance of water-based lubricants.
- To work closely with Research Associates working on this project but based at the partner universities to inform the design of test apparatus, design of experiments and modelling.
- 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.
- Maintain confidentiality at all times 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-to-day supervision and support of other researchers.
- Where appropriate, to deliver teaching, tutorial and laboratory sessions to students.
- 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.
- Undertake other duties as may be reasonably requested 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 & Inclusion policy and procedures at all times. Duties must be carried out in accordance with relevant Equity, Diversity & 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 the project's principle investigator.

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 | Background in tribology, material science and lubrication. | 1 |
| | Working on novel subjects, in collaboration with industries | 1, 3 |
| | Post-Doctoral level experience, or equivalent science-based industrial experience in the field | 1 |
| | Authoring original work for academic journal papers, conference papers or technical reports | 1 |
| Skills and abilities | Chemical analysis, material characterisation and lubrication | 1, 3 |
| | Excellent written and oral communication skills | 1, 3 |
| | Self-motivated with ability to meet deadlines | 1, 3 |
| | Excellent interpersonal, and organisational skills | 1, 3 |
| | Working knowledge of experimental data processing software | 1, 3 |
| | Working knowledge of specific analytical methods (tribology, machine elements and dynamics) | 1, 3 |
| | Working knowledge of experimental test (tribology, machine elements and atomic force microscope) | 1, 3 |
| | Ability to write project reports and make technical presentations to industrial and academic research groups | 1, 3 |
| | Knowledge of relevant Health & Safety issues | 1, 3 |
| Training | Demonstrate evidence of having undertaken further training | 1, 3 |
| Qualifications | PhD (or close to completion) | 1 |
| Other | Commitment to observing the University's Equal Opportunities policy at all times. | 1, 3 |
| | Ability to travel to industries and other partners organisations for extended period of time | 1, 3 |

Desirable Criteria

| Area | Criteria | Stage |
|------------|---|-------|
| Experience | Further project specific experience | 1, 3 |
| | Developing proposals for funding from external agencies | 1, 3 |
| | Working in a high-quality academic research environment | 1, 3 |
| | Experience of teaching and / or supervision of students in relevant areas | 1, 3 |

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|----------------------|--|------|
| Skills and abilities | Authoring original work, in the highest quality refereed academic journals | 1, 3 |
| | A strong publication track record | 1, 3 |
| Qualifications | PhD (or near completion) in tribology | 1 |
| Other | Travel / Able to travel Independently / Working patterns | 1, 3 |

Conditions of Service

The position is FULL TIME and FIXED TERM for 30 months with position not extending beyond the project end date of 31/07/2028. Salary will be on Specialist and Supporting Academic Research Grade 6 £35,608 - £42,254 per annum, at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's Terms and Conditions of Employment for STAFF GRADES 6 AND ABOVE, details of which can be found [here](#).

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which can be found [here](#).

The University offers a wide range of employee benefits which can be found [here](#).

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 see <http://www.lboro.ac.uk/services/hr/athena-swan/>