UNIVERSITY OF LEICESTER

Job Summary

Job Title: Research Associate
Grade: 7
Salary: £40,704 to £46,970 per annum, pro rata if part-time
Department: Chemical, Earth and Environmental Sciences (CEES)
Hours/Contract: Full time or job share, fixed-term until 30 September 2028
Job Family: Teaching and Research
Reference: 13902

Role Purpose

We are seeking a process engineer to deliver the University of Leicester's RECLAIM project, a collaborative project aim to develop short-loop recycling pathways for end-of-life electric-vehicle batteries. Working closely with researchers at the Centre for Sustainable Materials Processing at Leicester, you will lead the scale-up of Leicester's award-winning and IP-pending oil-water separation technology from kilogram-batch experiments towards a continuous modular pilot process.

You will design, develop and optimise process equipment and experimental procedures for mixed battery chemistry black mass, including NMC and LFP, establish mass and energy balances, define operating windows and scale-up criteria, and generate operational standards to ensure safety and maximizing yield. You will translate laboratory results into engineering specifications, support procurement, construction, commissioning and validation of the pilot unit capable of processing 100kg of battery black mass per hour by project end.

The role requires independent problem-solving, project planning and effective delivery against consortium milestones. You will work closely with recycling partners at the Widnes demonstration site, communicate technical decisions and challenges across disciplinary boundaries, manage risks and maintain high-quality process documentation. You will also contribute to reports, publications, intellectual property, dissemination, outreach and future funding proposals, while supporting students and colleagues within the wider research programme. Regular travel to consortium partner sites will form part of the role.

This role will spearhead Leicester's market leadership in the direct recycling of lithium ion batteries. This includes laboratory validation, multi-chemistry optimisation, pilot-unit specification and industrial demonstration. The wider project advances the technology from TRL 4–5 towards a continuous modular pilot unit and requires close work with the industrial recycling facility in Widnes. Commercial opportunities will be explored during or post project.

Main Duties and Responsibilities

Research

- To undertake a specific role in a research project or projects, taking responsibility for some element(s) of the planned research
- To lead in the collection, evaluation and interpretation of the research data in experimental design and performance, and work autonomously to attain project milestones.
- To contribute to the development of the choice of techniques, critiques, approaches, models and methods

Athena Swan Silver Award · Race Equality Charter Bronze Award · disability confident LEADER · LGBT+ Inclusion Award 2020 - 2021 AWARDEE ORGANISATION · Stonewall DIVERSITY CHAMPIONS

UNIVERSITY OF LEICESTER

Job Summary

- To contribute to the overall research programme using innovative research models, novel approaches and techniques.
- In agreement with the line manager, liaise with project collaborators to progress the research
- To lead in writing up research findings for dissemination amongst the research team and broader international community, and develop ideas and contributions for future grants, technical outputs.
- To represent the research group by disseminating results/findings at national and international conferences and broader community.
- To contribute to research outputs as a co-author to journal articles, technical papers, monograph, book chapter.
- To develop and carry out a plan to extend an area of personal research, or contribute as a team member to the development of a broader programme, this may include contributing to the writing of research bids/grants.
- With the support of colleagues, identify opportunities to apply for fellowships and/or further project grants
- To provide guidance to other staff and students (involved in the research programme).
- To actively seek opportunities to carry out multi-disciplinary research with other research groups at the University or stakeholders external to the University, with the approval of the Principal Investigator (PI).

Professional Development

- Duties and opportunities to engage in work that support your own professional development.

Impact and Knowledge Exchange

- Network and contribute to the maintaining and furthering of the wider research programme and research area
- To contribute to industry collaborations
- To consult effectively on own specialism directly with people external to the University
- To engage positively and pro-actively in research impact
- Willingness to travel regularly to partner facilities and undertake hands-on pilot trials.

Leadership and Citizenship

- Guidance to other team members both research staff and students
- Pro-actively build networks and collaborations.
- Providing mentoring and coaching to Early Career Researchers and research students.

Athena Swan Silver Award
Race Equality Charter Bronze Award
disability confident LEADER
LGBT+ 2020 - 2021 AWARDEE ORGANISATION
Stonewall DIVERSITY CHAMPIONS

UNIVERSITY OF LEICESTER

Job Summary

Internal and External Relationships

Regular meetings with members of the programme research group

Meeting members of the department for critical discussion of the research and exchange of new ideas and approaches that might benefit the research

Liaison with external collaborators

Planning and Organising

You will be required to effectively manage your time to plan your research activity and to deliver on the priorities of the project:

- Prioritise tasks within agreed work schedules;
- Plan for specific aspects of research incorporating issues such as deadlines, project milestones and overall research aims;
- Adapt daily and weekly plans to accommodate new developments and be flexible to the changing priorities of the research project;

Qualifications, Knowledge and Experience

Essential

- A PhD, or equivalent industrial experience, in chemical engineering, process engineering, mechanical engineering, mineral processing, separation science or a closely related discipline.*
- Experience of process scale-up, particularly translating laboratory or batch processes into pilot-scale or continuous operation*
- Practical experience in the design, specification, procurement, construction, commissioning or validation of pilot equipment*
- Knowledge of solid–liquid, liquid–liquid, flotation, emulsion, particle-separation or hydrometallurgical processes*

Desirable

- Experience developing process flow diagrams, mass and energy balances, operating envelopes and scale-up calculations
- Familiarity with process safety, risk assessment, COSHH, HAZOP or safe operation of industrial equipment.
- Evidence of a contribution to peer-reviewed journal papers or equivalent e.g technical report/writing a piece of software
- Evidence of proven analytical problem solving capability
- Expertise in relevant approaches/models and analytical techniques and ability to develop new ones where required.

Athena Swan Silver Award · Race Equality Charter Bronze Award · disability confident LEADER · LGBT+ 2020 - 2021 AWARDEE ORGANISATION · Stonewall DIVERSITY CHAMPIONS

UNIVERSITY OF LEICESTER

Job Summary

Skills, Abilities and Competencies

Essential

- Willingness and ability to work with internal and external stakeholders*
- Evidence of continued development of subject expertise*
- Excellent communication skills – written and verbal evidenced by the ability to communicate complex information *
- Evidence of working effectively as part of a team and the ability to work independently *
- Working towards independence and ability to be involved in collaborative research
- Evidence and commitment to Continuous Professional Development (CPD) for yourself, and encourage commitment to learn and develop in others
- Collegiate member of a research team

Desirable

- Budget management skills
- Experience of battery materials, black mass, critical-mineral recovery, recycling or powder processing
- Ability to analyse process performance using measures such as throughput, recovery, yield, purity, energy consumption and reproducibility
- Experience working with industrial partners, equipment suppliers or multidisciplinary consortia, including delivery against formal milestones
- Familiarity with technoeconomic analysis, life-cycle assessment, process simulation, CAD or statistical design of experiments
- Evidence of producing technical specifications, commissioning documentation, reports, publications or intellectual-property disclosures

**Criteria to be used in shortlisting candidates for interview*

Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

Athena Swan Silver Award
Race Equality Charter Bronze Award
disability confident LEADER
LGBT+ 2020 - 2021 AWARDEE ORGANISATION
Stonewall DIVERSITY CHAMPIONS

UNIVERSITY OF LEICESTER

Job Summary

Supporting University Activities

As a University of Leicester citizen, you are encouraged to support key university activities such as clearing, graduation ceremonies, student registration and recruitment open days. We encourage all staff as citizens to work flexibly across the University if required. If supporting these activities is likely to affect your workload, please speak to your line manager in the first instance

University Values

Inclusive - We are diverse in our makeup and united in ambition. Our diversity is our strength and makes our community stronger.

Inspiring - We are passionate about inspiring individuals to succeed and realise their ambitions. We challenge our community to think differently, to get involved, and to constantly embrace new ideas.

Impactful - As Citizens of Change we will generate new ideas which deliver impact and empower our community

Freedom of Speech

The University is committed to upholding freedom of speech and academic freedom within the law throughout our recruitment processes. We ensure that all candidates are considered based on merit and suitability for the role, without regard to their lawful viewpoints or the expression of challenging or controversial ideas. Our recruitment policies and practices are designed to protect applicants from discrimination or adverse treatment on the basis of their opinions, and to foster an environment where open debate and diverse perspectives are valued as essential to our academic mission.

Equity and Diversity

We believe that equity, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equality support our efforts to attract a diverse range of high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equality, diversity and inclusion.