UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Sustainable Process Engineering,

Faculty of Engineering and Physical Sciences



Salary: Grade 7 (£41,885 - £49,798 p.a.)

Reference: EPSPE1132

Location: Leeds main campus (with scope for hybrid working)

Fixed-term for up to 12 months

We are open to discussing flexible working arrangements

Research Fellow in Sustainable Process Engineering
Faculty of Engineering and Physical Sciences.

Do you have a strong interest in sustainable processes? Do you have experience in Process Systems Engineering and Sustainability? Are you keen to develop your career in optimising novel separations? Do you want to join one of the UK's research Intensive Universities?

A key challenge in decarbonising pharmaceutical manufacturing is the production of high-purity solvents required for active pharmaceutical ingredient (API) synthesis, chromatography and cleaning operations. Existing bio-based solvents often fail to meet the stringent moisture, purity and quality specifications demanded by the pharmaceutical sector, while conventional purification methods are highly energy intensive and economically prohibitive.

In this project, you will focus on the development, optimisation and scale-up of advanced solvent production and purification processes, integrating novel membrane separation technologies, process design and mathematical models to deliver pharmaceutical-grade solvents at industrially relevant scales. The work will involve process design, separation and dehydration system optimisation, mass and energy integration, and integrated process performance and evaluation. These activities will establish scalable manufacturing routes that reduce energy consumption, improve resource efficiency and enable the production of low-carbon solvents suitable for deployment across global medicines manufacturing supply chains.

This project is funded via the InnovateUK Industrialising UK Bio-based Solvents for Global Medicine Manufacturing, with partners across the University of Leeds, Queen Mary University London, Exactmer Limited, Celtic Renewables Limited, OXCCU Tech LTD, Solve Chemistry LTD, Atmospheric AI Limited and the Centre for Process Innovation Limited.

What does the role entail?

As a Research Fellow, your main duties will include:

- Apply a self-led approach to developing and optimise process flowsheets for the separation and dehydration of biosolvents used in API manufacturing;



- Develop and intensify separation processes associated with the use of bio solvents within manufacturing flowsheets;
- Develop input-output inventory models for economic and environmental sustainability analysis;
- Perform life cycle assessments and embed key performance indicators as part of the optimisation process;
- Develop research objectives and proposals, collaborating with the wider Team to set the direction of research activities and the project, while effectively communicating results through organised reports, journal publications and meeting presentations;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own research;
- Working independently and as part of a larger team of researchers, both internally and externally, to develop new research links and collaborations and engage in knowledge transfer activities where appropriate;
- Contributing to the training of both undergraduate and postgraduate students, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

What will you bring to the role?

As a Research Fellow you will have:

- A PhD (or have submitted your thesis before taking up the role) in Chemical Engineering;
- A MEng/MSc in Chemical Engineering
- Experience in mechanistic modelling of novel separations;
- Experience in process design, simulation, intensification and process flow sheeting using Aspen Plus;
- Experience in mechanistic or statistical optimisation techniques;
- Experience in developing life cycle inventories and carrying out life cycle assessments using SimaPRO software and Ecoinvent databases;.
- Experience in working with and collaborating with multiple partners/stakeholders;



- Good time management and planning skills, with the ability to meet tight deadlines and manage competing demands effectively without close support;
- A developing track record of peer-reviewed publications in international journals;
- Excellent communication skills both written and verbal, and the ability to communicate your research at national and international conferences;
- A proven ability to work well both individually and in a team;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience in techno-economic modelling.

How to apply

You can apply for this role online; more guidance can be found on our How to Apply information page. Applications should be submitted by **23:59** (UK time) on the advertised closing date.

Contact information

To explore the post further or for any queries you may have, please contact:

Dr. Keeran Ward, Associate Professor in Chemical Engineering
Email: K.R.Ward@leeds.ac.uk

Additional information

Faculty and School Information
Further information is available on the research and teaching activities of the Faculty of Engineering & Physical Sciences, and the School of Chemical and Process Engineering.

Working at Leeds
We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find



out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our Working at Leeds information page.

A diverse workforce

As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Engineering and Physical Sciences we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian and ethnically diverse people; people who identify as LGBT+; and people with disabilities. Candidates will always be selected based on merit and ability.

The Faculty of Engineering and Physical Sciences are proud to have been awarded the Athena SWAN Silver Award from the Equality Challenge Unit, the national body that promotes equality in the higher education sector. Our equality and inclusion webpage provides more information.

Information for disabled candidates

Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found under the 'Accessibility' heading on our How to Apply information page or by getting in touch by emailing HR via hr@leeds.ac.uk.

Criminal Record Information

Rehabilitation of Offenders Act 1974

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our Criminal Records information page.

Salary Requirements of the Skilled Worker Visa Route

Please note that this post may be suitable for sponsorship under the Skilled Worker visa route but first-time applicants might need to qualify for salary concessions. For more information, please visit the Government's Skilled Worker visa page.



For research and academic posts, we will consider eligibility under the Global Talent visa. For more information, please visit the Government's page, Apply for the Global Talent visa.

