UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Reaction Automation,

Faculty of Engineering and Physical Sciences



Salary: Grade 7 (£34,304 – £40,927 p.a.) Due to funding restrictions, an appointment will not be made higher than £34,304 p.a.

Reference: EPSPE1053

Closing date: Monday 01 November 2021

Fixed-term for up to 12 months

We will consider job share and flexible working arrangements

Research Fellow in Reaction Automation, Institute of Process Research and Development, Schools of Chemical and Process Engineering and Chemistry.

Are you an experienced and ambitious researcher looking for your next challenge? Are you looking to apply your skills in reaction engineering to the development of new approaches for manufacturing pharmaceutical and nanoparticulate products? Do you want to further your career in one of the UK's leading research-intensive Universities?

We are seeking a Research Fellow in Reaction Automation to join a major 4-year EPSRC-funded programme - *Cognitive Chemical Manufacture*. The overarching project aims to develop an Industry 4.0 approach revolutionizing the transfer from laboratory to production using advanced data-rich and cognitive computing technologies. Cloud-based machine learning services will generate experiment setpoints delivered through the cloud to automated laboratory platforms. A key novelty is that the analysis services can receive and analyse results, and post further experiments to the experimental platforms, thus generating a data generation - data analysis closed-loop. This enables the application of machine learning to chemical development: the system will continuously learn, increasing in confidence and knowledge over time, from previous iterations.

The position will work alongside a Research Fellow with Process Chemistry expertise at the Institute of Process Research and Development at the University of Leeds. The role holder will interact with partners at Swagelok, AstraZeneca and Promethean Particles, to develop automated reactor platforms, in collaboration with colleagues at the University of Nottingham and with experts at IBM & University College London, in the integration of machine learning algorithms for the efficient generation of kinetic and process knowledge.



What does the role entail?

As a Research Fellow, your main duties will include:

- Contributing to the development of the project, working alongside Dr. Richard Bourne, Professor Frans Muller and Dr. Thomas Chamberlain, by assisting with the design, construction and testing of the automated reactor platforms;
- Developing and operating automated continuous reactors, associated online analysis systems and control software;
- Integrating and developing the use of machine learning algorithms (led by IBM) and kinetic modelling (led by UCL) for chemical composition prediction and compare to current methodologies;
- Successfully interacting with members of the Leeds project team and collaborate effectively with industrial and academic collaborators;
- Delivering project objectives to agreed timelines;
- Communicating or presenting research results within the research team, at national and international meetings;
- Complying with H&S regulations, and encourage and ensure a safe working environment;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Preparing papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as 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 close to completion) in Chemical Engineering or a closely allied discipline;
- Expertise in process engineering including the design and construction of process equipment, process automation and control and preferentially chemical analysis;
- A solid understanding of reaction engineering concepts and their application;
- A proven track record of peer-reviewed publications in high impact factor journals;
- Proof of independence as a researcher, for example, through evidence of leadership of a high-impact peer-reviewed publication in process development/process analytical technology/reaction engineering;
- Demonstrable ability in independent planning of medium-term objectives, effective methods for delivering those objectives, and ability to contribute to planning of longer-term objectives with a team environment;
- Good time management and planning skills, with the ability to meet tight deadlines and work effectively under pressure;
- Excellent written and verbal communication skills including presentation skills;
- Proven ability to manage competing demands effectively, responsibly and without close support;
- 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:

- The ability to write computer programs and an understanding of hardware communication protocols with experience of laboratory automation software such as MATLAB or LabVIEW;
- Experience of pursuing external funding to support research.

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 Richard Bourne, Associate Professor in Reaction Engineering
Email: R.A.Bourne@leeds.ac.uk

Additional information

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

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 Schools in the Faculty of Engineering and Physical Sciences are proud to have been awarded the Athena SWAN Bronze or 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.

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

Candidates with disabilities
Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our Accessibility information page or by getting in touch with us at disclosure@leeds.ac.uk.



Please note: If you are not a British or Irish citizen, from 1 January 2021 you will require permission to work in the UK. This will normally be in the form of a visa but, if you are an EEA/Swiss citizen and resident in the UK before 31 December 2020, this may be your passport or status under the EU Settlement Scheme.

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.

