UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Digital Chemistry and Engineering, Faculty of Engineering and Physical Sciences

Salary: Grade 7 (£41,064 – £48,822 p.a.)

Reporting to: Professor Richard Bourne

Reference: EPSCH1125

Closing date: Sunday 15 February 2026

Fixed term (until 31 March 2029 - to complete specific time limited work)

Location: Leeds main campus

We are open to discussing flexible working arrangements.

Research Fellow in Digital Chemistry and Engineering, Institute of Process Research and Development (iPRD), School of Chemistry.

Are you an experienced and ambitious researcher looking for your next challenge? Do you want to further your career in one of the UK's leading research-intensive Universities? Are you eager to apply your machine learning expertise to cutting-edge automated optimisation challenges?

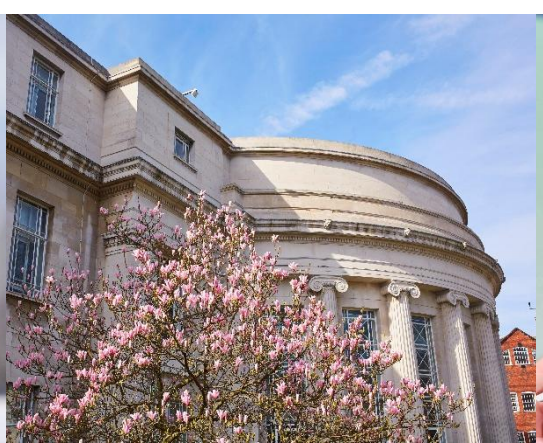
Overview of the Role

We are seeking a Research Fellow in Digital Chemistry and Engineering to combine self-optimising flow reactor technology with high-throughput experimentation (HTE) and apply it to pharmaceutically relevant case studies.

The overarching goal of the project is to advance the sustainability of pharmaceutical manufacturing through innovative automation, analytical science, and data-driven optimisation. You will upgrade a self-optimising flow reactor modular platform integrated with high-throughput experimentation (HTE) and online process analytical technology (PAT), embedding sustainability metrics into the optimisation loop, and apply transfer learning to accelerate the transition from batch to continuous flow processes. You will interact with project partners in the pharmaceutical sector to demonstrate the technology on high impact case studies.

This project is part of a £10M+ project funded by innovate UK and will involve extensive collaboration with industry partners including AstraZeneca, Labman and Britest.
https://iuk-business-connect.org.uk/news/funding-to-build-a-sustainable-future-for-medicines-manufacturing/

The position will be based at the Institute of Process Research and Development, in the School of Chemistry, University of Leeds.


Main duties and responsibilities

- Contributing to the development of the project, working alongside the academic team and industrial collaborators by developing a transfer learning approach and using machine learning models to apply insights from batch data to continuous flow;
- Comply with H&S regulations, and encourage and ensure a safe working environment;
- To design, build and operate automated multistep reactor platforms including integration of control software, online analysis and machine learning algorithms;
- 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;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own research;
- Making a significant contribution to the dissemination of research results by publication in leading peer-reviewed journals and by presentation at national and international meetings;
- 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;
- Maintaining your own continuing professional development and act 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.

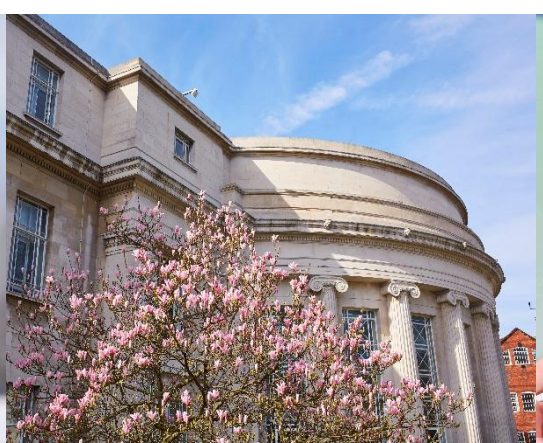

Qualifications and skills

Essential

- A PhD (or have submitted your thesis before taking up the role) in Chemistry, Chemical engineering or a related field;
- A strong background in machine learning, algorithm development, and/or autonomous experimentation for organic synthesis;
- The ability to write computer programs in Python or MATLAB and an understanding of hardware communication protocols;
- 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 within a team environment;
- 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.

Desirable

- Experience of pursuing external funding to support research;
- Experience in chemical synthesis and/or flow chemistry;
- Experience in batch high-throughput experimentation (HTE);
- Experience of applying machine learning algorithms for reaction optimisation;
- Experience working with industrial partners.


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:

Prof. Richard Bourne, Professor in Digital Chemical Manufacturing
Email: R.A.Bourne@leeds.ac.uk

OR

Dr Gilian Thomas, Lecturer in Sustainable and Digital Chemistry
Email: G.T.Thomas@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 and the School of Chemistry.

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.