



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

**Research Fellow in Sustainable Bio-Solvents,
Faculty of Engineering and Physical Sciences**



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

Reporting to: Professor John Blacker

Reference: EPSCH1132

Fixed term (18 months - to complete specific time limited work)

Location: Leeds main campus

We are open to discussing flexible working arrangements

Research Fellow in Sustainable Bio-Solvents, Institute of Process Research and Development, School of Chemistry.

Do you have a strong interest in Developing Processes? Do you have experience in Sustainability and Bio-Solvents? Are you keen to develop your career in Green Chemistry?

Overview of the Role

Achieving an economic, sustainable and net zero ambition for biogenically derived chemicals is a massive industry-wide challenge. Most solvents are petrochemically derived, and present one of the main wastes in pharma and fine chemical manufacture. The use of bio-derived feedstocks is attractive for making replacement bio-solvents for reasons of low-carbon footprint, however their source and production methods often entrain water and new impurities that are problematic for use in pharma. Current work has shown a bio-source can be used to generate crude bio-acetone and bio-acetonitrile but both require purification before being suitable replacement solvents. The former is used widely for plant cleaning whilst the latter is used in substantial quantity for making oligonucleotide medicines. Post-application recycle and re-use of both solvents will also be investigated.

In this project, you will develop sustainable and cost-effective methods for purifying the bio-solvents, testing low energy membrane drying technologies, assessing the purity of the solvents, investigating how used acetone or acetonitrile can be recycled and optimising protocols to help improve our understanding of the best design, economics and sustainable deployment. This will involve lab-based testing of pervaporation membranes in continuous flow and further purification of the solvent, integrating novel manufacturing methods into an intensified process flowsheet and collaborating on the development of life cycle sustainability assessments through multiple decision criteria.

This project is funded in part by Innovate UK under the Sustainable Medicines Manufacturing – Grand Challenge: Industrialising UK Bio-based Solvents for Global Medicine Manufacturing. The University of Leeds are a partner in this project in collaboration with 10 other organisations.



Main duties and responsibilities

- Apply a self-led approach to developing a bio-solvent purification process;
- Develop low energy membrane drying methods using membranes produced by a project partner;
- Use appropriate analytical methods to assess the purity of the solvents;
- Investigate sustainable methods for recycling used solvents enabling pharma re-use;
- Perform and collaborate on life cycle sustainability assessments to determine the environmental, economic and social impacts of the process;
- Collaborate to help optimise protocols, improving our understanding of the best design, cost model and techno-economic assessments to judge the feasibility of a commercial process;
- Effectively communicate results through project meetings, reports and presentations, journal publications and selected conferences;
- 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 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.



Qualifications and skills

Essential

- A PhD (or have submitted your thesis before taking up the role) in Chemistry;
- Experience in organic synthesis, catalysis or process design;
- Experience in process development, separation and chemical purification methods;
- Experience in organic chemical analysis for example GC, HPLC, NMR, Mass Spectroscopy and Karl-Fisher;
- Knowledge of techno-economic models, carrying out life cycle assessments and measures of process sustainability;
- Experience working 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.

Desirable

- Experience of pursuing external funding to support research;
- A strong first degree and Masters in Chemistry;
- Experience in continuous flow processes;
- Experience in chemical regulatory systems.

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:

[Professor John Blacker](#), Professor

Tel: +44 (0)113 343 8239

Email: J.Blacker@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 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](#).

