



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Microreaction Engineering, Faculty of Engineering



Salary: Grade 7 (£33,199 – £39,609 p.a.)

Reference: ENGPE1166

Closing date: 25 July 2019

Fixed-term for up to 8 months, available from 1 August 2019, to end by 31 March 2020

We will consider flexible working arrangements

Research Fellow in Microreaction Engineering School of Chemical and Process Engineering

Are you an ambitious researcher looking for your next challenge? Do you have an established background in Microreaction Engineering and heterogeneous catalysis? Do you want to further your career in one of the UK's leading research intensive Universities?

Metal nanoparticles are used for a wide range of applications due to their unique electrical, optical, and magnetic properties as well as the catalytic activity. The ability to achieve size-controlled, continuous synthesis of metal nanoparticles is of significant importance to provide an accurate adjustment of the colloidal properties. Continuous reaction systems, such as [Corning Advanced-Flow Reactor](#) (AFR), combine the advantages of micro reactors, e.g. faster mixing and enhanced heat and mass transfer, with conventional batch reactor systems, i.e. high throughput and less possibility of occurrence of clogging. These devices can then subsequently be employed to scale-up the developed reaction conditions.

We are looking for an outstanding Research Fellow to work on our EPSRC IAA-funded project "High-throughput synthesis of metal nanoparticles in an advanced flow reactor" in the School of Chemical and Process Engineering. In the proposed research, we will explore the application of Corning AFR (e.g. Low-Flow Reactor) for metal nanoparticles synthesis, optimize the experimental conditions and parameters to achieve a controllable and tuneable process based on the Institute of Process Research and Development, Leeds (iPRD), and characterise and evaluate the catalytic activity and selectivity of the synthesised nanoparticles for a particular reaction using the state-of-the-art facilities in Leeds Electron Microscopy and Spectroscopy Centre (LEMAS).

Holding a PhD (or an expectation that a PhD will be awarded soon) in Chemical Engineering or a closely allied discipline, you will have a strong background in microreaction engineering, flow chemistry, and heterogeneous catalysis, and experience with materials characterization, and experience with materials characterization using XRD, TEM and related techniques.



What does the role entail?

As a Research Fellow, your main duties will include:

- Working with [Dr Kejun Wu](#) and [Dr Richard Bourne](#) to develop the reaction system for the continuous synthesis of nanomaterials using Corning AFR;
- Evaluating the properties of the synthesised nanomaterials;
- Liaising with collaborators at the University of Leeds and externally;
- 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 work;
- 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 an expectation that a PhD will be awarded soon) in Chemical Engineering or a closely allied discipline;
- A strong background in microreaction engineering, flow chemistry, and heterogeneous catalysis, and experience with materials characterization;



- A strong background in metal nanoparticle synthesis in microreactors and their application for heterogeneous catalysis;
- Experience with materials characterization using XRD, TEM and related techniques;
- Experience with flowing, heat and mass transfer within micro-regime;
- Excellent time management and planning skills, with the ability to meet tight deadlines and work effectively under pressure;
- A proven track record of peer-reviewed publications in high impact factor journals;
- 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:

- Experience of pursuing external funding to support research;
- Experience of supported metal catalysts preparation.

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 Kejun Wu](#), School of Chemical and Process Engineering

Tel: +44 (0)113 343 0532

Email: K.J.Wu@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 the [School of Chemical and Process Engineering](#).

A diverse workforce

The Faculty of Engineering is 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.

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.

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.

