



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Understanding Formaldehyde and Glyoxal Chemistry for Satellite Measurements, Faculty of Mathematics and Physical Sciences



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

Due to external funding restrictions, the maximum salary will be £33,199

Reference: MAPCH1118

Closing date: 28 June 2019

Fixed-term for 36 months

We will consider job share / flexible working arrangements

Research Fellow in Understanding Formaldehyde and Glyoxal Chemistry for Satellite Measurements, School of Chemistry

Are you an ambitious researcher looking for your next challenge? Do you have an established background in Atmospheric Chemistry? Do you want to further your career in one of the UKs leading research intensive Universities?

We are looking for an outstanding Research Associate to join the [NERC](#) funded project 'Understanding Formaldehyde and Glyoxal Chemistry for Satellite Measurements' (UNFOGS) in the Atmospheric and Planetary Chemistry group at the University of Leeds. UNFOGS is designed to help the community extract maximum information from new high resolution satellites that will be launched in the near future to study air quality. Satellites have poor detection limits for primary VOC emissions, but can detect the important oxidation products formaldehyde (FA, HCHO) and glyoxal (GL, OHCCHO) and in the future, potentially, methylglyoxal (MGL, CH₃(O)CCHO). Different classes of VOC produce different ratios of FA:GL (or FA:MGL) allowing for the potential identification of the primary VOC emission **if** the chemistry of FA and GL production and removal is understood. UNFOGS is a multidisciplinary project involving instrument development, laboratory studies and modelling. The latter component is led primarily by [Prof Paul Palmer](#) in Edinburgh.

In collaboration with the project team, you will work on incorporating field instruments for FA and GL detection with the Highly Instrumented Reactor for Atmospheric Chemistry ([HIRAC](#)) simulation chamber; using both direct methods (laser flash photolysis/laser induced fluorescence/mass spectroscopy) and the HIRAC chamber to determine the yields of FA, GL and/or MGL from examples of the major types of VOC oxidation; and using a range of methods (direct and relative rate) to study the loss of FA, GL and MGL with major atmospheric radical species to determine atmospheric lifetimes.

You will have (or be close to obtaining) a PhD in Physical Chemistry or a related discipline, together with experience in the use of lasers and/or mass spectrometers for spectroscopy or kinetics measurements. Experience in the application of chemical models would be beneficial.



What does the role entail?

As a Research Fellow, your main duties will include:

- Taking a leading role in developing and enhancing spectroscopic methods for the detection of FA, GL and MGL and comparing these techniques with other methods (e.g. FTIR);
- Leading the laboratory programme on the chemistry of the production and removal of FA, GL and/or MGL from key VOC species using both direct methods and the HIRAC simulation chamber;
- Interacting with other project members in UNFOGS, particularly in the generation of chemical models for FA and GL/MGL production;
- Assisting the Principle Investigator (PI) to maintain the University of Leeds contribution to the EUROCHAMP2020 database;
- 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 have submitted your thesis before taking up the role) in Physical Chemistry or a closely allied discipline;
- Significant experience of experimental work in the use of lasers and/or mass spectrometry for kinetic or spectroscopic study;
- Experience in either the detailed operation, design, or maintenance of complex instrumentation for physical chemistry or related studies;
- Good time management and planning skills, with the ability to meet tight deadlines, manage competing demands and work effectively under pressure without close support;
- A proven track record of peer-reviewed publications in high impact factor journals;
- Excellent written and verbal communication skills including presentation skills;
- 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 in the use of simulation chambers, laser flash photolysis, laser induced fluorescence, laser absorption and mass spectrometry;
- Experience in the design and construction of complex instrumentation and software control;
- Experience of numerical modelling, particularly in the field of combustion or atmospheric chemistry.

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:

Paul Seakins, Professor of Reaction Kinetics

Tel: +44 (0)113 343 6568

Email: P.W.Seakins@leeds.ac.uk

Dwayne Heard, Professor of Atmospheric Chemistry

Tel: +44 (0)113 343 6471

Email: D.E.Heard@leeds.ac.uk

Additional information

Find out more about the [Faculty of Mathematics and Physical Sciences](#)

Find out more about our [School](#)

A diverse workforce

The Faculty of Mathematics and Physical Sciences is proud to have been awarded the [Athena SWAN Bronze 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.

