UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Astrochemistry, School of Chemistry

Salary: Grade 7 (£32,004 – £38,183 p.a.)

Due to external funding restrictions, appointments will only be made up to £33,943

Reference: MAPCH1067

Closing date: 6 August 2017

Fixed-term for 24 months, from Autumn 2017

Research Fellow in Astrochemistry
School of Chemistry, Faculty of Mathematics and Physical Sciences

Are you an ambitious researcher looking for your next challenge? Do you have an established background in experimental chemical kinetics, reaction dynamics, photochemistry or astrochemistry? Do you want to further your career in one of the UK's leading research intensive universities?

We are looking for an exceptional researcher to work on our project 'Astrochemistry of old stars: direct probing of unique chemical laboratories (AEROSOL)', with Professors Dwayne Heard and John Plane. This interdisciplinary project on the stellar winds around evolved stars is funded by the ERC Consolidator Grant AEROSOL (Principal Investigator: Professor Leen Decin, University of Leuven). The aim of the project is to boost our understanding of the physics and chemistry characterizing the stellar winds around evolved stars. The project builds upon novel observations, detailed theoretical wind models, and targeted laboratory experiments.

Our experimental research concerns the determination of rate coefficients and product distributions of elementary gas-phase reactions involving key reactive species (OH, C_2H, HCHO, etc.) in stellar winds for which data are currently lacking. Specifically, several advanced laser-spectroscopic and chemiluminescence techniques will be employed to follow photolytically-generated reactive species in real time in a state-of-the-art low-temperature Laval-nozzle apparatus, and also other apparatus, with the aim to obtain the rates of gas-phase reactions at temperatures below 200K.

You will perform research on the AEROSOL project, working in collaboration with a team of astrophysicists, chemists and computational mathematicians in both Leeds and Leuven. You will also have opportunities for training in science and people management, science communication, and grant application writing, with the aim to develop a personal independent career track.

You will have a PhD in Astrochemistry, Astrophysics, Physical Chemistry or a closely aligned discipline, together with experience in laboratory studies of chemical kinetics, reaction dynamics or photochemistry. You'll also have excellent communication skills and the ability to work under pressure and meet deadlines.



There is also a potential opportunity for you to be employed and funded by Leuven University, Belgium, for a subsequent one year period following the two year appointment at Leeds. Both Universities have modern and fully equipped research laboratories, and both groups enjoy and encourage further close collaboration with researchers in departments employing high-level quantum chemical calculations on species related to this project.

What does the role entail?

As a Research Fellow your main duties will include:

- Designing, planning and conducting a programme of investigation, in consultation with Professors Dwayne Heard and John Plane;
- Generating independent and original research ideas and methods in the investigation of astrochemically relevant reactions at low temperatures, using a Laval nozzle and other apparatus based on laser flash photolysis, primarily using laser-induced fluorescence and chemiluminescence to detect reactants and products;
- 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 (e.g. modellers and theorists), both internally and externally to develop new research links and collaborations and engage in knowledge transfer activities where appropriate;
- Contributing to the supervision of PhD and MChem students and acting as a mentor to less experienced colleagues;
- Evaluating methods and techniques used and results obtained by other researchers and relating such evaluations to your own research;
- Contributing to, and encouraging, a safe working environment.

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 in Astrochemistry, Astrophysics, Physical Chemistry or a closely allied discipline;
- Experience in laboratory studies of chemical kinetics, reaction dynamics or photochemistry;
- The ability to carry our complex astrochemical or physical chemistry experiments independently;
- A good background knowledge in contemporary research in laboratory studies of astrochemistry or atmospheric chemistry;
- The ability to design, execute and write up research independently;
- 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;
- Good time management and planning skills, with the ability to meet tight deadlines;
- A proven ability to work well both independently and as part of a team;
- Ability to work accurately and carefully;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience in experimental studies of chemical kinetics;
- Practical experience in the operation of a Laval nozzle apparatus;
- Experience in using lasers and specifically of using laser flash photolysis and laser induced fluorescence techniquest;
- Experience in data acquisition and instrument control, e.g. LabVIEW or another programming language;
- Evidence 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. As part of your online application, please include a statement of your research interests (optional) and your CV.



Contact information

To explore the post further or for any queries you may have, please contact:

Professor Dwayne Heard, Professor of Atmospheric Chemistry
Tel: +44 (0)113 343 6471
Email: D.E.Heard@leeds.ac.uk

Professor John Plane, Professor of Atmospheric Chemistry
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Email: J.M.C.Plane@leeds.ac.uk

Additional information

Our research
Further information about our research can be found at the websites for AEROSOL, the University of Leeds' Atmospheric and Planetary Chemistry group and the University of Leuven's Institute of Astronomy.

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.

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.

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 on our Criminal Records information page.