Job Description

DEPARTMENT OF CHEMISTRY

Summary

Job title	Doctoral Network Researcher
Division	MPLS
Department	Chemistry
Location	Department of Chemistry, Oxford
Remuneration	Salary will be no less than £43,883.36 per annum (refer to payment arrangements and benefits below)
Hours	Full-time
Contract type	Fixed-term for 36 months
Reporting to	Professor Stephen Fletcher
Vacancy reference	177292

Research topic	Catalytic asymmetric cross-coupling type reactions
Principal Investigator / supervisor	Professor Stephen Fletcher
Funding partner	UKRI

Overview of the role, Initial training activities

The Fellow will be considered to be both a registered student of the University, being enrolled for a comprehensive PhD/DPhil training in Oxford and as part of a European network, and also employed as a worker.

*Alongside research work, the department provides training in teaching skills, and there are opportunities to take part in teaching activities in the department, such as undergraduate classes and laboratory demonstrating, and tutorial teaching in colleges. However, please note that under the terms of the funding (which is provided by the UKRI Horizon guarantee scheme) the post-holder may **not** be paid for any teaching or other activities carried out over and above the full-time requirements of the post.*

Research and Training Goals of CATALOOP

The CATALOOP network aims at the development of powerful and readily applicable workflows for data-driven development of stereoselective catalysis.

As a main training goal we want to educate researchers in comprehensive data-driven experimental approaches for realizing challenging asymmetric catalytic methods.

This network brings together academic research groups with expertise in experimental catalyst development with theoretical groups skilled in computational and data-driven chemistry in order todevelop new catalytic asymmetric reactions. World-leading industrial partners with a wide range of interests will provide advice on which approaches may have the most impact on industry and will host the students in secondments. Students will be assigned experimental and theoretical supervisors and be trained to a minimum level of proficiency in both aspects. This envisaged combination of research and training will develop researchers with a unique skill set who are well suited to developing new enantioselective catalytic processes that are in high demand in academia and industry.

The network program will start in October 2025 and will offer 13 positions for PhD students at ten different universities and research institutes all over Europe.

Why data-driven catalysis?

Catalysis is a key concept for the transformation of the chemical industry towards sustainable production. One of the most challenging types of catalytic reactions to develop are stereoselective processes – the controlled preferential generation of one stereoisomer of a product over another.

The “classical" experimental development of catalytic asymmetric methods is generally difficult and time-consuming. Typically, a family of catalysts is explored based on a preliminary hypothesis. After initial (ideally positive) experimental results, further research is guided by trial and error or “educated guessing” with the goal to derive trends. One crucial shortcoming of this approach is the focus on positive results.

Data-driven approaches are attractive alternatives to the commonly used approaches to developing catalytic reactions: Descriptors are used to characterize the molecular properties of catalysts and statistical methods are then employed to derive predictive models for selective catalysis. In a data-driven approach, an initial set of reactions (including the negative results) is analysed and then used to establish such a model. Based on this, a new set of catalysts can then be predicted and tested. Subsequently, the new data is fed back into the model to improve its prediction capabilities in an evolutionary approach. Data-driven approaches therefore offer a highly structured and thus reproducible approach for the development of selective catalysts.

The project:

In this project you will work on the development of catalytic asymmetric carbon-carbon bond forming addition reactions using metals such as copper and rhodium often relies on using phosphine based ligands in order to control chemical reactivity and induce enantioseletivity in these reactions. This project will aim to improve challenging asymmetric transition-metal catalysed transformations by developing new chiral phosphorus-based ligands through data-driven approaches.

This role will work within the research team of Stephen Fletcher and is based in the Department of Chemistry. Interested candidates are invited to be in contact directly to find out more about the project: stephen.fletcher@chem.ox.ac.uk.

The successful applicant will also become a member of the EU network “CATALOOP”, funded from Marie Skłodowska-Curie Actions grant. They will become part of a Europe-wide network of students and investigators all working on projects related to *closing the loop in stereo selective catalysis with data-driven approaches.* Annual scientific meetings and training events will be included in the network’s activities. Furthermore, the successful applicant will have the opportunity to carry out a secondment at another laboratory (“node”) of the network during the 36 month project.

Eligibility criteria

Under the terms of the UKRI Horizon guarantee scheme funding, to be eligible for this post candidates:

- at the time of the fellowship start date, **must not** already be in possession of a PhD or have more than 4 years of full-time equivalent research experience as measured from the award date of your first degree or undergraduate degree.
- **must not** have been resident in the UK for more than a total of 12 months in the past three years up to the fellowship start date as the scheme aims to promote mobility within the research community

To be eligible candidates **must also be accepted by the University of Oxford as a DPhil student and continue to be a registered student for the duration of the employment contract.** Candidates will be assisted with the graduate admissions process. All graduate awards are subject to the Examination Regulations currently in force: see www.admin.ox.ac.uk/examregs/

Responsibilities

1. Plan and carry out experimental investigations using a range of instruments and techniques including the surface force balance;
2. Take responsibility for maintaining (and, where necessary, upgrading) apparatus relevant to the project in collaboration with other team members;
3. Together with other team members, maintain general laboratory equipment and take responsibility for maintaining high standards of lab safety and sustainable laboratory practice;
4. Undertake comprehensive and systematic literature reviews and take responsibility for curating state-of-the-art knowledge related to the project area;
5. Analyse experimental data and write up results of experimental work for publication in peer-reviewed journals, reports, or other documents relating to research findings and conclusions;
6. Contribute actively towards building positive and supportive relationships within the research team;
7. From time to time represent the research group at external meetings, seminars, conferences, and when visiting collaborators.
8. May be required to teach; this may include lecturing, small-group teaching, and tutoring of undergraduates and graduate students.

Selection criteria

Essential

1. Hold a Masters level degree or equivalent in Chemistry or a related area (or be close to completion).

2. Demonstrate interests in a relevant field, e.g. through prior research project(s) in experimental organic chemistry

3. Be able to demonstrate competence and success in previous academic work. Evidence will be sought of a deep understanding of the applicant's previous fields of study or research as indicators that such attributes can be brought to bear on the present project.
4. Demonstrate ability and interest in working with complex experimental setups and data analysis; for example involving mechanical, optical, electronic and computer control elements.
5. Communicate well in English in writing and in oral and visual presentations.
6. Be a motivated, enthusiastic, organised self-starter; one who can work with a minimum of supervision but at the same time extract the benefits of an excellent research environment.
7. Show an ability to work collaboratively in a laboratory environment, to supervise and educate junior co-workers, and take part in joint projects through co-operation and the exchange of information.

The selected candidate will be required to submit a formal application for DPhil in Chemistry:

https://www.ox.ac.uk/admissions/graduate/courses/dphil-chemistry The appointment is subject to your securing and retaining student status both within the University and your college throughout the fellowship.

Pre-employment screening

Standard checks

If you are offered the post, the offer will be subject to standard pre-employment checks. You will be asked to provide: proof of your right-to-work in the UK; proof of your identity; and (if we haven't done so already) we will contact the referees you have nominated. You will also be asked to complete a health declaration so that you can tell us about any health conditions or disabilities for which you may need us to make appropriate adjustments.

Please read the candidate notes on the University's pre-employment screening procedures at: https://jobs.ox.ac.uk/pre-employment-checks

Hazard-specific / Safety-critical duties

This job includes hazards or safety-critical activities. If you are offered the post, you will be asked to complete a health questionnaire which will be assessed by our Occupational Health Service , and the offer of employment will be subject a successful outcome of this assessment.

The hazards or safety-critical duties involved are as follows:

- Night working (11pm-6am)
- Lone Working
- Work with any substance which has any of the following pictograms on their MSDS:

- Travel outside of Europe or North America on University Business

Payment arrangements and benefits

Fellows are first and foremost registered students of the University. They are also employed

by the University as workers. However, the student status takes precedence.

The 'Horizon Europe guarantee' scheme provides funding to researchers and innovators who were unable to receive their Horizon Europe funding while the UK was in the process of associating. UK Research and Innovation cover the award which were originally made in Euros. An exchange rate may therefore be applied, and vary across the period of the grant to reflect the nature of the award.

Salary will be no less than £43,883.36 per annum.

All payments are made monthly in arrears in Pounds Sterling, including during any secondment periods outside of Oxford.

Due to UKRI's requirements fellows are paid at a rate of unit cost allowances as set by UKRI but which reflects the original EC funding award, rather than according to the University's normal employment terms, and the fellowships therefore carry only statutory employment entitlements, i.e. 28 days paid holiday (including bank holidays), statutory sick pay and statutory family (i.e. maternity, paternity, shared parental) leave and pay entitlements.

The fellows are not eligible for the University's own contractual sickness or family leave schemes.

Fellows will be automatically enrolled into the University Superannuation Scheme (USS) – and both employer and employee deductions will be made from the total amount awarded. For further information see http://www.admin.ox.ac.uk/finance/pensions/uss/ .

About the University of Oxford

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford's researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual's unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe's most entrepreneurial universities and we rank first in the UK for university spin-outs, and in recent years we have spun out 15-20 new companies every year. We are also recognised as leaders in support for social enterprise.

Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information, please visit www.ox.ac.uk/about/organisation.

Department Of Chemistry

The mission of Oxford Chemistry is to advance the global understanding of chemistry and to use that knowledge to address major challenges for society. Oxford Chemistry maintains world-class strengths in fundamental research, including the training of outstanding young scientists, whilst being an outward-looking department engaging with other disciplines,

industry, public services, government and the general public. We are a large department within the University's Mathematical, Physical and Life Sciences Division with over 70 research groups and 900 researchers including 400 graduate research students. Our MChem degree takes 180 students a year and features the distinctive tutorials of Oxford, an innovative three-year programme of practical teaching within our state-of-the-art teaching laboratory, and a 4th year focused on research based within one of our research groups.

Research in Oxford Chemistry focuses on fundamental science aimed at making significant and sustained long-term impact. We provide an environment that enables research by hiring, developing, and supporting talented researchers, many recognised as international leaders, across the spectrum of the chemical sciences. Our students and staff work in excellent research facilities to deliver field-leading research that crosses traditional boundaries and engages strongly with other disciplines, both within Oxford and across a range of external sectors.

The impact of our research in the wider economy and society is manifest in our many industrial and clinical collaborations and successful start-ups. Our eight research themes and business engagements showcase the breadth and depth of our research across the chemical sciences.

We are committed to providing an inclusive and supportive work and study environment for all our staff and students based on core values of respect, equality and collaboration. We have held an Athena SWAN silver award since 2015 reflecting our commitment to improving gender equality within our discipline.

Oxford Chemistry is accommodated within five buildings in the University's science area, including a modern RIBA award-winning dedicated research facility and a state-of-the-art practical teaching laboratory. Researchers are supported by a research infrastructure within Chemistry that includes NMR, Mass Spectrometry, Crystallography, Surface Analysis, Inorganic Materials Characterisation, Advanced Electron Spin Resonance and high-performance computing facilities as well as access to facilities across the wider University and at national research facilities including the Rosalind Franklin Institute and Diamond Light Source.

To support the Teaching and Research in the Department, there are a number of administrative functions including Finance, Human Resources, Facilities, Information Technology, Student Administration, Health and Safety, Communications and Alumni Relations.

Find out more about the Department, our work and our people at chem.ox.ac.uk

Equality, Diversity and Inclusion in Oxford Chemistry

We are committed to promoting an inclusive and diverse community of students and staff based on core values of respect, equality and collaboration. The Department has an active Equality, Diversity and Inclusion (EDI) committee and since 2015 we have held an Athena SWAN silver award in recognition of our efforts to introduce organisational and cultural practices which promote gender equality and create a better working environment for all. We promote family-friendly policies and support flexible working arrangements where possible. For more information about the University's family friendly benefits, please also see https://hr.admin.ox.ac.uk/information-for-parents-and-carers

Mathematical, Physical and Life Sciences Division

The academic administration of the University is conducted through four divisions (Humanities, Social Sciences, Mathematical, Physical and Life Sciences, and Medical Sciences). The Mathematical, Physical and Life Sciences Division consists of ten constituent departments: The Department of Chemistry, the Department of Computer Science, the Department of Earth Sciences, the Department of Engineering Science, the Department of Materials, Mathematical Institute, the Department of Physics, Department of Plant Sciences, Department of Zoology and the Department of Statistics. The division provides a framework for interdisciplinary teaching and research. There are also links with the Medical Sciences Division.

The disciplines within the MPLS Division regularly appear at the highest levels in rankings, including the Times Higher Education and QS world rankings. Nationally, the quality of the Division's research outputs and environment, and the resulting impact, was recognised through strong performances in the UK Research Excellence Framework in both 2014 and 2021.

For more information please visit: http://www.mpls.ox.ac.uk/

How to apply

Applications are made through our online recruitment portal. Information about how to apply is available on our Jobs website https://www.jobs.ox.ac.uk/how-to-apply.

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description.

As part of your application you will be asked to provide details of two referees and indicate whether we can contact them now.

You will be asked to upload a CV and a supporting statement. The supporting statement must explain how you meet each of the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants)

Please upload all documents **as PDF files** with your name and the document type in the filename.

All applications must be received by **midday** UK time on the closing date stated in the online advertisement.

Information for priority candidates

A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing department(s).

If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments).

If you need help

Application FAQs, including technical troubleshooting advice is available at: https://staff.web.ox.ac.uk/recruitment-support-faqs

Non-technical questions about this job should be addressed to the recruiting department directly recruitment@chem.ox.ac.uk

To return to the online application at any stage, please go to: www.recruit.ox.ac.uk.

Please note that you will receive an automated email from our online recruitment portal to confirm receipt of your application. **Please check your spam/junk mail** if you do not receive this email.

Important information for candidates

Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University's Privacy Notice for Job Applicants at: https://compliance.admin.ox.ac.uk/job-applicant-privacy-policy. The University's Policy on Data Protection is available at: https://compliance.admin.ox.ac.uk/data-protection-policy.

The University's policy on retirement

The University operates an Employer Justified Retirement Age (EJRA) for very senior research posts at **grade RSIV/D35 and clinical equivalents E62 and E82** of 30 September before the 70th birthday. The justification for this is explained at: https://hr.admin.ox.ac.uk/the-ejra.

For **existing** employees on these grades, any employment beyond the retirement age is subject to approval through the procedures: https://hr.admin.ox.ac.uk/the-ejra.

There is no normal or fixed age at which staff in posts at other grades have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time.

Equality of opportunity

Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

Benefits of working at the University

Employee benefits

University employees enjoy 38 days' paid holiday, generous pension schemes, travel discounts, and a variety of professional development opportunities. Our range of other employee benefits and discounts also includes free entry to the Botanic Gardens and University colleges, and discounts at University museums. See https://hr.admin.ox.ac.uk/staff-benefits

University Club and sports facilities

Membership of the University Club is free for all University staff. The University Club offers social, sporting, and hospitality facilities. Staff can also use the University Sports Centre on Iffley Road at discounted rates, including a fitness centre, powerlifting room, and swimming pool. See www.club.ox.ac.uk and https://www.sport.ox.ac.uk/.

Information for staff new to Oxford

If you are relocating to Oxfordshire from overseas or elsewhere in the UK, the University's Welcome Service website includes practical information about settling in the area, including advice on relocation, accommodation, and local schools. See https://welcome.ox.ac.uk/
There is also a visa loan scheme to cover the costs of UK visa applications for staff and their dependants. See https://staffimmigration.admin.ox.ac.uk/visa-loan-scheme

Family-friendly benefits

With one of the most generous family leave schemes in the Higher Education sector, and a range of flexible working options, Oxford aims to be a family-friendly employer. We also subscribe to the Work+Family Space, a service that provides practical advice and support for employees who have caring responsibilities. The service offers a free telephone advice line, and the ability to book emergency back-up care for children, adult dependents and elderly relatives. See https://hr.admin.ox.ac.uk/my-family-care
The University has excellent childcare services, including five University nurseries as well as University-supported places at many other private nurseries.
For full details, including how to apply and the costs, see https://childcare.admin.ox.ac.uk/

Disabled staff

We are committed to supporting members of staff with disabilities or long-term health conditions. For further details, including information about how to make contact, in confidence, with the University's Staff Disability Advisor, see https://edu.admin.ox.ac.uk/disability-support

Staff networks

The University has a number of staff networks including the Oxford Research Staff Society, BME staff network, LGBT+ staff network and a disabled staff network. You can find more information at https://edu.admin.ox.ac.uk/networks

The University of Oxford Newcomers' Club

The University of Oxford Newcomers' Club is an organisation run by volunteers that aims to assist the partners of new staff settle into Oxford, and provides them with an opportunity to meet people and make connections in the local area. See www.newcomers.ox.ac.uk.

Oxford Research Staff Society (OxRSS)

A society run by and for Oxford University research staff. It offers researchers a range of social and professional networking opportunities. Membership is free, and all researchers employed by Oxford University are welcome to join. Subscribe at researchstaff-subscribe@maillist.ox.ac.uk to join the mailing list to find out about upcoming events and other information for researchers, or contact the committee on committee@oxrss.ox.ac.uk. For

more information, see www.ox.ac.uk/oxrss, Twitter @ResStaffOxford, and Facebook www.facebook.com/oxrss.