Lead Research Technician for automated chemical reaction screening
Department of Chemistry

Closing date: 4 November 2018
Interview date: 22 November 2018
Vacancy reference: 7085
INTRODUCTION

Professor Ian Fairlamb has been developing a dedicated research programme in robotics and automation for ca. 6 years. The project involves collaboration with researchers from Chemistry, Computer Science and Mathematics Departments in York, in addition to collaboration with key researchers at other Universities. The vision for our team is to develop a leading hub for reaction optimisation (and analysis) through automation, with a longer-term connection to the agrochemical and pharmaceutical sectors (who have a firm interest in reaction screening facilities).

This project represents the initiation of the vision in enabling access to our robotic systems to both internal and external research user groups, i.e. to a valuable resource in reaction automation and expertise. The appointed lead research technician (LRT) will contribute to the overall running of a Chemspeed ISYNTH robotic system (for which full hands-on training, from Chemspeed Technologies experts, will be provided), from both a practical (hands-on) and logistical perspective. The LRT will coordinate and manage short-term research projects with both internal and external user groups. The LRT will ensure that the Chemspeed robotic system delivers useful chemical reaction data, performing initial analysis of data using common statistical packages. The latter will be supported by Professor Fairlamb and his collaborators.

The Department of Chemistry is one of the UK's leading Chemistry departments and we are renowned internationally for our research. This is combined with a commitment to teaching and outstanding student satisfaction, and we have been recognised consistently for our family-friendly policies and are proud of our Athena SWAN Gold Award: https://www.york.ac.uk/chemistry/ed/

As a Department we strive to provide a working environment which allows all staff and students to contribute fully, to flourish, and to excel. We aim to ensure that there is a supportive and egalitarian culture at all levels and across all staff groups. We promote good practice and a strong culture of equality in higher education. Further information can be found within this brief and on our website: www.york.ac.uk/chemistry/
Main purpose of the role

To lead and manage the day-to-day organisation and operation of a Chemspeed ISYNTH Robotic System and to support research activities; to provide guidance, training and theoretical/scientific/technical support to post-doctoral scientists, project students, postgraduates, academics and research staff within and external to the University of York.

Key responsibilities

(Role holders will be required to undertake some or all of the duties below)

- Undertake experimental work as required, and manage work with input from the principal investigator (PI, Ian Fairlamb)
- Understand and prioritise experiments for optimisation from internal and external collaborators to achieve the aims of individual case investigations, as part of the wide project.
- Provide guidance on the suitability of specific reaction chemistries to the Chemspeed robotic system. Explain to collaborators how parameters/operations will need to be adapted/modified.
- Undertake and/or collaborate in the development and implementation of innovative and novel techniques; design and conduct experiments or methods to test hypotheses/theories, synthesise results and communicate findings
- In discussion with collaborators develop robotic rapid screening methodologies and communicate outcomes to all stakeholders.
- Assist in the writing of draft research papers, coordinating with the PI directly and project collaborators. The latter will likely prepare draft papers with the expectation that a suitable written report with full experimental details is presented to them.
- Provide technical and scientific training, guidance and support to undergraduate and postgraduate students, project students, project team members, postgraduates, post-doctoral researchers and academic/industrial collaborators
- Support the Fairlamb research group with the day-to-day operation and housekeeping of the laboratory, associated machines and equipment; ensure compliance with laboratory health & safety procedures and best practice
- Be responsible for the maintenance and operation of complementary laboratory machines and equipment (mainly relating to the Chemspeed ISYNTH robotic system), and provide operational training, instruction and supervision to students and researchers both within and external to the University
- Ensure that legislative and regulatory safety testing of all laboratory apparatus and equipment is carried out and relevant documentation is completed
- Supervise another laboratory technician (grade 5) associated with the project.
- Maintain data sets in an appropriate manner to ensure data integrity and accessibility - part of this role will require coordination with the EPSRC Dial a Molecule grand challenge (and any future iterations of this network).
- Present research findings at Fairlamb group meetings and take part in debates and discussions to inform on scientific aspects of the research projects (at a range of network and conference meetings, particularly in the UK).
- Maintain up-to-date knowledge of the field reaction optimisation and analysis using robotic systems; investigate and propose additions and improvements to services; help keep the laboratory up-to-date with best working practices and new scientific protocols
# PERSON SPECIFICATION

## Qualifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Essential / Desirable</th>
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<tbody>
<tr>
<td>BSc in Chemistry or joint Chemistry/Science subject / MChem</td>
<td>Essential</td>
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<td>PhD in chemical synthesis and/or catalysis; or equivalent experience</td>
<td>Essential</td>
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## Knowledge

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<tr>
<td>Specific knowledge of the operation of a research laboratory; awareness of health and safety issues</td>
<td>Essential</td>
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<tr>
<td>Thorough, up-to-date theoretical and practical knowledge of the designated techniques associated with a laboratory (HPLC, GCMS, NMR, in situ spectroscopic techniques)</td>
<td>Essential</td>
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<td>Knowledge of the interaction between academia and research-led industrial companies</td>
<td>Essential</td>
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<td>Knowledge and understanding of scientific research methodology</td>
<td>Essential</td>
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<td>Knowledge of chemical synthesis and reaction optimisation</td>
<td>Essential</td>
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<td>Knowledge of equipment allowing reaction optimisation in high throughput mode</td>
<td>Desirable</td>
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<td>An appreciation of statistical analysis and associated software packages</td>
<td>Desirable</td>
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<td>Knowledge of quantitative measurements of reaction progression and interpretation</td>
<td>Desirable</td>
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## Skills, abilities and competencies

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<tr>
<td>Proven track record working in a chemical synthesis / catalysis research laboratory</td>
<td>Essential</td>
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<td>Proven ability to work independently and creatively, using problem solving and analytical skills</td>
<td>Essential</td>
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<td>Excellent Computer skills over a wide range of standard software, including Microsoft Office applications, ChemDraw and NMR software</td>
<td>Essential</td>
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<td>A high standard of written and verbal communication skills in English</td>
<td>Essential</td>
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<td>Excellent time-management skills; ability to prioritise own work in response to deadlines</td>
<td>Essential</td>
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<td>Ability to present complex ideas in a clear and concise manner and communicate with a wide range of people, such as colleagues, students and non-scientists</td>
<td>Essential</td>
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# PERSON SPECIFICATION

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<tr>
<th>Experience</th>
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<tr>
<td>Relevant laboratory research experience in an applied chemical synthesis research group</td>
<td>Essential</td>
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<td>Experience of working within an academic research environment</td>
<td>Essential</td>
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<td>Experience of training others (e.g., students) in laboratory techniques</td>
<td>Essential</td>
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<td>Experience with chemical reaction optimisation</td>
<td>Essential</td>
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<td>Experience in using both instrumentation and technology in the chemical sciences</td>
<td>Essential</td>
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<td>Experience of robotic systems for chemical reaction screening</td>
<td>Desirable</td>
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<td>Experience of data analysis and interpretation</td>
<td>Desirable</td>
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<td>Experience with data management strategies (e.g. retrieval by external research groups and/or general public)</td>
<td>Essential</td>
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## Personal attributes

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<td>Responsible, reliable and highly self-motivated; willing to learn new techniques and keep abreast of developments in own field</td>
<td>Essential</td>
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<td>Flexible attitude towards work (tasks and hours will depend on the state of the project)</td>
<td>Essential</td>
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<td>Disciplined with regard to confidentiality and security at all times</td>
<td>Essential</td>
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<td>A willingness to help others achieve their goals and realise their plans</td>
<td>Essential</td>
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THE DEPARTMENT

The Fairlamb Research Group

Our research group is UK-leading in mechanistic organic and organometallic chemistry. We have a strong international reputation in catalysis, chemical synthesis and applications, involving metals. The group have a unique research outlook, evident in our international profile in two distinct and complementary research fields, i.e., transition metal catalysis and CO-releasing molecule (CORM) therapeutic metal complexes. These interests are connected by fundamental rational design principles in understanding how substrates and ligands interact with metals. In conducting significant mechanistic studies, in addition to the development of new metal catalysts, the group have developed interests in screening chemical reactions using robust, productive and reproducible methods using automated robotic systems (this project), data capture and data analysis by statistical methods.

Further information about the Fairlamb Research Group can be found by clicking

http://www-users.york.ac.uk/~ijsf1/index.html

The Department of Chemistry

The Department of Chemistry: http://www.york.ac.uk/chemistry is one of the largest and most successful academic departments at York. The Department was placed in the top ten UK universities for Research Power by the 2014 Research Excellence Framework exercise (REF). Amongst our academic staff we have five Fellows of the Royal Society and many national and international prize winners, contributing to a dynamic and thriving department. The excellence of Chemistry at York was recognised by the outstanding 3rd place in both the 2019 Guardian and Times University League Table Guides and 6th place in the Complete University Guide.

The Department has nearly 60 academic staff (including teaching-only staff), more than 600 undergraduate students, approximately 160 graduate students (mainly studying for PhDs) and over 80 research associates and fellows. The Department has a group of coherent laboratories, recently extended and modernised, which provide an excellent environment for both teaching and research; £35M has been spent on new buildings and equipment in the last seven years.

Staff in the Department of Chemistry undertake research in a wide range of fields and there are particular strengths in analytical and archaeological science, atmospheric chemistry, chemical and structural biology, green chemistry, materials chemistry, metalloproteins, organometallic and catalytic chemistry, synthetic organic chemistry and time-resolved spectroscopy.

We have nearly 30 administrative staff (including those funded externally), as well as over 50 technical staff who provide assistance in the teaching and research laboratories and maintain the workshops (mechanical, glass and electronics) supporting these activities.
The undergraduate programmes, which typically attract over 1200 applications for the ca 180 places, have a flexible, modular structure with opportunities for specialisation in environmental, industrial and medicinal chemistry. There are three-year (BSc) and four-year (MChem) courses with opportunities for students to spend a year at one of a number of overseas universities or in industry. Students rated the Department with an overall satisfaction rating of 97% in the National Student Survey 2018.

The Gold Award from Athena SWAN: [https://www.york.ac.uk/chemistry/ed/](https://www.york.ac.uk/chemistry/ed/) for promoting women in science was won by the Department of Chemistry in 2007 and renewed in 2010 and 2015. This was the first Gold award made in this scheme. The Athena SWAN Charter recognises and celebrates good employment practice for women working in science, engineering and technology (SET) in higher education and research.

The case studies on our Equality and Diversity website: [https://www.york.ac.uk/chemistry/ed/fam-friendly-work/](https://www.york.ac.uk/chemistry/ed/fam-friendly-work/) illustrate the variety of working arrangements of staff which are supported by the Department.

The Department of Chemistry operates a set of family-friendly practices. Staff working patterns are flexible and a formal Flexitime system is also in operation. The Department has developed a maternity and paternity leave procedure to help provide support for staff and the University has a nursery [http://www.york.ac.uk/univ/nrsry/](http://www.york.ac.uk/univ/nrsry/).

The Department provides support for all categories of staff in their applications for promotion, role reviews, awards, prizes and rewarding excellence nominations. Staff are encouraged to attend training events and take up opportunities for professional development including those offered by the award-winning University Learning and Development Team: [http://www.york.ac.uk/admin/hr/training/](http://www.york.ac.uk/admin/hr/training/). The Department strives to address diversity inequalities to ensure that there is a culture that supports equality and encourages better representation throughout the Department. Support for all staff at all stages of their career is recognised as being extremely important; individuals will be allocated a specific mentor to help support them in future career development. Social events are also held regularly for members of staff.

Opportunities for employment for partners exist across the University, Science City York or within the City of York. The Department recognises that employment for partners can be an issue for new employees and will be understanding if you raise this and will do its best to help.

The Department is committed to establishing a culture of environmental good practice and all staff are asked to go about their duties in a resource efficient way and minimise impacts to the environment wherever possible.

The University has recently invested heavily in Chemistry. The Dorothy Hodgkin Building was completed in two phases. The first, housing Analytical Science and Synthetic Chemistry, opened in 2005, while the second phase housing catalytic, materials and synthetic chemistry was completed in 2012. The department is exceptionally well equipped for NMR spectroscopy and departmental instruments are housed in a purpose-built building opened in 2006, while the Wellcome-
Wolson-funded Centre for Hyperpolarisation in Magnetic Resonance (CHyM) was completed in October 2012. The Wolfson Atmospheric Chemistry Laboratories were opened in 2013 and have recently been extended (2018 and a two-storey building housing new teaching and research laboratories (to house Green Chemistry) and offices was completed in March 2014. The department has recently secured funding from the Wellcome Trust, the Wolfson Foundation, a generous alumnus and the university to acquire a 200 kV cryo-electron microscope and a building in which to house it. Construction and installation are anticipated in 2018.
The University

Founded on principles of excellence, equality and opportunity for all, the University of York opened in 1963 with just 230 students. In 2017 it is the home of more than 17,000 students across more than 30 academic departments and research centres. Since opening over fifty years ago, we have become one of the world’s leading universities and a member of the prestigious Russell Group.

We are consistently recognised as one of the leading Higher Education Institutes and one of just six post-war universities which appear in the world top 100 (2013-14) and 15th in the Times & Sunday Times league table (2016). The University of York has won six Times Higher Education (THE) Awards and five Queen’s Anniversary Prizes.

The University is proud of its association with Athena SWAN, holding 12 awards in support of gender equality, representation and success for all, with gold awards for Chemistry and Biology and a University-wide bronze award.

Of 154 universities that took part in the Research Excellence Framework (REF) in 2014, The University of York ranked 14th overall and 10th for the impact of our research. The University is consistently in the top ten UK research universities and attracts over £60m a year of funding from research alone.

Our vision is to make the University of York a world leader in the creation of knowledge through fundamental and applied research, the sharing of knowledge by teaching students from varied backgrounds and the application of knowledge for the health, prosperity and well-being of people and society.

A place where we can ALL be ourselves #EqualityatYork
Attractive workplace

Centred around the picturesque village of Heslington on the edge of the city of York, our colleges are set in an attractive landscaped campus. York enjoys a safe, friendly atmosphere with facilities including bars, shops, theatres and concert halls all within easy walking distance.

The University has undergone an unprecedented period of expansion and renewal since 2000. We have invested in twenty new buildings on the original campus and have completed the first and second phases of a £750m campus expansion. Our investment in new colleges, teaching and learning spaces, laboratories, research facilities and a new sports village mean there has never been a better time to join us.

During this period of change we've worked hard to retain our friendly, informal and collegiate atmosphere, which is important to our core values of inclusivity and interdisciplinarity.

We have a thriving international community and are committed to providing staff moving to York with as much support as possible through our Relocation Package and Welcome Officers.

The University aims to offer a nurturing and supportive environment as an employer. Flexible working hours, nursery facilities, childcare vouchers, cycle to work scheme, generous holidays and an attractive pension scheme all make the University of York one of the region’s leading employers.

For further information please visit our employee benefit pages.
The City of York

Internationally acclaimed for its rich heritage and historic architecture, York's bustling streets are filled with visitors from all over the world. Within its medieval walls you will find the iconic gothic Minster, Clifford’s Tower and the Shambles - just a few of the many attractions.

But York isn’t just a great place to visit - it’s also a great place to live and work. While nourishing a vibrant cosmopolitan atmosphere, York still maintains the friendly sense of community unique to a small city.

Visit www.visityork.org for more information on the city of York

Shopping, culture and entertainment

York boasts specialist and unique boutiques but also all the high street stores on its busy shopping streets. Alongside them you will find cinemas, theatres, an opera house, art galleries, a vast range of restaurants, live music venues and clubs. York is particularly renowned for its multitude of pubs and bars, from the modern to the medieval.

Housing and schools

Whether you choose to live close to the city, in one of the surrounding villages or further afield, you will find a wide range of housing within comfortable distance of York and the University. For families, the area has a range of excellent schools both in the state and independent sector.

Great location

York is one of Britain’s best-connected cities. Halfway between London and Edinburgh on the East Coast mainline, on intercity trains you can reach London King’s Cross in less than two hours and Edinburgh in two and a half hours. York is also well served by road links, and it is easily accessible from the A1, M1 and the M62.

For those travelling from overseas, Manchester Airport is two hours away and Heathrow Airport just three and a half. Flights from nearby Leeds Bradford Airport provide easy access to mainland Europe. By Eurostar from London St Pancras, Paris is just over six hours away.

Yorkshire

The Lonely Planet guide recently declared Yorkshire the third best region in the world to visit. There is something to cater to every taste, whether it be the rugged landscapes of the Moors or the Dales, the picturesque seaside towns of Scarborough and Robin Hoods Bay, the gothic architecture of Whitby or the vibrancy of cosmopolitan Leeds.
Apply online

- Go to https://jobs.york.ac.uk
- Find this job using reference 7085
- Complete the online application form

You will need to submit your completed application by midnight (local UK time) on 4 November 2018

What will I need?

We will ask you for details of:

- your employment history
- relevant qualifications
- two referees

You need to be ready to show us how you meet the requirements of the job, either in a written statement and / or by answering questions.

Help and assistance

Direct any informal queries to Professor Ian Fairlamb on ian.fairlamb@york.ac.uk

If you have any questions about your application, contact the HR Services team:

recruitment@york.ac.uk
+44 (0)1904 324835