Postdoctoral Research Associate in Indoor Air Modelling

Environment Department

Closing date: 2 October 2018
Interview date: 12 October 2018
Vacancy reference: 6995
INTRODUCTION

This position is available as part of a $50M research programme supported by the Alfred P. Sloan Foundation in the US called the Chemistry of Indoor Environments (CIE). The CIE programme started in 2016 and runs for 10 years. It involves mainly US groups, but also, the research group of Dr. Nicola Carslaw in the Environment Department at the University of York. As part of the CIE programme, a number of research groups are investigating different elements of indoor air chemistry. These activities include modelling studies, laboratory experiments and a large indoor air field campaign in early summer 2018 in a test house in Texas. Large amounts of data will be generated and a key aim is to use these data to validate models which can then be used to gain further insight into the underlying processes.

The aim of this post within the CIE programme is to refactor an existing model for indoor air chemistry (the Indoor Detailed Chemical Model, INDCM) to Python code. The model has been developed over the last 15 years by Carslaw, but uses proprietary software so limiting its wider use by the community. Therefore, given the large amount of data that is likely to become available through the CIE programme over the next few years, this post has been created to convert the INDCM to run in a more widely and freely available language. The post will also involve creating a user-friendly interface for the new model and appropriate documentation.
Main purpose of the role

- To conduct research under the supervision of senior colleagues and to contribute to the production of research

- To assist in the identification and development of potential areas of research and the development of proposals for independent or collaborative research projects

Key responsibilities

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

- To conduct individual and collaborative research projects, duties to include: analysis and interpretation of research data; use of appropriate research techniques and methods; writing up of research results and dissemination through publications, seminar and conference presentations and public engagement and outreach activities; contributing to the identification of possible new areas of research

- To contribute to the preparation of research proposals and applications to external bodies

- To undertake appropriate organisational and administrative activities connected to the research project, including conference organisation, and the development of promotional or educational material including website maintenance and development

- To develop and initiate collaborative working internally and externally, duties to include: the building of internal contacts and participation in internal networks; collaboration with colleagues on joint projects as required; participation in and identification of external networks in order to share information and identify potential opportunities for collaboration and possible sources of funding; attendance at and contribution to relevant meetings

- To provide guidance to other staff and students, as required, as well as coordinating the work of small research teams

- To assist with undergraduate teaching in own area of expertise.
# PERSON SPECIFICATION

## Qualifications

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<tr>
<th>Qualifications</th>
<th>Essential / Desirable</th>
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<tbody>
<tr>
<td>First degree in [science]</td>
<td>Essential</td>
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<tr>
<td>PhD in [atmospheric science, atmospheric modelling or related chemical modelling] or equivalent experience</td>
<td>Essential</td>
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## Knowledge

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<tr>
<th>Knowledge</th>
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<tbody>
<tr>
<td>Knowledge in [atmospheric and/or indoor air chemistry] to engage in high quality research</td>
<td>Essential</td>
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<tr>
<td>Knowledge of a range of research techniques and methodologies</td>
<td>Essential</td>
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<td>Has research expertise in an area that will complement and enhance the department's research strategy and goals</td>
<td>Essential</td>
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<td>Knowledge of the Master Chemical Mechanism</td>
<td>Desirable</td>
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## Skills, abilities and competencies

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<tr>
<th>Skills, abilities and competencies</th>
<th>Essential / Desirable</th>
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<tbody>
<tr>
<td>Excellent working knowledge of Python</td>
<td>Desirable</td>
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<tr>
<td>Experience with using and coding models</td>
<td>Essential</td>
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<tr>
<td>Highly developed communication skills to engage effectively with a wide ranging audience, both orally and in writing, using a range of media</td>
<td>Essential</td>
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<tr>
<td>Ability to write up research work for publication in high profile journals and engage in public dissemination</td>
<td>Essential</td>
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<tr>
<td>Ability to develop research objectives, projects and proposals for own and joint research, with the assistance of a mentor if required</td>
<td>Essential</td>
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<tr>
<td>Competency to conduct individual and collaborative research projects</td>
<td>Essential</td>
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<td>Ability to identify sources of funding and contribute to the process of securing funds, with collaborators if required</td>
<td>Essential</td>
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<td>Competency to make presentations at conferences or exhibit work in other appropriate events</td>
<td>Essential</td>
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# PERSON SPECIFICATION

## Experience

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<th>Essential/Desirable</th>
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<tr>
<td>Experience of carrying out both independent and collaborative research</td>
<td>Essential</td>
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<tr>
<td>Experience of writing up research work for publication</td>
<td>Essential</td>
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<tr>
<td>Ability to work as part of a team and also to work independently using own initiative</td>
<td>Essential</td>
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## Personal attributes

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<th>Essential/Desirable</th>
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<tr>
<td>Attention to detail and commitment to high quality</td>
<td>Essential</td>
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<tr>
<td>Collaborative ethos</td>
<td>Essential</td>
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<tr>
<td>Interest in and enthusiasm for the subject matter of the project(s)</td>
<td>Essential</td>
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<td>Positive attitude to colleagues and students</td>
<td>Essential</td>
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<tr>
<td>Willingness to work proactively with colleagues in other work areas/institutions</td>
<td>Essential</td>
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<tr>
<td>Ability to plan and prioritise own work in order to meet deadlines, including using initiative to plan research programmes</td>
<td>Essential</td>
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<td>Commitment to personal development and updating of knowledge and skills</td>
<td>Essential</td>
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The Environment Department was established in 1992 to develop and disseminate the approaches required to address the complex environmental challenges facing society and has since grown to accommodate 33 academics, 7 technicians, 7 support staff, 11 postdoctoral researchers, 80 PhD students and 450 undergrads. In the 2014 REF 96% of our research was internationally recognised. Our guiding principle is that issues of sustainable development demand interdisciplinary research across the interface between natural, physical and social sciences. This interdisciplinary ethos is unique among university departments in the UK and the Department has established an international reputation for excellence and innovation at the forefront of environmental research. In recognition of the Department’s growth and its success, the Department has recently moved into a £12.5 million purpose-built building. Further growth is planned through to 2020. We have identified Environment facing social sciences as a focus for much of this growth and launched our Human Geography and Environment degree in 2015. We also deliver a degree in “Environment, Economics and Ecology” that remains unique in the UK with its coupling of environmental economics and applied ecology.

Our strength is augmented by the embedding of the Stockholm Environment Institute at York (http://www.york.ac.uk/sei/) into the Department and the establishment of the York Environmental Sustainability Institute (YESI) (http://www.york.ac.uk/yesi/). Both these groupings are co-located in our new Environment building, together with BioArCh, a joint venture between Archaeology and Chemistry. YESI has been created to ensure that York’s world-leading researchers can operate in an inter-disciplinary setting to undertake the research needed to address major environmental issues. YESI incorporates environmental research across the Departments of Archaeology, Biology, Chemistry, Environment, Politics, Sociology, Social Policy and Social Work, and the York Law School. It integrates environmental research across these departments to tackle the major themes of: (1) Sustainable food; (2) Resilient ecosystems; and (3) Urban living.

Physically, the new building captures the cross-disciplinary focus of the Department, occupying a lakeside location between the Departments of Biology and Sociology.

The interdisciplinary mission of the Environment Department is founded on a mix of environmental science, ecology, human and physical geography and environmental economics and policy. Research is focused within three themes: Understanding the causes and consequences of environmental change; Developing innovative solutions to environmental challenges; and Engaging people with environmental challenges and solutions. All research themes have major impacts on national and international environmental policy,
helping to shape the debate in a diversity of policy arenas. Our staff advise global policymakers including UNEP, FAO and WHO, support international NGOs such as WWF, and sit on national and international expert committees.

The Environment Department has a reputation as a friendly and collegiate place to work and study and this is frequently commented on by new staff, visitors, and students via feedback such as the National Student Survey. The University as a whole matches this ethos. It has retained a very flat management structure that actively encourages cross-departmental collaboration and seeks to remove any obstacles to cross-disciplinary working.

The Environment Department is committed to supporting equality and diversity for all staff and students. The Department was awarded a bronze Athena Swan award in 2014 and has just submitted its application for a silver award. 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 Department operates a set of family-friendly policies. Staff working patterns are flexible and a formal flexible working scheme is also in operation. The Department has a maternity and paternity leave policy to help provide support for staff and the University has a nursery and a Child Care voucher scheme. Social events are held for all categories of staff.

The Department provides support for all categories of staff in their applications for promotion, role reviews, awards and prizes and rewarding excellence nominations. The Department strives to address gender inequalities and ensure that there is a culture that supports equality and encourages better representation throughout the department. Support for women at all stages of their career is recognised as being extremely important.

Departmental Research

The Department conducts world-leading research on topics of global environmental importance and is a QS top 200 department (2016). Our research is highly interdisciplinary across the natural and social sciences, ranging from atmospheric chemistry to environmental economics and policy analysis. Our funding comes from numerous sources, including research councils, national and international government agencies, charities and industry.

All members of academic staff participate in the activities of at least one of the three research themes in order to promote collaboration and knowledge exchange across the Department. The Stockholm Environment Institute Institute York plays an important role through its mission to translate science into policy at all scales from local to global.
THE DEPARTMENT

Teaching Programmes

The Department currently offers three professionally accredited undergraduate BSc degrees: Environmental Geography; Environmental Science; and Environment, Economics and Ecology and a BA in Human Geography and Environment that was introduced in 2015/16 and which is in the process of being accredited. All undergraduate programmes are offered as either Bachelors or Integrated Masters. At the postgraduate level, we offer four stand-alone MSc programmes: Corporate Social Responsibility and Environmental Management (joint with The York Management School); Environmental Economics and Environmental Management; Environmental Science and Management; and Marine Environmental Management. Our PhD programmes parallel these disciplines and also include a joint programme with the Department of Politics.

Stockholm Environment Institute at York

The Stockholm Environment Institute at York is one of six constituent centres of SEI, an independent, internationally renowned research organisation committed to the implementation of practices supportive of global sustainable development. The Swedish Government established the Stockholm Environment Institute in 1989 with the goal of encouraging sustainable development by linking basic scientific research and policy making. SEI has established an international reputation for rigorous and objective scientific analysis in the field of environment and development and has been recognised as the world’s top environmental ‘think tank’ (fpri.org).

The SEI-York centre is located within the Environment Department at the University of York. In the UK, SEI-York has concentrated on issues related to consumption, production, individuals’ behaviour and the impacts of our affluent society on the environment. In developing countries, SEI-York staff work on atmospheric issues, from air pollution in urban centres to regional air pollution and its interaction with climate change. In Africa and Asia, York staff work at local scales, attempting to improve management of water resources in arid areas to improve agricultural yields.

The SEI-York centre has around 30 core members of staff from a variety of disciplines. In addition to research, they supervise postgraduate research students and participate in undergraduate and postgraduate teaching (http://www.york.ac.uk/sei/).

York Environmental Sustainability Institute

The York Environmental Sustainability Institute has been created to ensure that York’s world-leading researchers can operate in an interdisciplinary setting to undertake the research needed to tackle major environmental issues. YESI brings together researchers working on environmental questions across a broad range of disciplines and is open to all York researchers and their collaborators. Research undertaken by around 100 faculty is clustered within the themes of Future Food & Fuel, Global Change, and Sustainable Environments. Full details are available at http://www.york.ac.uk/yesi/.

Further information about the Department’s teaching, research and staff can be found on our website at: http://www.york.ac.uk/environment/
THE UNIVERSITY

Founded on principles of excellence, equality and opportunity for all, the University of York opened in 1963 with just 230 students. In 2018 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 are ranked 16th in the Times & Sunday Times league table (2017). 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.
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 is committed to promoting a diverse and inclusive community - a place where we can all be ourselves and succeed on merit. We offer a range of family friendly, inclusive employment policies, flexible working arrangements, staff engagement forums, campus facilities and services to support staff from different backgrounds.

For further information please visit our employee benefit pages.
THE CITY AND THE REGION

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](http://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 6995
- Complete the online application form

You will need to submit your completed application by midnight (local UK time) on 2 October 2018

What will I need?

You will need to upload:

- your CV
- a letter describing how you meet the requirements of the job

You will also need details of 2 referees.

Help and assistance

Please direct informal queries to Dr Nicola Carslaw (nicola.carslaw@york.ac.uk)

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

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