Chemistry Update

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Calendar of Events

Department Open Day
Date: Saturday 1 July
Time: 9am-4pm

Department Open Day
Date: Sunday 2 July
Time: 9am-4pm

Chem@York Research Conference
Talks from PhD students and PDRAs taking place across the department
Time: 9am-6pm
Plenary Speaker: David Cole Hamilton, University of St Andrews
Date: Thursday 6 July
Time: 9am-10.10am
Location: C/A/101

Calibre Scientific Tabletop Exhibition James Collinge
Date: Thursday 6 July
Time: 10am-4pm
Location: C/A Foyer

Integrating Green Chemistry into Higher Education Day
Date: Friday 5 July
Time: 9am-5pm
Location: Green Chemistry Centre of Excellence

Postdoc Induction
Date: Monday 17 July
Time: 2.30-4.30pm
Location: C/B/102

Graduation
Date: Friday 21 July
Time: 10am-1pm

Chemistry Postdoc Society Career Development Day
Date: Monday 24 July

This issue:

Hartshorn Jones Innovation Fund

Chemistry alum Dr Mike Hartshorn and his wife Dr Michelle Jones, have established a fund at York to give emerging scientists the chance to explore new areas of biological chemistry research.

During his time at York, funding of this kind gave Mike the opportunity to explore and develop his abilities in molecular graphics, modelling and chemoinformatics. He subsequently developed key software infrastructure in the UK biopharmaceutical industry, and was instrumental at the software company, Dotmatics, whose methods have had a global impact on research and discovery in the pharmaceutical industry. Now, through the Hartshorn Jones Innovation Fund, Mike and his family are keen to support the next generation of bright minds in biochemistry.

Dr Mike Hartshorn said: "I'm delighted to be able to fund additional research and training within the YSBL and also other departments at the University. The opportunities I received from funding such as this, when I was in Rod's group, gave me the best possible start for my career. During a recent visit to the lab, I was impressed to see the progress made by post-graduates in learning truly interdisciplinary skills that had been enabled by the fund."

Recent decades have seen accelerating invention and deployment of chemical and biophysical methods to answer questions in biology and medicine, including molecular graphics and modelling, chemoinformatics, imaging, and high-throughput crystallography and more recently cryo-electron microscopy. There are great opportunities for early stage, inventive scientists to make significant contributions in the development and deployment of these methods, which can have real impact on their personal development as well as scientific research and benefit to wider society.

However, the constraints of conventional training and funding can limit the opportunities for a student to immerse themselves in a new technology and find out what they are capable of. The Hartshorn Jones Innovation Fund provides small grants of £500 - £2,000 to enable young York researchers to explore new methods and areas of chemical biology. The fund supports three areas:

- for a current York student or early researcher (within 5 years of PhD Award) to explore a technology for chemical biology which is new to them. There is no restriction on how funds are used to achieve this - examples include attending a conference, visiting a company or a UK laboratory, purchasing hardware or software, or gaining access to a new facility.
- to a PI for purchase of computer hardware to support successive years of 4th year Masters research projects.
- For 4th year MChem students to work in a research lab for 4-6 weeks during the summer vacation between their 3rd and 4th years (cost £1,000-1,500) learning a new technique in chemical biology. This will allow the student to gain research experience that may help them develop their career aspirations.

Funding has so far been used to purchase well-configured computers to develop new computational methods for Cryo-EM studies, allowing in-house datasets to be processed very quickly. For example, the Parkin Group, a bioinorganic chemistry group, under Dr Alison Parkin, have been awarded funds for a specialised computer to allow successive generations of MChem project students to contribute

to the development of methods to simulate enzyme redox reactions. The group is developing a toolkit of electrochemical methodologies to deconvolute how biological electron transfer is controlled and the impact of the tuning of this redox activity on important bio-fuel reactions, e.g., H2-production and lignin degradation. Through a collaboration with Oxford, they have integrated Bayesian statistical analysis into their experimental modelling. Previously, experimental measurements were made in York and then data modelled in Oxford. This limited the use of modelling for rapid optimisation of experiments and also the extent to which York students were able to build experience and expertise in improving the models.

The Fund is managed by the York Structural Biology Laboratory (YSBL), the epicentre of York's biological chemistry research, under Professor Rod Hubbard. Work here focuses on the fundamental chemical bases for biological and biochemical processes, the use of small molecules to probe cellular biology, software and methods development and on the exploitation of enzymes in biocatalysis. Professor Rod Hubbard said: "The Hartshorn Jones Fund enables early-stage researchers at York to explore new methods at the interface between chemistry and biology to find out what they are good at and where they can make distinctive contributions to the development of new areas of science. The pioneering work in this area when Mike was a Chemistry undergraduate at York during the late 1980s attracted flexible funding (and equipment) from pharmaceutical, biotechnology and computer equipment companies. Such funding was transformative for Mike and laid the foundation for his successful career in developing scientific informatics systems that are now in use worldwide. We are delighted to continue working with Mike and the brightest minds at York, to ensure their groundbreaking research can be facilitated through this innovative fund."

To apply for funding
Funding awards are between £500 - £2,000, with funding limited to PhD students or Post-Doctoral fellows within 5 years of PhD at the University of York, but open to students in Chemistry, Biology, Physics, Engineering and Technology, Maths, Computer Science or other relevant theme or subject area. For more information on the fund please contact hartshorn-jones-fund@york.ac.uk

7th in the UK: Complete University Guide 2024

Chemistry at York ranked 7th in the UK according to the latest release of the Complete University Guide league tables (2024).

The Department of Chemistry has been ranked 7th in the UK in The Complete University Guide 2024.

Published annually, The Complete University Guide league tables rank the best universities in the UK, overall and within 74 subject areas. Overall, universities and subjects are ranked on entry standards, student satisfaction, research quality, graduate prospects, completion rates, student-staff ratio and spend on academic services and facilities.

The rankings are based on public domain data collected by the Higher Education Statistics Agency (HESA), the National Student Survey and the Research Excellence Framework 2021.

Head of Department, Professor Caroline Dessent said, "I'm delighted that the Department of Chemistry has been ranked 7th nationally in the new Complete University Guide rankings. This reflects the excellent quality of teaching and research achieved by our Department, which makes it an outstanding environment for students to pursue an undergraduate degree, with access to the very best research opportunities. We are proud to be a Department which strives for excellence in everything we do, alongside our long-standing commitment to equality and inclusion."

New partnership to develop sustainable polymers for a clean future

A new partnership between the University of York, Croda International Plc and the University of Nottingham has been launched to develop novel, sustainable polymers for liquid formulations.

Thanks in large part to the efforts of Dr Tom Farmer from the Green Chemistry Centre of Excellence (GCCE), researchers from the Department of Chemistry at the University of York and the School of Chemistry at the University of Nottingham will work with Croda, which uses smart science to create high-performance ingredients and solutions that improve lives, to approach the challenge of developing novel biobased and biodegradable polymers for liquid polymer formulations.

This new collaboration is funded through a £5M (£2.5M from ESPRC, £2.5M from Croda) ESPRC Prosperity Partnership and brings together experts from industry and academia to undertake new research, combining this with Croda's unrivalled understanding of product performance and market requirements.

Used in a number of day-to-day items including crop protection and personal care products, these special polymers for liquids provide the key function of emulsification and stabilisation, without which, widely used items would be unable to meet consumer requirements. Despite their critical part in formulations, to date there has been no coordinated effort to develop more sustainable versions, and it is estimated that more than 36 million tonnes (enough to fill Wembley Stadium 32 times over) of these polymers are not recovered after use, entering the environment as plastic waste 1.

Speaking on the project, Dr Ian Tooley, Vice President – Chemistry at Croda said: "Croda's ambition to be the most sustainable supplier of innovative ingredients is key in our drive to find sustainable solutions for these widely used polymers. We are excited to be partnering with these like-minded, innovation driven universities to help bring sustainable, biobased and biodegradable alternatives to our markets."

Professor Helen Sneddon, Director of the Green Chemistry Centre of Excellence, University of York added: "This is a great opportunity to further explore the potential of bioderived, biodegradable soluble polymers, understanding the different properties they can offer relative to current petrochemically-derived ingredients, and having an impact in an important, and often overlooked area."

Steve Howdle, Professor and Head of School of Chemistry at University of Nottingham commented: "We are delighted that we have the chance to contribute to solving this very important societal issue. Working with our industrial and academic partners we will create new sustainable polymeric materials that are going to have an impact on our supermarket shelves. I'm excited!"

Success for Chemistry Staff at YUSU Excellence Awards 2023

The YUSU excellence awards give students the opportunity to show their appreciation to staff across the University. They are a student-led celebration which allows students to recognise those who have had a particularly positive impact on them over the past academic year, whether they are academic or non-academic staff members. Three Chemistry staff members were shortlisted for awards this year. Julia Sarju was shortlisted in the category 'Promoting Accessibility, Diversity & Inclusion' for the tireless work to support disabled students and promote better and inclusive practice across the department. Jon Agirre was shortlisted for the category 'Supervisor of the Year' – an award which recognises excellent academic supervisor at undergraduate or at Masters' level. Finally, Will Unsworth was chosen as the winner of the category 'Supporting Student Voice Activities and Partnership', recognising his work with the Chemistry Staff Student Forum. All three (and a special guest!) are shown below at the ceremony.

O'Brien Group News

Empowering Women in Organic Chemistry Conference Europe

This June, Lucy Tomczyk presented a poster at the first Empowering Women in Organic Chemistry Conference Europe. The conference included fascinating talks from women working in academia and industry. Notable speakers included Professor Natalie Fey, Dr Katherine Wheelhouse, Dr Anne O'Kearney-McMullan and Professor Mónica H. Pérez-Temprano. It was great to see talks from chemists at the early stages of their academic and industrial careers, especially Dr Aisha Bismillah from the University of York. The conference had a great atmosphere and was really inspiring to see so many successful women in the field in one place.

Dr Glenn Hurst at the 2nd Commonwealth Chemistry Congress

Between the 23rd and 25th May 2023, Dr Glenn Hurst attended the 2nd Commonwealth Chemistry Congress at the University of the West Indies, St Augustine Campus in Trinidad and Tobago. The congress brought together a uniquely diverse group of nations from across the Commonwealth to promote the United Nations Sustainable Development Goals (SDGs), strengthen scientific capacity, inspire, and elevate the role of the chemical sciences to society and policy makers, and celebrate achievements in chemistry.

Professor Karen Wilson, former member of Chemistry at York was amongst the keynote speakers while Glenn participated in panel on 'Quality and Effective Education (SDG 4), examining how chemistry education has changed over the last four years and identifying future directions for education in the chemical sciences. The panel was comprised of Dr The Honourable Nyan Gadsby-Dolly, Minister of Education in the Republic of Trinidad and Tobago, Professor Peter Mahaffy, Professor Mariki Potgieter and Dr Glenn Hurst.

Panellists delivered individual talks, where Glenn outlined how, using a systems thinking-based theoretical framework, he has led green chemistry-oriented projects with students as partners for chemistry education. A very lively discussion followed on how we can work to transform our curriculum to equip the next generation to solve grand sustainability challenges. Topics of discussion were very diverse; from how artificial intelligence may be used within instruction, to promoting a culture of research-led teaching, to inclusive and equitable education.

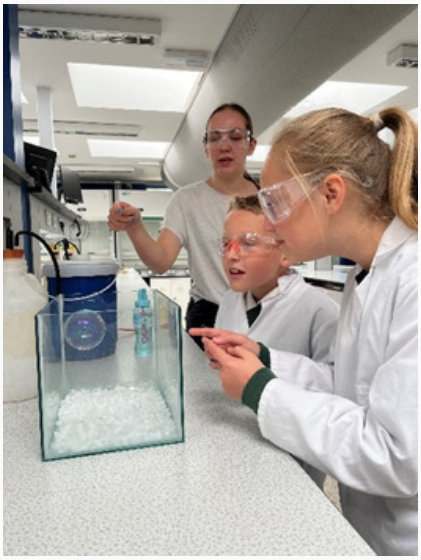
Though the discussions on inclusivity, equality and equity didn't end within the Quality Education session. An enlightening session on identifying and understanding the issues and barriers to equality and diversity through reviewing case studies, sharing lived experiences of women and other under-represented groups in chemistry together with examining international data and recent improvements for inclusion on the international stage was a highlight of the conference (panellists were Akua Opokua Britwum, Kevin Coutinho, Cynthis Ibeto and Ale Palermo).

It was a privilege to be part of a conference with so many early-career colleagues from across the Commonwealth, asking such insightful and pertinent questions and having the opportunity to disseminate their research, on some occasions for the first time. Networking opportunities were excellent and there was much excitement around the potential of newly forged collaborations across the Commonwealth. The conference was capped off with a fantastic evening at the Port of Spain Performing Arts Center where there was a special performance from the Trinidad and Tobago National Philharmonic Orchestra. Other parts of the evening comprised of calypsos, poetry, dance, and a special performance of the 'can-can' from the steel drum band!

Local primary schools visit for Clean Air Day

Children from two local primary schools visited the department to celebrate Clean Air Day 2023. St. Lawrence's year 5 class spent the morning of the 22nd June exploring the three ways to detect pollutant gases. York Science Outreach Centre (YSOC) was buzzing with excited kids mastering some chromatography and levitating bubbles. Happy children returned to school at the end of the morning, each supplied with RSC pencils and balloons, not to mention their own-design "pollution catcher" instrument for particulates analysis.

Badger Hill year-5 visited chemistry on the following morning, coincidentally the last day of their school "Science Week". The class had done some fieldwork of their own, comparing lichens growing in their polluted car-park to those at in the greener space at the back of school. High impact publication imminent! A big thank you to all the kids and school staff who participated – we had a fabulous time. A massive thank you to the ace team of Amber, Ruth, Ashish and Wael from WACL, Lucy Frazer (year-1) and Dave Shaw from Environment & Geography and of course to Annie for help with bubbles.



These school sessions capped a busy month of outreach activities in support of the NERC INGENIOUS project. INGENIOUS is a York-led interdisciplinary project bringing together experts in environmental, social, economic, and health issues. Researchers from four universities are working with the NHS Born in Bradford cohort of families to better understand the sources, transformations and fates of indoor air pollutants. On the weekend of June 10th, INGENIOUS researchers were spread pretty thin, with public engagement events across Yorkshire. Sari, Athina and Tom (all WACL) exhibited and supervised kids' activities at Bradford Science Festival. Meanwhile, at the York Festival of Ideas Discovery Zone, Ashish and Terry were very grateful to volunteers Charlotte and Li (WACL), Ambar and Jasmine (physchem) and Annie H. for their help explaining indoor air science to the public and supervising the kids' activities.

Congratulations!

Congratulations to Abby Mortimer who has been selected for the ITTS Technical Council, a body of technical staff across the nation who will advise on the aims and initiatives of the UK's Institute for Technical Skills and Strategy. She was one of 14 technicians (out of 150+ candidates) chosen to represent the voice of technicians in higher education and research on a national stage. Well done Abby!