Chemistry Update

Newsletter 342, 29 March 2022

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Calendar of Events

Departmental Seminar
Speaker: Prof. Tom Welton, Imperial College London
Date: Monday 4 April
Time: 3pm—4pm
Location: C/A/101

Departmental Seminar: London Dispersion in Molecular Chemistry
Speaker: Prof. Peter Schreiner, University of Giessen
Date: Thursday 7 April
Time: 1pm—2pm
Location: C/A/101

Organic Seminar
Speaker: Prof Vy Maria Dong, University of California Irvine
Date: Wednesday 13 April
Time: 4pm—5pm
Location: Online

Physical Seminar
Speaker: Prof. Thomas Krauss, Physics, University of York
Date: Wednesday 20 April
Time: 1pm—2pm
Location: C/A/101

McCamley Lecture
Speaker: Dr Amanda Jarvis, University of Edinburgh
Date: Wednesday 27 April
Time: 1pm—2pm
Location: C/A/101

Date of Next Issue:
29 April 2022

Double ERC Grant Success

Two academics in the Department of Chemistry have received prestigious European Research Council Consolidator Grants worth over £1.5 million pounds each, to support their rapidly growing portfolios of innovative research in the area of chemical biology.

Dr Martin Fascione (left) and Dr Alison Parkin (right).

European Research Council (ERC) Consolidator Grants are highly competitive 5-year awards designed to support excellent Principal Investigators at the career stage at which they may still be consolidating their own independent research team or programme. Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal.

Dr Martin Fascione received a grant worth €2.0M (£1.7M) for his project '*Chemical Glycobiology for the Study and Exploitation of Pseudaminic Acid Sugars in Infectious Disease (ChemGlycoSEPSIS)*'. Dr Fascione is an expert in chemical biology and his research team is developing an international profile for their work studying carbohydrates at the interface between chemistry and biology. By understanding how carbohydrates are perturbed in disease pathways, they aim to develop innovative new 'chemical glycomedicine' approaches for the prevention and treatment of disease. In ChemGlycoSEPSIS he will focus on combining carbohydrate chemistry and enzymology to tackle multidrug resistant bacterial infections.

Dr Alison Parkin received a grant worth €2.0M (£1.7M) for her project '*Modernising Electrochemical Enzymology To Map Electron Transfer (Enzyme e-map)*'. An expert in electrochemical methods, Dr Parkin uses these approaches to gain detailed insight into the behaviour of biological systems. Her proposed research aims to revolutionise the application of electrochemistry to the study of enzymes in order to gain new insights into electron transfer processes. Understanding such processes is important across a wide range of fields: from antibiotic development to industrial catalyst design. In Enzyme e-map she will combine sophisticated data analysis with molecular biology techniques to "see" the electron-hopping mechanisms that underpin important sustainable bio-fuel production reactions such as hydrogen production and cellulose degradation.

Head of Department, Professor Caroline Dessent said: "Huge congratulations are due to Alison and Martin. The award of these highly competitive grants is a testimony to the exceptional science their research groups is conducting. Colleagues across York Chemistry have supported Alison and Martin through the ERC application process, and it's wonderful to see this departmental team effort leading to such success."

You can read more about the ERC Consolidator Grants online.

SCI Science for Society Award

The Society of Chemical Industry Yorkshire and Humber Division has awarded its 'Science for Society Award' to a York academic in recognition of their sustained, outstanding and influential contributions to the advancement of science education.

Professor David Smith is the recipient of the 2022 SCI 'Science for Society Award'. He is a passionate educator – indeed he has previously been recognised by the Royal Society of Chemistry Higher Education Award and an Advance HE National Teaching Fellowship. In 2019, York University Students' Union recognised him as the 'Most Inspiring' academic.

In addition to his work within the University, Professor Smith also has a much wider profile, regularly giving public lectures about Medicinal Chemistry – he has spoken to over 50,000 UK school students. He has also developed his own YouTube chemistry channel, with well over half a million views, while as @professor_dave on Twitter he has over 25,000 followers.

The Society of Chemical Industry 'Science for Society Award' aims to recognise influential contributions to science education which provide a major benefit to society in the Yorkshire and the Humber region as well as beyond.

Professor Smith has developed a reputation for highly engaging lecture presentations, with the use of entertaining 'breaks' to enhance delivery (see: *J. Chem. Ed.* 2006). He has always seen students as individuals, valuing their own unique voices. In landmark work, he engaged first year students in the creation of YouTube videos as a way of reinforcing their own learning on materials chemistry, but also enabling them to share their learning online to inspire a wider diverse audience (see *J. Chem. Ed.* 2013). As Professor Smith moved into leadership positions within the Department of Chemistry's teaching, he helped embed a curriculum that developed student skills alongside their chemical knowledge (see *Ed. Chem.* 2016).

Professor Smith is also an outspoken advocate of Equality, Diversity and Inclusion (EDI) in science, and has reflected on the need for the prevailing culture of chemistry to change to become more inclusive (see *Nature Chem.* 2020). Recently, he has been involved in initiatives to incorporate EDI in the York undergraduate chemistry curriculum (see *J. Chem. Ed. 2022*). He has also helped pioneer the decolonisation of the chemistry curriculum, including being involved in the publication of simple strategies by which undergraduate chemistry teaching can become more global and inclusive (see *J. Chem. Ed. 2022*).

Professor Smith will receive his award at the SCI Yorkshire & Humber annual awards event in September 2022, where he will deliver his award lecture: *EDI in Chemistry Education - From Engaging, Developing & Inspiring to Equality, Diversity & Inclusion.*

Chemistry PhD Student competes in UK Championships

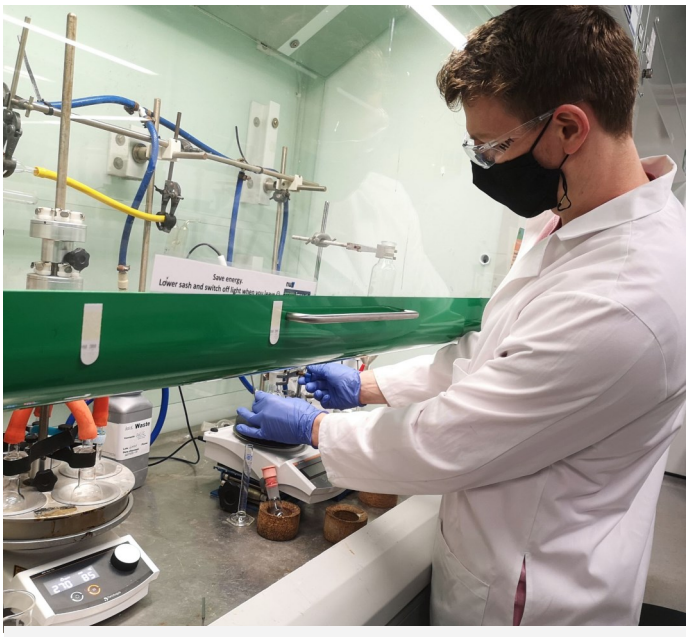
Congratulations to Harry Maslen who placed 5th overall in the heptathlon at the UK Indoor Championships on 26/27 February.

Harry Maslen competing in the World University Games in Napoli, 2019. Photo credit: Olavi Kaljunen.

Harry is a PhD student in the Green Chemistry Centre of Excellence (GCCE) with Dr Tom Farmer, and has been competing in athletics for 14 years. He began as a hurdler and now competes in both the heptathlon and decathlon!

As well as being a chemist, having graduated with an MSc in Green Chemistry at York and now working towards his PhD, Harry Maslen is also a competitive athlete, and headed to Birmingham to compete in the UK Indoor Championships on 26 February.

"I've been doing athletics for about 14 years now - I was just a hurdler when I started but I did the other events for fun and it slowly evolved into doing the combined events. The ten-event decathlon is the main event (outdoors), but in the winter/indoor season I do the seven-event heptathlon. My favourite events are probably hurdles and long jump."



Harry working in the Green Chemistry lab

Harry is no stranger to competition at this level, having previously competed in the American Collegiate national Championships during his undergraduate degree at Angelo State University, Texas and at the English Championships. In 2019 he also represented Great Britain and Northern Ireland in the decathlon at the World University Games in Napoli. This was his first time at the British Indoor Championships.

"Time management is pretty crucial to balancing research and training, and some athletics coaching I do with City of York AC, but truthfully I couldn't do it if I didn't enjoy doing all of it. I have been thoroughly enjoying working on my project so far, and the Clean Synthesis group is a fantastic group to be working amongst. Training for ten events makes for a busy schedule, but I couldn't do it without a lot of support from those around me, and without having fun when I train for each event."

Cooking up a storm - windy weather no impediment to the indoor air team

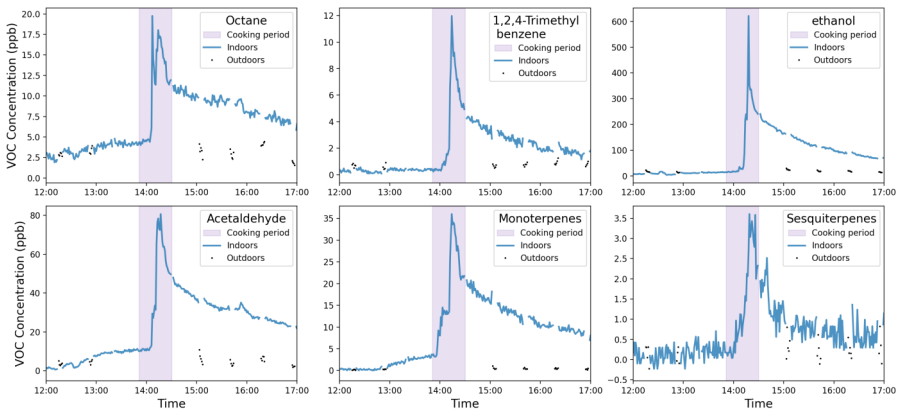
Ruth, Ellen, Athina and Catherine together with NCAS instrument van at Nottingham, Park Campus

Researchers from Dr Terry Dillon's group spent much of March on campaign, studying the impacts of cooking and cleaning on indoor air quality at the Nottingham Department of Architecture and Built Environment. The WACL-based team deployed the NCAS "Environmental Baseline Monitoring" van and a variety of other instrumentation for online gas- and particle-phase analysis. The experiments formed part of IMPeCCABLE, a three-year EPSRC project bringing together chemists, environmental scientists and engineers from York, Chester and Nottingham. This campaign was led by IMPeCCABLE PDRA Catherine O'Leary who acknowledged "So many people have helped make this possible – a big thank you to Marv, Chris, Katie, Jimmy, Martyn, Jenny, James, Cate, Helen and the rest of the team back in York!"

Cooking experiments built on the work of Year-4 MSci student Ruth Winkless, who has quantified emission rates of many VOC from cooking with oils and spices. Ellen Harding-Smith took the lead on the cleaning experiments and commented "Given the weather we've been having, it is great to work on indoor air!" The team was strengthened by particle-phase expertise from PhD student Athina Ruangkanit from Professor Jacqui Hamilton's group.

It has been a busy twelve months, with this being the third deployment since lockdown, following a similar campaign near Chester and a collaboration with *Which?* magazine performed in Vanbrugh College. Terry hopes to be able to base more work in York in future – watch this space for news of the DOMESTIC labs coming to York.

Chicken stir fry



Gas-phase data from a typical cooking experiment (chicken stir fry)

Johnson Matthey Poster Competition: 2022

On 24 March, the Johnson Matthey PhD Poster Competition took place. Having been cancelled in 2020 and held online in 2021, this was the first time the event could be held in person for three years.

PhD students in Year 3 are asked to display a poster about their research, which is scored by judges who look at presentation, scientific content and student discussion. Scores are collated to generate winners who are confirmed by Dr Mike Bainbridge, our guest from Johnson Matthey, and Professor Gideon Grogan as Chair of the event.

Photo attached: l-r: Dr Mike Bainbridge, Johnson Matthey, Nantachai Inprung, Chloë Bartlet, Nicholas Rose, David Husbands.

A total of 30 posters were on display for judging and for general viewing by all members of the Department and it was great to hear a room buzzing with conversation and enthusiasm which just cannot be replicated on Zoom!

At the end of the event, four posters were confirmed as our winners. Congratulations to our winners who will each receive £375 to spend on something related to their research:

David Husbands (IJSF)
Palladacycle mechanisms for cross-coupling reactions

Nicholas Rose (CDS/DKS)
The use of iminoboronates for dynamic linkages in an aqueous environment

Chloë Bartlett (KEHP)
Rhino tooth enamel: Building an amino acid geochronology for the South-Central African region

Nantachai Inprung (WPU/RJKT/MJJ)
Indole-ynones as privileged substrates for radical dearomatising spirocyclisation cascades

The afternoon ended with a departmental seminar where winners were announced, followed by a talk from our guest Dr Mike Bainbridge on *Revolutionary **CANS**™ catalyst carrier technology for Fischer-Tropsch synthesis: a sustainable approach to fuels production.*

As always, we are very grateful to Johnson Matthey for their generous sponsorship of the event.

Chemical Communications BSc project students give presentations at two-day symposium

The Chemical Communications BSc project students gave excellent presentations recently, at a two day symposium led by Dr Annie Hodgson. They shared their research, which ranged from equality and diversity in STEM, to the use of Instagram to encourage young people to consider studying Chemistry.

Annie said: "They all demonstrated a great breadth of understanding in science education and communication, making the symposium a really informative and entertaining event. We have some excellent teachers and science communicators of the future in our midst. Well done to everyone."

New starters

Cate Anstoter, Research Associate in Physical/Analytical Chemistry
Room: C/A051; Ext: 4525; Email: cate.anstoter@york.ac.uk

Dr Pavol Bardy, Sir Henry Wellcome Postdoctoral Fellowship
Room: B/L0 open area; Ext: 8255; Email: pavol.bardy@york.ac.uk

Jordan Liburd, Technician
Room: B/L0 open area; Email: jordan.liburd@york.ac.uk