

issue 8 | autumn 2020



ChemYork

HIGHLIGHTS FROM A LEADING UK CHEMISTRY DEPARTMENT

**Next
Generation
Talent**

**Covid-
Secure
Labs**

**TikTok
Teaching**



Team Chemistry



PROFESSOR DUNCAN BRUCE,
HEAD OF DEPARTMENT,
INTRODUCES THE AUTUMN
EDITION OF CHEMYORK.

When I last wrote for ChemYork in the late Spring, the country was in its first lockdown, and now as I write again, we have just entered a second period of lockdown. A huge amount has happened in between...

Heroically, the year's teaching was completed and marked. Year 1 students were 'given a bye', but for Years 2, 3 and 4, exams did take place and while the assessment was not how we would do it normally, it worked and although somewhat delayed, there was an online Graduation Ceremony in late August. During the ceremony our students were treated to a wonderful acceptance speech from Honorary Graduate Professor Carolyn Bertozzi from Stanford University in the USA.

Lockdown was duly relaxed over the summer but didn't really provide much opportunity for a normal holiday break and so while I believe that people did take time off, I'm sure it wasn't quite the same and there was certainly a great deal of extra effort and planning involved even in a UK seaside holiday. But what did help many people was the re-opening of the research labs in early July and the feeling of increased momentum and a small glimpse of the world the way it used to be, even if viewed through safety glasses that were a little steamed up. To open them as quickly as we did and with so much of the original function and support available was a real lesson

in teamwork from our own technical staff and colleagues in the University's Buildings and Estates team. Indeed, we were pretty well ahead of the curve nationally in getting research back up and running. Yet this very positive picture hides a story of trying to manage changes in research contracts, in student funding, furloughing for some – the behind-the-scenes efforts were quite incredible.

And then of course the push was to get ready for the new teaching year with all lectures online, reduced occupancy of teaching labs and much greater use of electronic submission of work. This has been a huge effort and is one that will continue through the remainder of the teaching year. The imagination, creativity and sheer hard work that colleagues have put into all aspects of our teaching has been incredible to witness and I know is appreciated by our students.

Getting the teaching ready was one focus of the summer's activities, but there were also real challenges in getting ready to welcome the students who would join us. A-Level results time was more challenging than usual and then there was the huge effort in doing our best to keep in contact with students who would be coming to study at all levels, from undergraduates to taught and research postgraduates, many of whom were abroad. These efforts paid off and we have welcomed

a hugely talented (if somewhat large) undergraduate cohort and have seen a record intake for the taught Masters programme that is run within Green Chemistry.

I've gone into a bit of detail in this, because I want to paint a picture, albeit perhaps in soft focus, of how it has been over these last months. Seen from a distance, an analogy I have used with colleagues is that of a swan gliding effortlessly across the surface of the water. The labs are open, the teaching is happening, back-office functions are all working... Yet we all know that disguised under the water are those strong feet, paddling like fury and occasionally getting caught up in unseen debris.

“I could not be prouder to work in a department like ours and it is a real pleasure and privilege to be able to give you a brief glimpse under the waterline as the swans move on by”

And so it has been. Colleagues have been ill, have had family who took ill, have had children at home and/or other caring responsibilities, have been coping with living alone and yet, somehow, Team Chemistry pulled together, offered support, covered for people where they could and made it all happen. Wow – that is really something! I could not be prouder to work in a department like ours and it is a real pleasure and privilege to be able to give you a brief glimpse under the waterline as the swans move on by.

Front cover image: Second Year undergraduate student Molly Clayton working in Teaching Labs. © Christina Surdhar.

Compiled by David Smith
and Christina Surdhar

Designed by Cookie Graphic Design



Next generation of talent

THE DEPARTMENT OF CHEMISTRY HAS A REMARKABLY TALENTED NEW GENERATION OF RESEARCHERS AND EDUCATORS. IN RECENT MONTHS, SEVERAL OF THEM HAVE BEEN RECOGNISED WITH PRESTIGIOUS AWARDS.

Research fellowship to explore tuberculosis treatments

Dr Jamie Blaza has been awarded a Future Leaders Fellowship from UK Research and Innovation (UKRI) to study the role of antibiotics in tackling tuberculosis infections - work that could pave the way for improved treatments in the future.

TB is one of the top ten causes of death worldwide - in 2017, 10m people developed the disease causing 1.6m deaths. It is caused by the infectious *Mycobacterium tuberculosis* and current treatment strategies rely on a combination of drugs over an extended period with unpleasant and damaging side-effects. Antibiotic-resistance is threatening the effectiveness of these treatments.

Dr Blaza and his team will use advanced biophysical methods to measure the energy flow in living bacterial cells and how these parameters change in response to antibiotics. He will combine these measurements with high-resolution imaging of key bioenergetic enzymes using an advanced electron microscope. This cutting-edge instrument will be installed in the Eleanor and Guy Dodson Building, a new facility currently under construction as part of the York



Structural Biology Laboratory in the Department of Chemistry.

“For the first time, a number of biophysical techniques will be brought together to allow us to measure key cellular molecules without needing to break open or disrupt the bacteria,” said Dr Blaza. “The research will give us a unique window into the workings of the bacterial cells. We will then add clinical antibiotics to observe how different drugs disrupt the cell, which should be able to offer insights into how to make more effective antibiotics to tackle TB.”

The Future Leaders Fellowships scheme aims to support the world's best researchers and innovators, regardless of their background, with up to £1.5m, keeping the UK at the cutting edge of innovation. The fellowship project will run for four years, with the possibility of a three-year extension.

York academic recognised by Nature Research Awards

Dr Pete Edwards, an Independent Research Fellow in the Wolfson Atmospheric Chemistry Labs, was recognised as one of two runners-up for the highly prestigious Nature Research Award for Driving Global Impact.

The award acknowledges his work to understand the chemical processes controlling global challenges like air pollution and climate. His current research develops novel measurement techniques to reduce uncertainties in



the models used to inform air quality and climate policy.

After hearing about his success, Dr Edwards said: “It is an honour to be recognised alongside other eminent researchers in their respective fields. As an atmospheric

chemist whose work involves instrument development, lab work, and field measurements, it is often easy to get buried in details and lose sight of the wider societal impacts of the work we do.”

Higher Education Teaching Award

Dr Glenn Hurst has been named the winner of the RSC's Higher Education Teaching Award - the fourth member of the Department of Chemistry at York to win the award, after Professors David Smith, Andrew Parsons and Paul Walton.

Dr Hurst won his award for impactful work in green chemistry teaching resulting in national and international renown, and particularly for the innovative use of social media in higher education.



His work is centred around using innovative approaches to help students engage with and contextualise chemistry with an emphasis on green and sustainable chemistry, helping them address real-world problems as outlined by the United Nations Sustainable Development Goals.

After receiving the award, Dr Hurst said: “I wish to thank the brilliant students of Chemistry at York together with my inspirational and supportive colleagues across the institution. It is a real honour for me to receive such a prestigious award so early in my career. Looking ahead, I am excited to see developments in interdisciplinary teaching strategies focused around global challenges and the potential use of virtual reality as a tool to support practical teaching and visualisation.”

Possible broad spectrum drug treatment for viruses on the horizon



Research from the team of Professor Gideon Davies, in collaboration with Professor Spencer Williams from the University of Melbourne, has shed new light on how viruses like hepatitis B, dengue and SARS-CoV-2 hijack a cell. This work (published in Proceedings of the National Academy of Sciences USA 2020, doi 10.1073/pnas.2013620117) paves the way for potential broad spectrum anti-viral drugs that could

stop a range of viruses in their tracks.

In the cell, all proteins pass through 'quality control' checkpoints where they are inspected before they are transported to their destination to carry out their functions. The researchers showed that some viruses can hijack this manufacturing and distribution process. They demonstrated that in particular, viruses tend to harness a step in this

process where sugar molecules coat newly-assembled proteins.

With this knowledge in hand, the team was able to develop inhibitors to block an enzyme that trims, checks, and modifies the sugar coating process, which can therefore disrupt the viruses' ability to hijack the pathway. When tested in human cells, these inhibitors were shown to reduce infection in dengue fever.

Professor Gideon Davies said: "The trimming process is a crucial quality control step and when it does not occur, proteins are marked for degradation. The enzyme we have identified represents a key target for broad spectrum drug development against certain viruses, because if it can be inhibited, then the viral proteins will be destroyed. Targeting the sugar coat of viruses in this way is a really exciting route to novel antiviral agents, especially in these challenging times."

Enhancing the visualisation of aromatic molecules

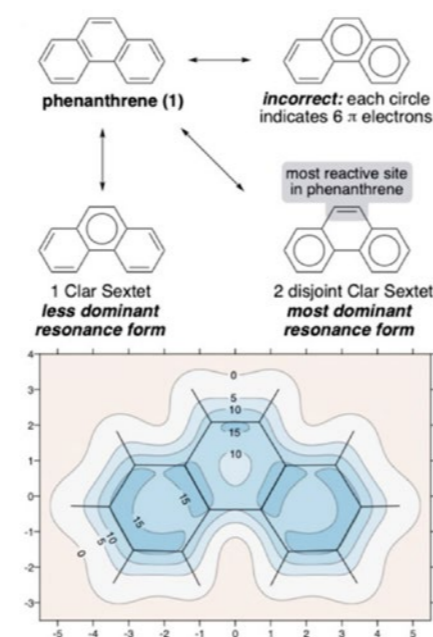
Dr Peter Karadakov from the Department of Chemistry here in York, working with Professor Brett VanVeller and Bryan Lampkin from Iowa State University in the USA have developed a method to create a better visualisation of aromaticity in important polycyclic aromatic hydrocarbons.

Aromaticity is a fuzzy concept - chemists often use simple qualitative rules such as Hückel's $(4n + 2)$ electron-counting rule to determine if a molecule is aromatic. However, for polycyclic aromatic hydrocarbons (PAHs) which have multiple fused rings this is not sufficient, as the individual rings have varying degrees of aromatic character - very often they end up being misunderstood and drawn incorrectly. Yet understanding the bonding and behaviour of PAHs is

of great significance, in part because they are environmental pollutants, and are abundant in the universe - indeed it has been suggested such molecules may have played a critical role in the origins of life.

In order to better visualise aromaticity in polycyclic systems the researchers created isotropic magnetic shielding (IMS) plots, which provide an intuitive picture of aromaticity - both overall and local (Angew Chem Int Ed, 2020, 59, 19275). "Pictures are remarkably powerful - as soon as you see them, you can immediately start interpreting them" says Dr Karadakov.

Dr Karadakov and his co-workers are now developing a tutorial so other chemists can create their own aromaticity maps and hope that such plots may in the future enhance



the intuitive understanding of these important molecules, find their way into textbooks and help avoid future aromaticity drawing disasters.

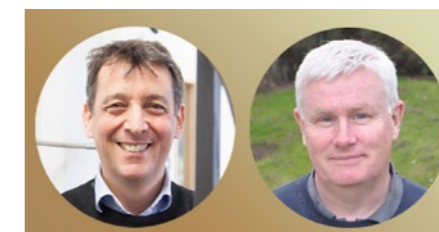
Award for collaborative research

Professors Gideon Davies and Paul Walton received the Rita and John Cornforth Award from the Royal Society of Chemistry. This Award enables scientists working in collaborative research teams with both chemistry and the life sciences disciplines to be promoted and rewarded.

The Walton-Davies team won their award for ground-breaking research into the extraction of sugars from cellulose to provide a rich source of sustainable biofuel known as cellulosic bioethanol. Cellulose is naturally resistant to break down into its constituent sugar molecules, which hinders its use as a feedstock for bioethanol. However, the team has focused their research on a group of enzymes called lytic polysaccharide

monoxygenases which significantly enhance the breakdown of cellulose, enabling waste plant matter high in cellulose to be used as an industrial feedstock for fuel production.

Professors Walton and Davies thanked the RSC for the award and said that they were accepting it on behalf of their many co-workers who have contributed to the insights gained into these enzymes over the past four years.



York is a major player in two new Marie Skłodowska-Curie Innovative Training Networks

Two high-profile European-Commission-funded projects will bring four early career researchers to the Department of Chemistry, with York research groups collaborating with a wide range of institutions and industrial partners across Europe in multi-million Euro research projects.

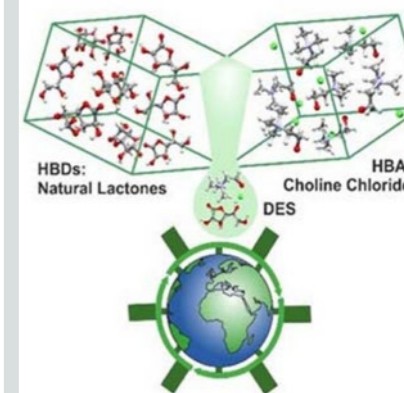
The Department is a major player in Coordination Chemistry Inspires Molecular Catalysis (CCIMC), coordinated by the Laboratoire de Chimie de Coordination (LCC) in Toulouse. This network aims to push back the frontiers of knowledge in ligand design, coordination chemistry, precatalyst development, catalyst recovery and catalytic process implementation. It will see 15 PhD students engaged in a coordinated research and training programme



across Europe, three of whom will spend half their degrees in the Department of Chemistry with Dr Jason Lynam, Dr John Slattery and Professor Simon Duckett.

York is also a beneficiary of PUSHH (Palaeoproteomics to Unleash Studies on Human History), which has been set up to provide state-of-the-art doctoral training for 14 early-stage researchers, pursuing palaeoproteomics to advance knowledge about the biological and cultural evolution of humans. Currently, very few specialists have been trained to analyse ancient proteins. Researchers in the network will be supervised by Professors Kirsty Penkman and Jane Thomas-Oates.

Both CCIMC and PUSHH are Marie Curie network projects of the Horizon 2020 programme.



Vitamin boost for green solvents

Naturally-occurring analogues of Vitamin C have been used to form deep eutectic solvents for the first time. These environmentally-friendly solvents may have applications as natural antifreezes or antibacterial agents.

Deep eutectic solvents (DESs) are formed when two solid materials mix to give a liquid phase. If the two solids are environmentally-friendly, then the resulting solvents are one of the most promising green technologies to emerge in recent years. In the pursuit of new sustainable DESs, Dr Avtar Matharu and his research team reported the preparation of DESs based on natural lactone analogues of L-ascorbic acid, Vitamin C (Chemistry Open, 2020, 9, 559). The researchers combined these natural lactones with choline chloride, a well-established component in sustainable DESs.

PhD student, Andrew Maneffa said, "This work is an illustration of how we can take the building blocks provided to us by nature and re-tool them in a way that offers potential uses in some intriguing applications."

Covid-Secure Teaching Labs

CORONAVIRUS HAS PRESENTED AN IMMENSE CHALLENGE FOR US HERE IN THE DEPARTMENT OF CHEMISTRY, WITH MUCH OF OUR TEACHING MOVING ONLINE. AS THE COVID OUTBREAK EXTENDED INTO A NEW ACADEMIC YEAR, WE NEEDED TO FIND WAYS STUDENTS COULD DEVELOP THEIR ESSENTIAL PRACTICAL SKILLS IN OUR TEACHING LABS, BY MAKING THE LABS AS COVID-SECURE AS POSSIBLE. THIS ARTICLE HIGHLIGHTS THE INCREDIBLE WORK OF SOME OF THOSE INVOLVED.

Careful risk assessments were carried out, led by Dr Moray Stark. Teaching labs are a well-ventilated, spacious environment and it was decided that given our fume cupboards have dimensions of 2 metres, a capacity of 1 student per fume cupboard would be appropriate. There was considerable discussion about the safety of masks, in particular the balance between potential mask contamination and the Covid-risk of not wearing them. In the end, in-line with all university teaching it was decided that given the level of Covid risk and the key role masks can play in mitigating it, they should be worn by students and demonstrators at all times. Non-flammable, multi-layer cotton masks were provided to all students and staff.

A number of further adaptations were needed to get Teaching Labs ready,

with tireless work from the technical team of Dr Phil Helliwell, Helen Burrell, Dr Scott Hicks, Liza Binnington and Dr Charlotte Lee. To minimise travelling around the lab, each hood now has a waste station within it, experiments have been carefully located in the lab space and there is more equipment available for each student to use. The instrumentation has also been relocated; some to YSOC (the 'York Science Outreach Centre' laboratory), to clear space in the instrument room, so that IR and UV work can be fully distanced. PPE was allocated to students prior to them arriving in York, via a Google Form that the students could fill in for lab coat and glove size, so that everything could be bagged up and ready for them to collect. All PPE is now kept in over 600 colour-coded gym bags on the coat pegs, so that



there is no direct contact between coats from different students. More handwashing points are available, hand sanitiser is supplied for each PC and instrument, and sanitizing wipes are available to clean down the hood sashes and service taps, etc. The lab has never been so clean!

The arrival of students at the labs has been staggered, to ensure social distancing in the entrance foyer, each student is pre-allocated a locker and a fume hood for the day, so that we can track and trace is possible if needed. This has all been made possible by Dr Adrian Whitwood's expertise at handling mail merge and spreadsheets

The initial focus in labs was to test the systems with our more experienced second and third year students. Obviously, working at half density in labs means less lab-time is available, and Dr Nick Wood and Dr David Pugh put huge amounts of energy into restructuring the course so that students would only do experiments focussed on developing the high-level practical skills that can only be obtained hands-on in the laboratory, such as Schlenk-line work.

“I think the whole experience has been very positive and also very good for their wellbeing”



Schlenk Line work



Dr David Pugh with recently returned students

Experiments that develop other skills, such as data analysis and interpretation, were converted into interactive online exercises. The team then learned from this experience to deliver the best possible teaching support for the Year 1 students.

Overall, lab teaching has been going really well. Dr Lizzie Wheeldon, who organises Year 1 labs reports: "The students seem to enjoy being in labs, especially now it's their only face-to-face contact. They are keen to learn and get stuck in". Some of the demonstrating methods have been changed and this can have some advantages. Dr Wheeldon explains: "Briefings and step-by-step techniques which would normally be demonstrated by GTAs have been replaced with short videos. This ensures consistency across different student groups and allows the students to go back and recap, rather than having to remember everything from the demo". Kat Harrison, Nick Heywood and Angelo Amaratunga (see page 12), who were appointed as full-time demonstrators recorded and edited lots of these technique videos and are now playing key roles in helping deliver the face-to-face lab teaching.

Graduate Teaching Assistant Jack Davison added: "There have been fewer

questions than normal, but that was because the videos allowed them to double check the method. I found I was asked more chemistry questions (why did we do this?) rather than lab skill questions (how do we do this?)." Having looked after some of the first year students on their first day in labs, Jack added: "First thing in the morning I'd asked them each individually how they were feeling - most commonly the answer was nervous (and a little excited). Five minutes before the end of my shift I went round and did the same thing, and all of them replied they were feeling a lot more confident being in the lab than they did at the start."

Reflecting on all of the hard work that has gone into getting labs running, Dr Helliwell says: "The biggest problems have been in planning and preparation of all this extra provision. Once the courses are actually running, they are pretty easy to support - with fewer students in the lab there has been less delay caused by waiting for communal equipment. Working with the students has been very good, no real problems have arisen and the students seem very happy to be there, seeing a real human being instead of a Zoom meeting or lecture capture. I think the whole experience has been very positive and also very good for their wellbeing".

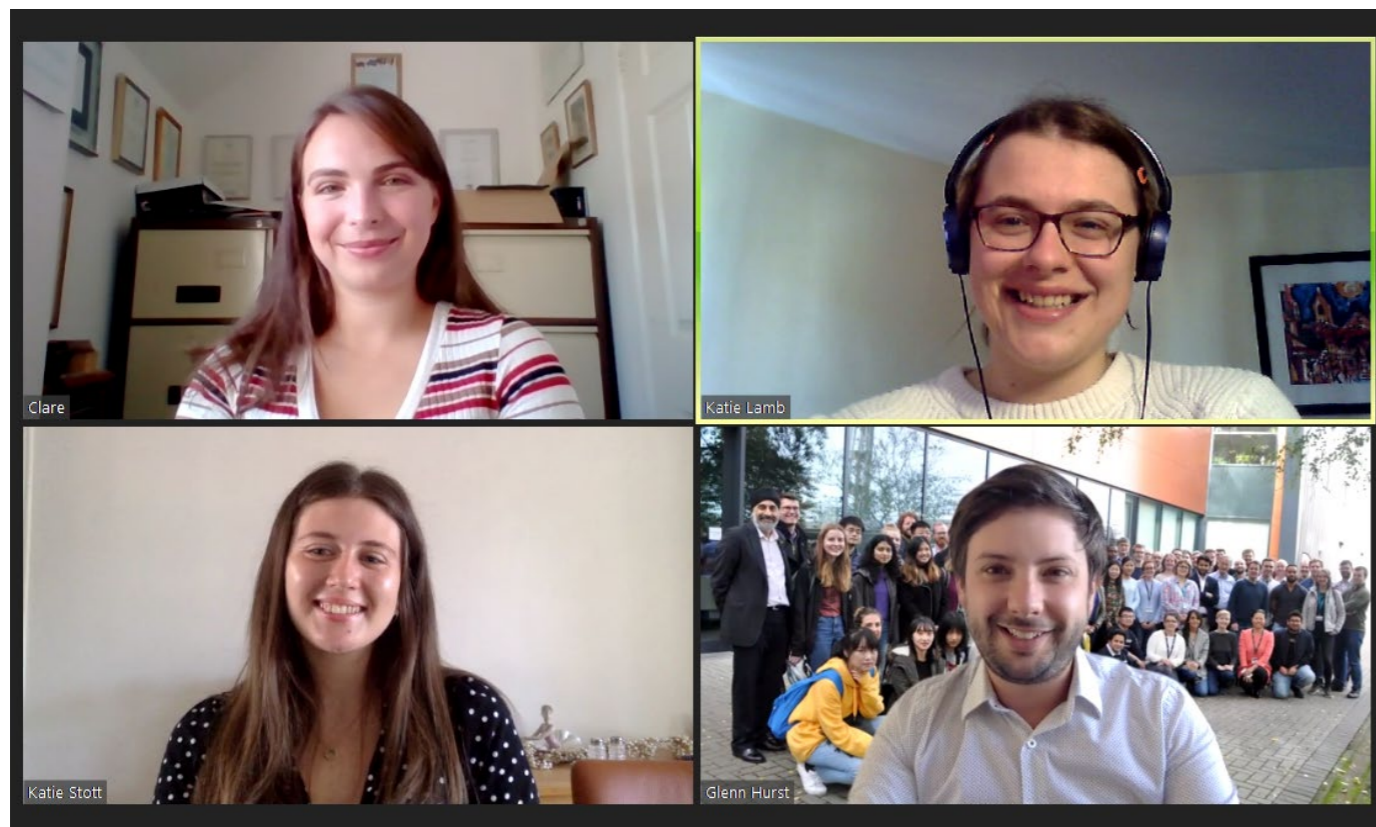
“Experiments are focussed on developing the high-level practical skills that can only be obtained hands-on in the laboratory”



Dr Nick Wood - how to smile while wearing a mask



Helen Burrell and Dr Scott Hicks putting labcoats in new bags



Using TikTok to teach chemistry

A RECENT INNOVATIVE PROJECT IN THE CHEMISTRY DEPARTMENT HAS SEEN 'THE CHEM COLLECTIVE' LAUNCHED ON THE TIKTOK SOCIAL MEDIA PLATFORM WITH THE GOAL OF ENGAGING A NEW AUDIENCE WITH CHEMISTRY.

Recently-graduated BSc Chemistry students Clare Hayes and Katie Stott performed research into developing new and innovative methods to aid with chemistry education and public dissemination, as part of their research project under the supervision of Dr Glenn Hurst and Dr Katie Lamb. The students used a 'systems thinking' approach to place theoretical concepts in context to create new learning resources

A major component of this research involved investigating the use of the mobile phone application TikTok for teaching chemistry as well as a public dissemination tool. Considering the recent transition to online teaching due to COVID-19, the use of social

media to aid teachers with chemistry teaching and communication is now extremely important.

TikTok is a social media video-based phone application that enables creative and engaging videos to be shared on social media platforms worldwide. Despite its young age, TikTok is now one of the top ten most downloaded apps of all time. As TikTok is mainly used by people aged 18 or younger to make creative and often humorous online videos, this was an opportunity to make informative, fun and visually engaging chemistry videos that could reach younger audiences, as well as the general public, and inspire them to learn about chemistry.

Using an online TikTok account, "The

Chemistry Collective", 16 chemistry outreach and educational videos (15-60 seconds long) were created showing how chemistry can be fun, performed at home, and is part of our daily lives. On surveying participants, viewers of these TikTok videos strongly agreed that they had learned something new about chemistry since watching these videos and had an increased interest in chemistry. This highlights how TikTok can be used in a creative and innovative manner to enhance public and undergraduate student engagement with chemistry education.

Katie and Clare published their results in the Journal of Chemical Education 2020, 97, 3858. They also wrote an article for The Times Higher Education, reflecting on their experiences.



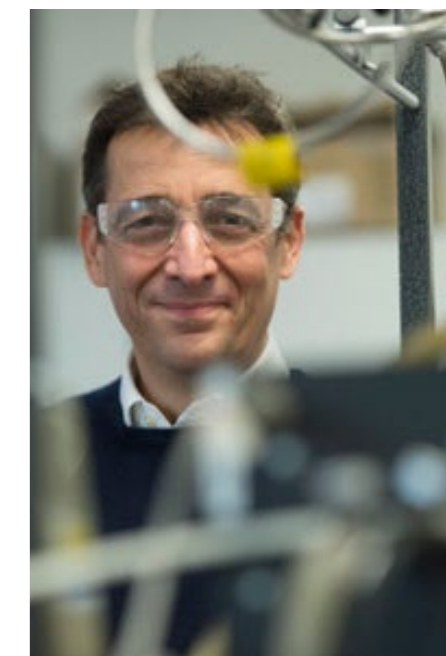
Vice-Chancellor's Teaching Award

PROFESSOR PAUL WALTON RECEIVED A VICE CHANCELLOR'S TEACHING AWARD TO RECOGNISE EXCELLENCE IN TEACHING AND LEARNING SUPPORT.

Professor John Robinson, Pro-Vice-Chancellor for Teaching, Learning and Students, wrote: "The panel was impressed with your exceptional and sustained contribution to teaching within the department, including small group teaching innovations that have entered into the culture of the wider department. Your support for students and quality of feedback are exemplary; you are renowned amongst current and former students for going the extra mile to demonstrate what you are teaching in front of a packed lecture theatre.

The Panel recognised the tremendous impact you have made on how teaching is organised and delivered in the department that is felt positively by all students and staff."

Professor Paul Walton joined the Department of Chemistry in 1993 as a lecturer and also served as Head of Department from 2004 to 2010. His teaching also received recognition in 2000, when he received the Royal Society of Chemistry's Higher Education Teaching Award. Currently, as well as contributing to small-group teaching within Chemistry's



college system, he contributes with lectures in core modules to chemists and natural scientists, and teaches on the Bioinspired Chemistry option module in Year 3, where he can draw on his award-winning research in bioinorganic chemistry (see page 5).

Department of Chemistry retains position in UK Top Five

THE DEPARTMENT CONTINUES TO BE AMONG THE UK'S MOST HIGHLY REGARDED DEPARTMENTS FOR THE SUBJECT OF CHEMISTRY, FOR EXAMPLE BEING RANKED 5TH IN THE UK IN THE COMPLETE UNIVERSITY GUIDE 2021.



Published annually since 2007, the Complete University Guide ranks 130 UK universities, 14 Arts, Drama and Music colleges and conservatoires, and 70 subjects by quality measures important to students.

The Department's ranking is based on a range of measures including graduate prospects, student satisfaction and research quality. Head of Department, Professor Duncan Bruce, said "It is fantastic to see Chemistry at York retain its place in the top five: one of the very best places to study our subject in the UK. This is real recognition of the hard work and commitment of all staff across the department in providing a first-rate educational experience for our students and a reflection of the excellent students who we are very proud to graduate each year."

In total, six departments at the University were ranked in the UK top ten: Archaeology (9th), Chemistry (5th), English (6th), History of Art (6th), Nursing (7th) and Social Work (6th).

Roger J Mawby Demonstrating Award Winners 2020

THE OUTSTANDING CONTRIBUTIONS OF SIX CHEMISTRY GRADUATE TEACHING ASSISTANTS (GTAs) HAS BEEN RECOGNISED IN THIS YEAR'S ROGER J MAWBY DEMONSTRATING AWARDS.

These annual awards recognise the important contribution made by GTAs to undergraduate teaching in the Department of Chemistry. Prizes are awarded thanks to a generous bequest made to the Department in memory of Roger J Mawby, an inspirational educator and one of the founding academic staff members of Chemistry at York. Each of this year's winners received a cash prize of £150 to be spent as they wish, and a glass trophy made by Chemistry glassblower Abby Mortimer.

This year's winners are:

Conor Black. For incredibly diligent teaching, especially in Year 1. Conor puts great efforts into understanding the background behind the

experiment, which is used to help students (and other GTAs where needed!) to a very high standard. **Paul Bond.** For exceptional effort in writing simulation software for the ICP course in a few weeks in response to the Covid crisis, allowing the key experimental design aspects of the course to be preserved. Student feedback for the course was exceptional. **Chris Goult.** For efforts on the MChem Schlenk line experiment. Chris's calming influence makes for a very effective educator and is very supportive of students. Delivers information clearly and concisely, particularly important in avoiding risk and ensuring equipment is used correctly.

Prize for graduating Chemistry student

As part of the summer graduation, Rob Ives received a prestigious Chancellor's Leadership Award. This is awarded to University of York students who have demonstrated a combined commitment to academic study, work experience and track record that has benefited others and made a significant and lasting contribution to both the University community and the city of York. Only three students across the university are selected for the award after excelling on the York Award and York Leaders programme.

Rob successfully completed his MChem research project in Organic Molecular Materials Chemistry in the group of Dr Alyssa-Jennifer Avestro. During his time at York, he was elected as Chair of the Chemistry Society and was also a member of the executive board of the York Science Conference. In the Summer of 2019, Rob was also a visiting research scholar gaining international research experience

at the Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences in Prague.

On receiving the news of the award, Rob said: "I feel truly humbled. Over my time at York, I've pushed myself as much as possible - dedicating countless hours to develop personally and professionally. It is really pleasing to be recognised for my efforts with such a prestigious award presented to a select few. Above all else, I believe university is more than studying solely for a degree. For myself, it has been about developing a willingness to take a chance, no matter how daunting or difficult."

Rob has now moved on to a PhD in Organic Chemistry at Durham University with the long term intention of following a career in academia or industry.



Nina Leeb. Nina is always bursting with enthusiasm across all her teaching and takes great pride in her work. She tries to get the best out of every student.

David Loades. Incredibly organised, efficient and always working hard to help students get the best out of themselves. Very patient and thorough in everything he does.

Anna Patterson. Always friendly and willing to help the students. Patiently helps students to overcome their own problems and develop their learning. Continuously seeks to identify improvements to experiments to improve the future running of the course.

KMS Award Winners

On 7 October, this year's KMS Winners' Seminar was, like all large events this year, held online, led by KMS Chair, Aneurin Kennerley. However, this did not detract from the event, with the four winners all delivering brilliant presentations via Zoom to a departmental audience.

The winners and talk titles were:

Lucy Wheeler (Prof Kirsty Penkman and Prof Roland Gehrels). Bringing amino acid geochronology of sea-level records up to date: investigating the intra-crystalline approach for foraminifera.

Ben Tickner (Prof Simon Duckett). Improving the sensitivity of NMR using iridium-catalyzed magnetization transfer from parahydrogen.

Natalie Wong (Prof Caroline Dessent and Dr Martin Cockett). Illuminating sunscreens: laser photodissociation of deprotonated & protonated organic sunscreens.

Anna Patterson (Prof David Smith). Supramolecular hydrogels for drug release.

Supporting BAME Scientists

THE UNDER-REPRESENTATION OF BAME (BLACK, ASIAN AND MINORITY ETHNIC) INDIVIDUALS IS A LONGSTANDING PROBLEM IN CHEMISTRY AND REPRESENTS AN ENORMOUS LOSS OF TALENT. TO HELP ADDRESS THIS URGENT PROBLEM, THE DEPARTMENT OF CHEMISTRY HAS RECENTLY BEEN AWARDED £5000 BY THE ROYAL SOCIETY OF CHEMISTRY TO SURVEY THE LIVED EXPERIENCES OF BAME CHEMISTRY STUDENTS AND STAFF.

Demonstrating the seriousness of the problems faced by BAME chemists, a recent Royal Society of Chemistry study demonstrated that the UK chemistry pipeline loses almost all of its BAME chemists after their undergraduate studies. As such, the Departmental Equality and Diversity Group, chaired by Professor Caroline Dessent, wanted to take action to understand and address this problem.

The Department of Chemistry at the University of York has been a pioneering department in Equality, Inclusion and Diversity, for example in the area of gender equality, as reflected by the award of Athena SWAN gold status, held continuously since 2007. The Department is now planning to use this experience to build the best possible environment to support BAME students and staff.

In the early years of the Department's work on gender equality, one key activity was listening to the lived experiences of women and allowing them opportunities to talk. These discussions provided a space for individuals to be honest about any problems they faced, individually or with the Department itself. This new project will therefore carry out a broad listening exercise with BAME staff and students in the Department.

Dr Sean McWhinnie, an external consultant, will be employed to carry out the survey. He understands the chemistry context having been an inorganic chemistry lecturer and worked in Science Policy and Diversity for the RSC, and is himself BAME. Using an external consultant will allow consultations will be conducted in a way that allows individuals to be as honest as possible. This work will allow us to identify the ways in which individuals experience racism, understand career aspirations and bottlenecks, and identify practical actions that any department could put



in place to encourage individuals to continue with chemical careers.

Dr McWhinnie commented: "I'm delighted to be working with York Chemistry to explore this important topic. Although nationally, the representation of BAME people in undergraduate chemistry is broadly what one might expect, representation at more senior levels remains very low." In particular, the project team hope to understand the lived experiences of BAME staff and students and the actions they believe would encourage them to continue in chemical careers. They also hope to learn whether there are differences in the experience of UK and non-UK BAME chemists. The results will be compiled in an openly-available report that will be disseminated across the chemical community.

Professor Dessent said: "We were delighted to receive support for this project from the RSC Inclusion and Diversity Fund and hope that our students will welcome the opportunity to contribute their experiences. We want to ensure the Department enables all of its staff and students to thrive, and think this is an important

step in helping us achieve this goal."

Dr Avtar Matharu, member of academic staff in the Department, and Chair of the University Staff Race Equality Forum said: "This will be an important study, and I hope it provides rich information. The environment experienced by individuals in York will likely be very different from other universities, particularly those with higher current percentages of BAME students and staff. We hope our project will stimulate similar work in other institutions and we plan to share all of our developed resources to facilitate this. In the longer term, it will be particularly important to understand how the lived experiences of BAME chemists change from department to department across the UK, and identify best practice in the widest possible terms".

The Royal Society of Chemistry Inclusion and Diversity Fund provides financial support for innovative products, activities and research projects that foster inclusion and diversity in the chemical sciences. The survey of BAME experiences will run during the early part of 2021 and should report later in the year.

New Beginnings

STARTING A NEW JOB IN THE MIDST OF A GLOBAL PANDEMIC MAY SEEM CHALLENGING, BUT LIFE IN THE DEPARTMENT GOES ON, ESPECIALLY AS ESSENTIAL TEACHING AND RESEARCH IS NOW A PROTECTED ACTIVITY, EVEN DURING LOCKDOWNS. HERE WE CATCH UP WITH A FEW OF OUR NEW STARTERS TO LEARN A BIT MORE ABOUT THEM AND HOW THEY ARE SETTLING IN.

Jennifer Gibbard DTP Administrative Manager



I've worked here at York for more than three years before joining Chemistry, most recently as an Operations Coordinator in the Academic Support Office. In the Department, I am the Admin Manager for a new Doctoral Training Programme (DTP) which aims to forge a new path into academic research for people who might not otherwise have considered it, whilst creating opportunities for mobility between industry and academia. I'll be the administrative lead on all aspects of student recruitment, admission and progression, and I'm very much looking forward to admitting our first cohort of students in early 2021.

As with any new job, there's a lot to learn but I'm doing interesting work alongside talented people so I couldn't be happier. I'm excited about getting to know our industry partners and sharing knowledge, talent and best practice with them. But at the heart of this programme will be the students - people seeking innovative solutions to industry problems with real-world impact. Lots to look forward to!

Outside work, I run a small business doing freelance admin and I volunteer as a Board member with a local community group. I'm also close to completing a part-time MA in Anthropology through which I've indulged my fascination with domestic material culture (i.e. 'stuff') in my research on professional decluttering.

Angelo Amaratunga Teaching Labs Demonstrator



I recently graduated from the University of York, having spent the last year of my studies in Helsinki (Finland), where I worked on a year-long CO₂ reaction project. This is my first job and I am really excited to work as a demonstrator!

The transition from student to demonstrator was quite smooth, probably because I knew a little bit about the role of a demonstrator from being an undergraduate here. Interestingly, some lecturers and professors who used to teach me are now my co-workers, which took a couple of days to get my head around. It has been really interesting to get to see the 'behind the scenes' of teaching labs - a lot of work is being put in by a lot of people to make sure that students have a good lab day.

In my spare time, I enjoy playing ultimate frisbee, and relax by listening to music, watching movies and cooking. I speak English, Italian and Sinhalese, and I am currently learning French when I have some free time.

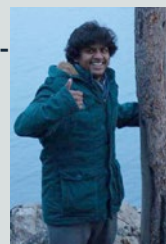
Daniel Day Postdoctoral Research Associate



I have just started my postdoc here in York following my PhD at Durham University. My research investigated the synthesis and self-assembly of block copolymers and was supervised by Prof. Lian Hutchings with industrial support from Synthomer and Croda.

Here in York I am working in the Green Chemistry Centre of Excellence

Paven Kisten Marie Skłodowska- Curie Early Stage Researcher



I have just started as a Marie Curie Early Stage Researcher following my Masters at the University of Southampton. My work there focussed on exploiting metal-organic frameworks for their catalytic applications supervised by Professor Robert Raja. This was followed by a research placement at the University of Calgary again working on catalysis.

Here in York, I am working with Dr. Jason Lynam, Dr. John Slattery, and Professor Simon Duckett as part of the CCIMC Network (see page 5). My PhD work will focus on utilizing synthetic, catalytic, and mechanistic studies to gain insights into the mechanism of asymmetric hydrogenation of prochiral substrates, and to use these insights as a platform to optimize ligand structure.

Although it is disappointing to arrive in a new city and not be able to make the most of it, I have found everyone in the research group and department to be friendly and helpful during these tough times. The University has a good support system in place to assist international students coming to the UK, and I feel comfortable and happy. My hobbies include travel, running, football and cooking, half of which have been affected by the pandemic.

(GCCE) with Dr Tom Farmer. I am researching the synthesis of bio-based polyesters for industrial applications as part of the EU-funded CHAMPION project.

Settling in at the moment has been challenging! Everyone has been great and very helpful in helping me get going in the lab. My hobbies include basketball and music. I am very tall (hence the basketball), but not scary. It would be nice to get to know people a bit better at some point in the near future - hopefully over a drink or two once this becomes possible!