

Chemistry Update

Newsletter 310, 28 June 2019

Inside this Issue

European collaboration shines a light on enzyme discovery for industry	2.
YUSU Excellence Awards for Chemistry academics	
Chemistry at York's support of gender equality recognised with Athena SWAN awards	
New starters	
We're 4 th in the UK	
Dr Glenn Hurst gives keynote lecture in Dublin	
The Roger J Mawby Demonstrating Awards	
Chemical Interactions: Careers Seminar from Dr Seishi Shimizu	
Chemical Interactions: looking for new members	
Soapbox Science outreach event	8.
Professor James Clark in Brazil	
Confronting sexual harassment in chemistry	1
Mental health and wellbeing tip	1
York Festival Fringe Family Fun Afternoon 2019: The Wonders of Light	12-1
Green Chemistry MSc student wins poster prize at ACS National Meeting in Orlando, Florida	1
KMS Prize winners	1

6

.9

9

0

New arrivals

Calendar of Events

Dial-A-Molecule Conference Date: 3-5 July Time: 9am—5.30pm Location: Department of Chemistry

Research Seminar Speaker: Dr Anna Slater, University of Liverpool Date: Wednesday 3 July Time: 1pm—2pm Location: C/A/128

York Biology-Chemistry Glycoscience Symposium Speakers: various Date: Wednesday 10 July Time: 1pm—4.30pm Location: B/T/019 Followed by beer and pizza social at 4.30pm

Annual Northern Universities Meeting in Chemical Physics Speakers: various Date: Thursday 11 July Time: 9am—5pm Location: C/A/101 & C/A/102

Sixth Form Chemistry Conference Date: Friday 12 July Time: 9.30am—4pm Location: Department of Chemistry

Lunchtime wellbeing walk Date: Friday 12 July Time: 12.15pm—12.45pm Meet 12.10 at Chemistry reception

> Date of Next Issue: 26 July 2019

Organic Seminar

Date: Friday 12 July Speaker: Dr Allan Gamble, University of Otago Time: 1pm—2pm Location: C/A/128

Chemistry@Work Date: 15-16 July Time: 10am—2.30pm

Location: Department of Chemistry **Organic / Inorganic Seminar** Speaker: Dr Alex Gagnon, Université du Québec à Montréal Date: Wednesday 17 July

Time: 1pm—2pm Location: C/B/101

Chemistry Graduation & Reception Date: Wednesday 17 July Time: 10am—2pm

Staff/Family Picnic & Rounders Match Date: Friday 19 July Time: 2.30pm—7pm Location: Chemistry Quadrangle

Organic / Inorganic Plenaries Date: Wednesday 24 July Time: 1pm—6pm Location: C/B/101

Organic Seminar Speaker: Dr Pierre Stallforth, Leibniz Institute for Natural Product Research and Infection Biology – Hans Knöll Institute Date: Monday 29 July

European collaboration shines a light on enzyme discovery for industry

Scientists at the University of York are playing a key role in a European consortium which has provided a disruptive technological breakthrough to allow the discovery and characterisation of novel enzymes for industrial biotechnology.

Technology



Photo by Zhen Hu on Unsplash

The technology will open the way to more efficient industrial processes such as in the biofuel, animal feed and paper and pulp industries.

The breakthrough – termed activity-based protein profiling (ABPP) – allows the immediate visualization of the activity of enzymes in complex samples secreted by wood-decaying fungi and bacteria, whose enzymes are central to many current and planned industrial processes.

The rise in genome sequencing has provided

scientists with hundreds of thousands of DNA sequences for enzymes with potential societal and industrial use, but with limited ways to rapidly characterise their activity, function and role.

Such annotation is especially important for enzymes involved in plant polysaccharide degradation where digestion of these intractable materials, for example in biofuels, often demands enzymes are active under extreme reaction conditions.

The team included scientists from the Universities of York, Leiden, Barcelona, and the French National Institute for Agricultural Research/University of Aix-Marseille. It applied technologies originally designed to use in clinical diagnosis of genetic disease and adapted these for industrial enzyme discovery.

Rapid

Professor Gideon Davies, who led the York team, said: "Activity-based probes have provided rapid diagnostic solutions for genetic disease, here we have developed the technology to allow the discovery and characterization of enzymes for biomass degradation, opening the way to more efficient industrial processes."

And Professor Hermen Overkleeft, from Leiden University, added: "It's an exciting new application of activity-based protein profiling. We can now synthesise bespoke probes for key industrial processes where specific insight is needed into enzyme function and stability.

"Enzymatic solutions to societal and industrial challenges will benefit the planet considerably, and it's great to be rolling out a transformative new technology in this arena."

Breakthrough

Their breakthrough has been the synthesis and application of a suite of coloured probes, which provide a rapid diagnostic fingerprint for different enzyme classes. The 'flick of the switch' method providing diagnosis of activity, specificity, and stability under any user-defined conditions using visible light allows, not only the discovery of new enzyme activities, but also the rapid assessment of their potential utility.

The work has recently been published in the American Chemical Society publication ACS Central Science (DOI 0.1021/acscentsci.9b00221).

YUSU Excellence Awards for Chemistry academics

Three Chemistry academics have been recognised as winners in the York University Students Union Excellence Awards.



The <u>YUSU Excellence Awards</u> presented to Professor Peter O'Brien, Dr Alison Parkin and Professor David Smith are based on student nominations from across campus in twelve different categories, with up to four leading nominees being shortlisted in each category. This year, the Department of Chemistry had five shortlisted nominees, three of whom won awards.

<u>Professor Peter O'Brien</u> received the prestigious 'Teacher of the Year' Award. Students described him as 'an icon of the Department' and commended him as 'an incredibly engaging lecturer that never fails to enthuse and enlighten'.

<u>Dr Alison Parkin</u> was recognised for her work as Chair of the Staff Student Committee with the Award for 'Supporting the Student Voice'. Students described her

as 'synonymous with efficiency' and really appreciated the strong support for student representation. Alison thanked the YUSU Chemistry Reps, and particularly the Departmental Rep, Alvaro Lopez-Acosta for their hard work and dedication.

<u>Professor David Smith</u> received the award for 'Most Inspiring'. The Award was presented by Department of Chemistry YUSU Rep, Alvaro Lopez-Acosta, who said Professor Smith had received more individual nominations than any other winner in the history of the awards, and talked about how he manages, by authentically being himself, to draw students into wanting to learn.

In addition to the three winners, PhD student Tom Stephens, from the research group of Dr Will Unsworth, was shortlisted as 'Graduate Teaching Assistant (GTA) of the Year', and <u>Dr Glenn Hurst</u> was shortlisted for the 'Teacher of the Year Award'.

Chemistry at York's support of gender equality recognised with Athena SWAN awards

The University of York's Department of Chemistry has been officially awarded an Athena SWAN Gold award for a further four years at a ceremony on 24 June.

The <u>Athena SWAN Charter</u> was established in 2005 to encourage and recognise commitment to advancing the careers of women in science, technology, engineering, maths and medicine (STEMM) employment in higher education and research.



In May 2015 the charter was expanded to recognise work undertaken in arts,

humanities, social sciences, business and law, and in professional and support roles, as well as for trans staff and students. The charter now recognises work undertaken to address gender equality more broadly, and not just barriers to progression that affect women.



York's Department of Chemistry was the first in the UK to obtain the Gold award in 2007 and is the only department in the country to stay this long at Gold level. The award recognises the advancement of gender equality including issues related to representation, progression and success for all.

Head of Department, <u>Professor Duncan</u> <u>Bruce</u> said: "This new Gold award recognises our long-term commitment to supporting the careers of women in chemistry and challenges us to continue to embrace diversity in its widest sense in the future.

"It reflects the innovative policies and practices that have been developed here, for example in the areas of flexible and part-time working schemes and supportive parental leave structures. Over many years, the department has achieved a vibrant and open culture where equality, diversity and inclusion are an accepted part of everyday life, providing a setting where the careers of individuals can flourish, regardless of who they are."

Read the full story on the University of York website.

New starters

Dr Daniel Shaw, Technical Specialist in Laser Spectroscopy with Dr Simon Breeden Room: C/A057; Ext: 4541; Email: <u>danny.shaw@york.ac.uk</u>

Orsolya Frittmann, Research Technician for Eukaryotic Protein Production with Prof Marek Brzozowski Room: B/K234; Ext: 8268; Email: <u>orsolya.frittmann@york.ac.uk</u>

Hello

We're 4th in the UK

Chemistry at York retains its place in the top five in the Guardian University Guide.



This week we confirmed our place among the UK's most highly regarded departments for the subject of Chemistry, being ranked 4th in the UK in the <u>Guardian university league tables for 2020</u>.

Published annually, the Guardian's University Guide ranks 121 UK universities by undergraduate degree subjects according to satisfaction with course, teaching and feedback; student to staff ratio spend per student; entry tariff; career after six months of leaving the course; degree results compared to entry qualifications; and continuation of first year students.

The rankings are based on official data collected by the Higher Education Statistics Agency (HESA) and the National Student Survey, published by HEFCE.

The Department prides itself on providing a high-quality experience for its students, and has <u>a carefully</u> <u>designed degree programme</u> that aims to develop highly skilled chemists. A large number of members of staff in the department have received awards for their teaching.

Head of Department, Professor Duncan Bruce, said: "We are delighted to be recognised among the top Chemistry departments in the country, which reflects the very hard work of our staff in delivering the best possible experience for our highly engaged and talented students."

Dr Glenn Hurst gives keynote lecture in Dublin



On Wednesday 12 June, Dr Glenn Hurst was invited to give a keynote lecture at the Public Sector Digital Marketing Summit at The Helix in Dublin. The summit is a digital marketing and social media conference for government, public sector and non-profit organisations. Glenn took to the same stage where 'Ireland's Got Talent' is recorded to present his lecture on 'Pushing the Boundaries of Social Media for Student Engagement'.

Glenn outlined the inspirational social media work of academic and administrative staff within the department that formed a crucial platform for him to develop new ways to teach students using social media. Glenn also discussed the research-led approach he takes to sharing chemistry, particularly work from the Green Chemistry Centre of Excellence. The event was an excellent opportunity to network with and share ideas about using social media in new ways across a multitude of organisations.

The Roger J Mawby Demonstrating Awards



This year's Roger J Mawby Demonstrating Awards took place on 24 June, along with our annual drinks reception to say a big thank you to all our GTAs / Demonstrators for their hard work throughout the academic year.

Last year, the name of our awards was changed to reflect a generous bequest made in memory of Roger Mawby, one of the founding academic staff members of the Department of Chemistry and an inspirational teacher. Roger gave detailed and engaging lectures, frequently using chemical demonstrations to illustrate important concepts in transition metal chemistry and catalysis. In addition, he gave stimulating and challenging tutorials that allowed students to develop and build their understanding of chemistry.

The Roger J Mawby Demonstrating Prize is now awarded to up to six students each year to reflect Roger's interest in research and teaching.

All GTAs make a valuable contribution to undergraduate teaching, but there are also those that go above and beyond the requirements of the role, and these awards seek to acknowledge this. Nominations and comments were sought from Teaching Labs staff, course organisers (practical and maths) and undergraduates via the Staff-Student Committee reps. Winners were identified by a selection panel of staff involved with undergraduate teaching and demonstrating.



L-R: Gill Mawby, Chris Maddocks, Kirsten Hawkins, Richard Douthwaite, Jordan Herod, Mark Dowsett and Robin Brabham

Congratulations to the winners of the 2019 Roger J Mawby Demonstrating Prize:

Robin Brabham, Mark Dowsett, Kirsten Hawkins, Jordan Herod, Jenny Lewis and Chris Maddocks.

Awards were presented by Richard Douthwaite, Chair of the awards panel and Gill Mawby who attend the event and shared some of her memories of Roger and his time at York. Barry Thomas also paid tribute to Roger's contribution to the Department, not just his teaching but the key role he played in improving the admissions process and the subsequent successful increase in student numbers.

Richard thanked all of our GTAs, course organisers and teaching labs staff for their valuable contributions throughout the year. A big thank you also goes to Abby Mortimer who once again made the beautiful trophies, this year celebrating the 150th anniversary of the periodic table. Many thanks to everyone who attended, and particularly to Gill Mawby.



Chemical Interactions: Careers Seminar from Dr Seishi Shimizu

In a recent seminar entitled *The Ups and Downs of a Globe Trotting Troublemaker*, Dr Seishi Shimizu gave a fascinating talk about his early career and the challenges he faced, both professionally and personally, from starting his Masters studies in Japan up to his arrival in York. Seishi spoke with honesty, warmth and humour about his experiences which included both struggle and success, and highlighted the importance of being honest and open about the challenges we face in order to preserve our mental wellbeing. Thank you to Seishi for sharing his experiences.



Chemical Interactions: looking for new members

<u>Chemical Interactions</u> is a group within the Department of Chemistry that aims to provide all members of the Department with opportunities to meet other people working and studying here through a variety of informal and social events. We are lucky to receive financial support from the RSC to help towards the running of events. All staff and students are welcome to be involved.

A number of our core members will soon be moving on so we are looking for other people to get involved. We meet once a month to try and ensure a regular calendar of events takes place throughout the year. Previous events include coffee mornings, quizzes, careers talks and international picnics. Anyone in the Department is welcome to be involved. You don't have to commit large amounts of time to lots of events - even a small amount of time is helpful, or even just some ideas.

If anyone would like to be involved in the Chemical Interactions group, or has any ideas / suggestions for future events, please get in touch at <u>chem-interactions@york.ac.uk</u> or come along to our next meeting on Wednesday 3 July, 12pm in C/A132.

Soapbox Science outreach event

On Saturday 8 June, <u>Soapbox Science</u> went out onto the streets of York, as part of York's 2019 "Festival of Ideas". Soapbox Science is a global series of annual public science communication events that bring cutting-edge science to the public, in an accessible, fun, free and un-intimidating way, whilst giving a novel public outreach platform for promoting women scientists. Dr Katie Lamb took part in York's Soapbox Science event this year, out of 42 Soapbox Science events that will occur across 13 countries globally from May to October 2019. Dr Lamb was one of the 12 speakers to discuss their research with the general public, whilst standing on top of soapboxes with only props (no PowerPoint presentations) to aid them during their talks. Dr Lamb talked about her research at the Green Chemistry Centre of Excellence (GCCE), with her talk titled "Carbon Dioxide: The "green" greenhouse gas and why we need it". Despite the rainy weather conditions, Dr Lamb thoroughly enjoyed the event and loved discussing her research with the public, whilst standing on a soapbox in the middle of King's Square.

"I feel extremely honoured to have been a Soapbox Science speaker this year. Not only did I enjoy the whole experience and the chance to discuss my research with the general public, but I also had the amazing opportunity to meet and socialise with some fantastic scientists. I would like to thank the superb and enthusiastic team of organisers and volunteers who made this event so enjoyable. My biggest thanks must go to Amanda Dixon from Chemistry, as she helped me during my talk despite the less than ideal weather conditions. Without Amanda's help, my talk would not have gone as smoothly as it did. I must also thank Jonny Ruffell from GCCE for helping me make my balloon props. I would strongly encourage anyone, who has any interest in outreach and public engagement events, to apply to be a speaker or volunteer for Soapbox Science if the opportunity ever arises in the future. It was an extremely rewarding and enjoyable experience and I hope to be a volunteer at the Soapbox Science event in York in 2020."



Jonny Ruffell @JonnyRuffell



Happy as Lamby @Dr_Katie_J_Lamb @SoapboxScience #CO2 #outreach



The CO₂ balloons may have ended up lying on the floor during Dr Lamb's talk due to the wet weather conditions, but were still useful nonetheless. Amanda Dixon also worked extremely hard to keep Dr Lamb dry during her talk, despite getting soaked in the process.



The fantastic team of speakers and volunteers at this year's Soapbox Science event

Professor James Clark in Brazil



Professor James Clark gave the Keynote lecture at the International Food Tech Forum in Piracicaba in Brazil to an audience of ca. 300 people from industry, academia, farming and government. James' talk which followed an introduction from the Secretary of State for Agriculture, described the opportunities for agriculture and food industries to develop new businesses from exploitation of their by-products and waste. The Forum launched a new Food Tech Hub in Brazil which will seek to maximise their enormous renewable resource potential including 20% of the worlds biodiversity and some of the worlds largest food industries including citrus where York has unique IP on the valorisation of citrus peel using microwaves.

During his visit to Brazil, James also gave invited lectures at Global Green Chemistry Centre ("G2C2") meetings in Rio de Janeiro and in Sao Paulo State. York GCCE PhD student Roxana Milescu also gave talks at these events and is now spending a month working in the labs of Professor Vania Zuin at the Federal University of Sao Carlos looking at the extraction of flavonoids using biobased solvent Cyrene.

Confronting sexual harassment in chemistry

Sexual harassment is certainly not unique to academia. But unlike companies, universities are particularly prone to overlook harassment because of their faculty members' independence. While chemistry hasn't had a sexual harassment case come to national prominence yet, increased attention to sexual harassment in the larger science community is shining a light on the problem. This article has been adapted from *Chemical & Engineering News*, you can read the full article here.

It's clear that sexual harassment is common in academia. A <u>2015 survey</u> of 27 American research universities showed that **62% of female and 43% of undergraduate students experienced sexual harassment. 44% of female and 30% of male graduate students experienced sexual harassment**. For graduate students, the perpetrator was most likely to be a faculty member or adviser, while for undergraduates the perpetrator was most likely to be a fellow student. Genderqueer, gender nonconforming, questioning (TGQN) individuals were even more likely to experience sexual harassment, (75% of TGQN undergraduate students and 69.4% TGQN graduate students).

48% of university students report they have been sexually harassed.

6% of sexual harassment survivors report it.

A <u>2014 survey of field scientists</u>, was one of the first to show pervasive sexual misconduct against scientists doing fieldwork. More than 60% of respondents reported being harassed, and over 20% reported being assaulted. Another recent survey of PDRAs showed that around 700 women and men were harassed out of more than 2,700 who responded. It also confirmed that the majority of postdocs who were harassed did not report it, either because they didn't think it was serious enough to report or because they thought it would make the workplace even more uncomfortable.

In one study that looked at sexual harassment of graduate students, of those who were harassed by professors, 6% reported it, which means 94% did not. Feeling invalidated is among the reasons why a large majority of sexual harassment survivors never report the perpetrator. When there's a power differential, it can be almost impossible for a student to say no. "The professor is writing a letter for them or serving as their research adviser or deciding who will receive travel funding to conferences. It's really hard."

"Neither women nor men should have to accept that sexual harassment is part of the price of admission into a promising career in the chemical sciences."

The Chemistry Department Equality and Diversity Group (EDG) are planning a number of activities around sexual harassment including running a survey. The University is in the process of updating its guidance and reporting procedures and our survey will be launched once this is in place. If you would like to talk to someone about this issue you can contact <u>caroline.dessent@york.ac.uk</u>, chair of the Chemistry Equality and Diversity Group. The University's Guide - what to do if you think you have experienced harassment can be found <u>here</u>.

Mental health and wellbeing tip

As part of our ongoing exploration of Health and Wellbeing, this month a member of the Department of Chemistry has shared with us some anonymous thoughts on how they get outdoors over the summer to improve their health and make the most of our surrounding campus.

"This is the start of the time of year when I start to feel at my best mentally. Unsurprisingly it coincides with the time when there is plenty of daylight, and the weather is such that being outside in the garden, going for a wander or out for a bike ride is a made all the more enjoyable. To make the most of the time of year, I have managed to make myself leave the house earlier in the morning so I can benefit from an elongated cycle commute in (now about 7 miles rather than 2) through the Heslington East campus then onto Fulford, along Rowntree Park and then through the Walmgate Stray to campus (tackling the hill that leads from Biology, going under University Road and up behind Alcuin College to the Science Park is an optional extra if you want to exert yourself a bit more and get the circulation going).

"The bricks on Lakeside Way do not make for the nicest 'road surface' to ride on but the ride on a nice day more than makes up for this. Over the summer last year, the area between Lakeside Way and the lake was planted up as a meadow and it was common to hear skylarks whilst passing through.

"Doing this for most inward commute journeys, along with a slightly more extended but variable detours to get home in the afternoons certainly helps me to get two of the boxes ticked that I need in order to keep myself mentally well; namely exercise, fresh air as well as some time for general contemplation. Additionally, if I'm lucky with the weather then there is the added benefit of some sunshine, and that always makes me feel better in myself."



Photos of Heslington East in summer

Online Department suggestion box



The online Equality and Diversity suggestion box has been extended to be a suggestion box for the whole Department. You can submit your thoughts/suggestions/ideas for general Departmental matters as well as matters relating to Equality and Diversity. You can find the Google form on the intranet homepage or at this <u>link</u>.

York Festival Fringe Family Fun Afternoon 2019: The Wonders of Light



On Saturday 8 June, members of the Physical Chemistry group at the Department of Chemistry joined in on the fun at the York Festival Fringe Family Fun Afternoon on Heslington East, and hosted a series of activities surrounding the Wonders of Light. The event, on the whole, was hugely successful - with over 350 children and parents having participated this year!

The activities included the use of the successful 'Spectroscopy in a Suitcase (SIAS)' kit developed by Durham University; the exploration of the acid-base concept with the help of a red cabbage pH indicator; a spectrometer designed to understand the interaction of light with matter and unravel how spectroscopy can be used to investigate stars and extra-terrestrial matter; and finally, the ignition of the minds of 5-11 year olds with ThinkFun's Beam-Bending Laser Maze Logic Game.

Our activities, funded by the Humanities Research Centre and outreach provisions from Dr Caroline Dessent's Leverhulme Trust Research Project Grant, offered an afternoon of energetic, puzzling, and scientific fun, allowing children and their parents to actively engage in such a wonderful area of chemistry by showing its enlightening application in the real world and in outer space.

Quotes:

"I think my favourite exhibition was the light mirror puzzle maze and the space mission! I really liked it!!!!!!!!"

"The laser game was very cool!"

"It is magical [when the indicator solution changed colour]"



The event underway in the Ron Cooke Hub



L-R: Pete Howe, Michi Burrow, Rosaria Cercola, Natalie Wong and Kelechi Uleanya

Green Chemistry MSc student wins poster prize at ACS National Meeting in Orlando, Florida



MSc Green Chemistry and Sustainable Industrial Technology student, Ahmed AlJameel, has been awarded a Certificate of Merit for his poster presentation at the ACS National Meeting, which took place on 31 March - 4 April in Orlando, Florida.

Ahmed's award winning poster presented his research on "Adsorption of small polarisable molecules on Starbon® materials". Division members judged it to be of high quality in both intellectual merit and presentation style, and also noted that the research actively contributes to the efforts of the Division to better understand and protect the environment.

Ahmed's research project is being carried out in the <u>Green</u> <u>Chemistry Centre of Excellence (GCCE)</u> under the supervision of <u>Dr</u> <u>Vitaliy Budarin</u>. His research will help to develop a better understanding of the adsorption applications of Starbon® mesoporous materials that were discovered at the GCCE 13 years ago.

Ahmed said of his participation in the meeting: "I have gained a broader understanding about challenges and opportunities in chemistry research from all around the world. I am grateful to GCCE staff members and students for all the help and support I received that enable me to achieve this success".

KMS Prize winners



The Department holds an annual competition for the KM Stott Memorial Prize which offers recognition for excellence in scientific research. PhD students in their third year are eligible for nomination by their supervisors. We received 16 high quality nominations from supervisors, nine of whom were shortlisted for interview by the KMS Panel.

Shortlisted candidates were asked to give a presentation on their own research before answering a number of questions on their own work as well as broader research areas. With all candidates delivering a high quality performance, it was a difficult decision for the panel. This year, the panel decided to split the awards into Gold and Silver categories and the following winners were chosen:

Gold

Yann Lie (Duncan Macquarrie, Tom Farmer)

Tom Stephens (Will Unsworth, Martin Fascione, Peter O'Brien

Silver

Kirsten Hawkins (Paul Clarke, Dave Smith)

Jenny Lewis (Simon Duckett)

Nick Yates (Martin Fascione, Alison Parkin)

Congratulations to our winners and well done to all nominees. Thanks also to the KMS Panel chaired by Alison Parkin with Aneurin Kennerley, Terry Dillon and Anne Duhme-Klair.

Other candidates shortlisted for interview were: Mark Dowsett, Freya Squires, Neil Scott and James Rossi Ashton.

The winners will give presentations at the KMS Prize Winners' Seminar on Wednesday 9 October in A101 and everyone is welcome to attend.

New arrivals



Dr Hannah Briers (Green Chemistry Coordinator) and husband Ciaran are delighted to announce the birth of their twin baby girls, Isabel and Erin.

They were welcomed into the world on Wednesday 5 June, each weighing a healthy 6lbs. Mother and babies are doing well.