

Chemistry Update

Newsletter 271, 24th March 2016

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Calendar of Events

Organic Chemistry Research Seminar

Speaker: Dr Stephen Fletcher,
University of Oxford
Date: Wednesday 30 March
Time: 4pm—5pm
Location: A101

Chemical *InterActions* Careers Seminar

Speaker: Prof. Sir John Holman
Date: Thursday 31 March
Time: 2pm—3pm
Location: B101

Green Chemistry Seminar

Speaker: Dr Akshat Tanksale,
Monash University
Date: Thursday 7 April
Time: 1pm—2pm
Location: F106

Physical and Atmospheric Chemistry Seminar

Speaker: Dr Detlev Helmig,
University of Colorado
Date: Monday 11 April
Time: 12pm—1pm
Location: WACL Seminar Room

John Holman Kavli Lecture

Date: Tuesday 12 April
Time: 6pm—7pm

RSC Award Afternoon

Speakers: Prof. Shu-Li You,
Shanghai, China; Dr Debra
Wallace, Merck & Co.
Date: Wednesday 13 April
Time: 1-3pm
Location: A101

Chemical *InterActions* Careers Seminar

Speaker: Dr Jonathan Lawson,
Cancer Research UK
Date: Friday 15 April
Time: 12.30pm—1.30pm
Location: B101

Departmental Seminar

Speaker: Prof. Kenneth Harris,
University of Cardiff
Date: Wednesday 20 April
Time: 1pm—2pm
Location: A101

Equality & Diversity Seminar

Speaker: Prof. Lesley Yellowlees,
University of Edinburgh
Date: Monday 25 April
Time: 2pm—3pm
Location: C/B101

Organic Research Seminar

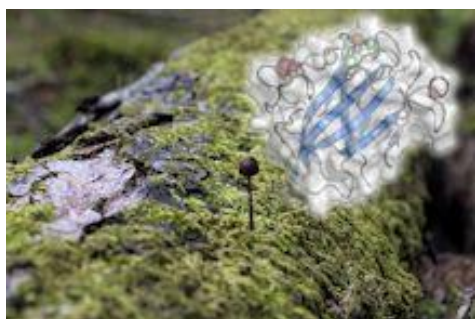
Speaker: Dr Andrew Lawrence,
University of Edinburgh
Date: Wednesday 27 April
Time: 4pm—5pm
Location: A101

Date of Next Issue:

29th April 2016

New Advance Quest for Second Generation Biofuels

Scientists in the Department of Chemistry are part of an international research team that has made a significant step forward in understanding the processes naturally occurring enzymes use to degrade microbe-resistant biomass, a key aim in the development of biofuels.



The research is part of ongoing study of a recently discovered family of enzymes produced by fungi and bacteria, which are able to break down tough cellulose-based materials such as plant stems. Understanding the chemistry behind these natural processes will help scientists to recreate and potentially improve them for industrial purposes, principally the production of biofuels from sustainable sources.

The team, including Professor Paul Walton and Professor Gideon Davies, presented the first published molecular structure of one of the key enzymes (lytic polysaccharide monooxygenases or LPMOs) involved in these processes.



Reported in [*Nature Chemical Biology*](#), the research shows in unprecedented detail how the 'active site' of the enzyme changes when it binds to plant cell wall cellulose, and this knowledge is important in advancing understanding of the reaction chemistry.

Professor Walton said: "LPMOs have overturned our thinking about biomass degradation in biology; they are also essential components in the commercial production of bioethanol from cellulosic feedstocks. This new structure will help chemists and biochemists improve the efficiencies of these important enzymes."

Professor Davies added: "When we can understand structure and chemistry we can improve environmentally-friendly processes for the benefit of all. This work, by a combined European team, gives us unparalleled molecular insight into one of the key reactions catalysed by fungi. It is truly exciting."

The new research resulted from a European consortium project entitled Critical Enzymes for Sustainable Biofuels from Cellulose (CESBIC) involving York and the Universities of Copenhagen and Cambridge, CNRS Aix-Marseille Université, France, Chalmers University of Technology, Sweden, and industrial partner Novozymes A/S in Denmark.

CESBIC (Critical Enzymes for Sustainable Biofuels from Cellulose), collaborative project funded by the European Research Area Industrial Biotechnology network (ERA-IB). LPMO research at York is also funded by the Biotechnology and Biological Sciences Research Council (BBSRC).

Claire Seeley Joins the CIEC Team Working in Royston



CIEC are delighted to welcome a new member to the team. Claire Seeley joins CIEC to deliver the CCI project in the Royston area in partnership with Johnson Matthey.

Claire explains in her own words her extensive primary teaching experience and her hopes for building on the strong links between CIEC, Johnson Matthey and local schools in the Royston area.

“I have been a teacher for over twenty years in a wide variety of contexts including both inner city and rural schools. For me, I feel the best learning is happening when children bring in something from home linked to our explorations in the classroom. That's when I know that science has caught their imagination!

Over the last five years, alongside my classroom practice I have been extremely fortunate to work alongside teachers as a Primary Science Consultant; providing both a wide range of CDP and ITT courses across East Anglia - both through Science Learning Centres and as an independent consultant. I am also a hub leader for Primary Science Quality Mark in Suffolk and am the secretary of the Association of Science Education Primary Committee.

My work as a consultant has included working with a number of Educational charities, writing materials and providing bespoke training courses; working with them to improve their services to schools. Latterly I have been working with industry on various primary science education initiatives, providing advice and support to create materials for use by primary schools. I am really interested in using children's natural curiosity about science to boost their aspirations for the future. I am looking forwards to working with CIEC and learning more about developing meaningful links between industry and education.”

By Claire Seeley, CCI Advisory Teacher for the Royston area

York Chemist Profiled for IWD2016



Professor Pratibha Gai, York chemist and co-director of the [York JEOL Nanocentre](http://www.york.ac.uk/jeol/nanocentre/), has been profiled by Royal Academy of Engineering (RAEng) as part of their celebration of leading women in engineering for International Women's Day 2016. See:

<http://www.raeng.org.uk/policy/diversity-in-engineering/diversity-in-our-fellowship/pratibha-gai>

Johnson Matthey Poster Competition

The Johnson Matthey Poster Competition took place this year on 18th March, and saw 29 of our third year PhD students presenting their work.

The Competition requires participants to display a poster about their research which is scored by a panel of judges who look at presentation, scientific content, and student discussion. The judging panel consists of members of academic staff and PDRAs.

The overall standard of the posters was high as usual, and after careful consideration four winners were awarded £350 to be spent on research activities/items.



Many congratulations to (left to right):

Hope Adamson (Dr Alison Parkin and Prof. Robin Perutz)

Adam Islip (Prof. Peter O'Brien and Dr Peter Karadakov)

Amy Ruddlesden (Prof. Simon Duckett)

Michael James (Prof. Richard Taylor and Prof. Peter O'Brien)

Winners were announced at a departmental seminar in the afternoon, followed by a talk from our guest speaker Dr Martin Partridge from Johnson Matthey entitled "Johnson Matthey and Methanol Technology". Thanks go to Johnson Matthey for their sponsorship of the event, all those members of staff on the judging panel, and all the students for taking part.

Organic Plenary Session, Thursday 17th March 2016



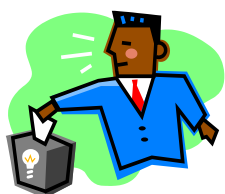
The organic chemistry research group held an excellent plenary session for three final year PhD students last Thursday, demonstrating a wide range of chemistry disciplines ranging from synthetic methodology, to materials chemistry, and biochemistry.

Sarah Chambers began the session with an engaging talk on the application of direct imine acylation in the synthesis of novel azaspirocycles. Dan Cornwell educated the masses on the formation and application of multi-component and hybrid hydrogels. And to round off the session, Tom Sanderson presented the culmination of his studies into siderophore-fluoroquinolone conjugates designed as potential Trojan Horse antimicrobials.

These fascinating talks were punctuated with illuminating and probing questions from the audience, followed by a lively tea and coffee session where the chemistry was discussed further. This plenary session gives testament to the quality of research that happens at the University of York. It was a true pleasure to chair the session. Great job guys!

- Dr. John T. R. Liddon, Postdoctoral Research Associate working for Prof. Richard Taylor

Suggestion Box



Reminder: There is a online anonymous suggestion box for staff under the Equality and Diversity section of the intranet: <http://www.york.ac.uk/chemistry/internal/> and a physical suggestion box located outside Room K167 for YSBL staff. Suggestions from staff are most welcome. All suggestions are discussed by the appropriate departmental committee.

O'Brien Group News

Sabbatical Research Visit at the University of Utah, Salt Lake City, February / March 2016



As part of his sabbatical, Professor Peter O'Brien recently spent two weeks visiting Professor Matt Sigman and his group at the University of Utah in Salt Lake City. Matt's group were particularly welcoming and Peter attended several group and sub-group meetings, trying to identify collaborative opportunities. In particular, Peter identified several possibilities for using the Sigman group's parameterisation approach to physical organic chemistry. Peter also gave a lecture during his stay which was especially interesting as it was punctuated by numerous questions from the audience! If you get the chance, Salt Lake City is well worth a visit – a unique place surrounded by 10,000 foot mountains and home to lots of Mormons.



24th International Symposium on Gas Kinetics and Related Phenomena

17th - 21st July 2016, University of York, UK

24th International Symposium on Gas Kinetics and Related Phenomena
17th - 21st July 2016 at the **UNIVERSITY of York**

Invited Speakers:
Polanyi Medalist
• James G. Anderson (Harvard)
Benson Lecture
• Jürgen Troe (MPI Göttingen)
Plenary Speakers
• David Glowacki (Stanford and Bristol)
• Mark Blitz (Leeds)
• Annele Virtanen (Univ. East Finland)
• Luc Vereecken (Forschungszentrum Jülich)
• Lucy Carpenter (York)
• Adam Trevitt (Wollongong)
• Alison Tomlin (Leeds)
• Claire Vallance (Oxford)

Contributions welcome on a range of topics:
• reaction dynamics; elementary processes
• atmospheric and combustion chemistry
• modelling of complex systems
• nanoparticles & aerosols; experimental methods

Important dates:
• Abstract submission - Tuesday, 5th January 2016
- Friday, 15th April 2016
• Early bird deadline for registration payment
- Monday, 4th April 2016
• Registration deadline
- Friday, 1st July 2016

For more info www.gk2016york.com
Contact local organisers via GK-2016@york.ac.uk

Logos for the University of York, the National Centre for Atmospheric Science, and the GK2016 York 2016 logo are also present.

Many of you may have noticed advertisements for GK2016 York on the electronic notice boards over the last few months – here are a few more details. The Symposium has a long and distinguished history dating back to the inaugural meeting in Swansea, UK in 1967. Since then, the conference has typically alternated between venues in UK / Ireland and Europe. It traditionally provides an open forum for the presentation and discussion of the latest research on a wide range of

topics related to chemical kinetics. Experimental and theoretical presentations are welcome, covering diverse topics such as reaction dynamics; elementary processes; atmospheric, interstellar and planetary chemistry; combustion; modelling of complex systems; nano-particles and aerosols and experimental methods.

Sessions will comprise of invited plenary talks from internationally renowned experts (see flyer) followed by a number of talks selected from abstract submissions, prioritising presentations from young scientists. There will also be two poster sessions during the conference.

The conference traditionally starts with the Benson Lecture (this year given by Prof. Jürgen Troe, MPI Göttingen) and finishes with the award of the Royal Society of Chemistry's prestigious Polanyi Medal for outstanding contributions to the field of Gas Kinetics and Related Phenomena (this year's recipient being Prof. James Anderson, Harvard), followed by the Polanyi Lecture and Gala Dinner at the National Railway Museum.

We are extremely honoured to have been chosen to host such a distinguished international symposium in York and it would be great to have as many people from the department attend. If you need more information please see the website (<http://www.gk2016york.com/>) for more details or contact either Dr Andrew Rickard or Dr Terry Dillon for more information.

Hope to see you there!

Andrew and Terry

Chemical *Inter*Actions Networking Event

Leonie Jones facilitated a networking event for staff and students on Wednesday 9th March. The event was based on a previous session, organised by Sue Couling and Kirsty Penkman which was very successful and is planned to become a regular event.

Participants hoped to *“learn how to get a conversation started”*, *“learn tricks for speed-networking”* and also *“get to know others from the Department”*.

Everyone developed an ‘elevator pitch’ - a concise and interesting introduction into themselves and their research. They then had an opportunity to give their pitch and receive feedback in order to perfect their pitch. The exercise was followed by a discussion on what makes good (and bad!) networking and strategies for breaking the ice. In particular the idea that good networking should be about listening and finding ways to help people in order to build meaningful collaborations rather than just talking or collecting people.

In the final activity, Speed-Networking/Problem Solving, participants got to put their elevator pitch and listening skills into practice by sitting in rows and introducing themselves to their opposite neighbour, explaining a problem they would like advice on. Their partner then gave ideas and suggestions before moving along and repeating the exercise with the next person. The discussions were really lively and some pairs were having such good discussions that they were reluctant to move on!

It was really nice to see a number of conversations restart after the event. A number of the attendees were fairly new to the Department and it was great to hear everyone getting to know each other and discussing their research ideas.

The feedback from the session was really positive - *“Very good thank you”*, *“Learnt more than I expected to!”* and *“The speed networking exercise is very useful for brainstorming ideas and breaking the ice to meet people in the Department”*. From next year the networking session will be embedded into the iDTC course and held as a regular event.



‘Speed-Networking’ and problem solving

Chemical *Inter*Actions: Dates for Your Diary

The Chemical *Inter*Actions group has some more talks planned for the coming weeks, starting with Professor Sir John Holman on 31st March who will be talking about his career in science education in his talk "*A Career Teaching Chemistry to Young and Old*".

John will be speaking at 2pm in B101 on Thursday 31st March. Tea and cake provided, all welcome to attend.

Other speakers lined up for the Summer term are:

Friday 15th April: Dr Jonathan Lawson, Cancer Research UK

Tuesday 17th May: Professor Elena Rodriguez-Falcon, Department of Mechanical Engineering, University of Sheffield

To be arranged: Dr Calvin Smith, University of Reading; Dr Charlotte Jones, DEFRA

Keep looking for posters around the department for more details.

If you would like to be involved in Chemical *Inter*Actions, please get in touch. As members of the group move on to new things, we need to replace them so always keen for more people to get involved. Get in touch at chemical-interactions-group@york.ac.uk

Baby Zak Muschamp



Congratulations to Lyndsay Muschamp (CHyM Administrator) who welcomed baby boy Zak (left) into the world at 2.30am on 28th February, weighing 7lb 6oz.

Mum and baby are doing well.

New Starters



Dr Simon Tanley, YSBL Research Technician

Room: B/K234; Extension: 8268; Email: simon.tanley@york.ac.uk

David Whitehead, IT Support Officer

Room: A138; Extension: 4186; Email: david.whitehead@york.ac.uk

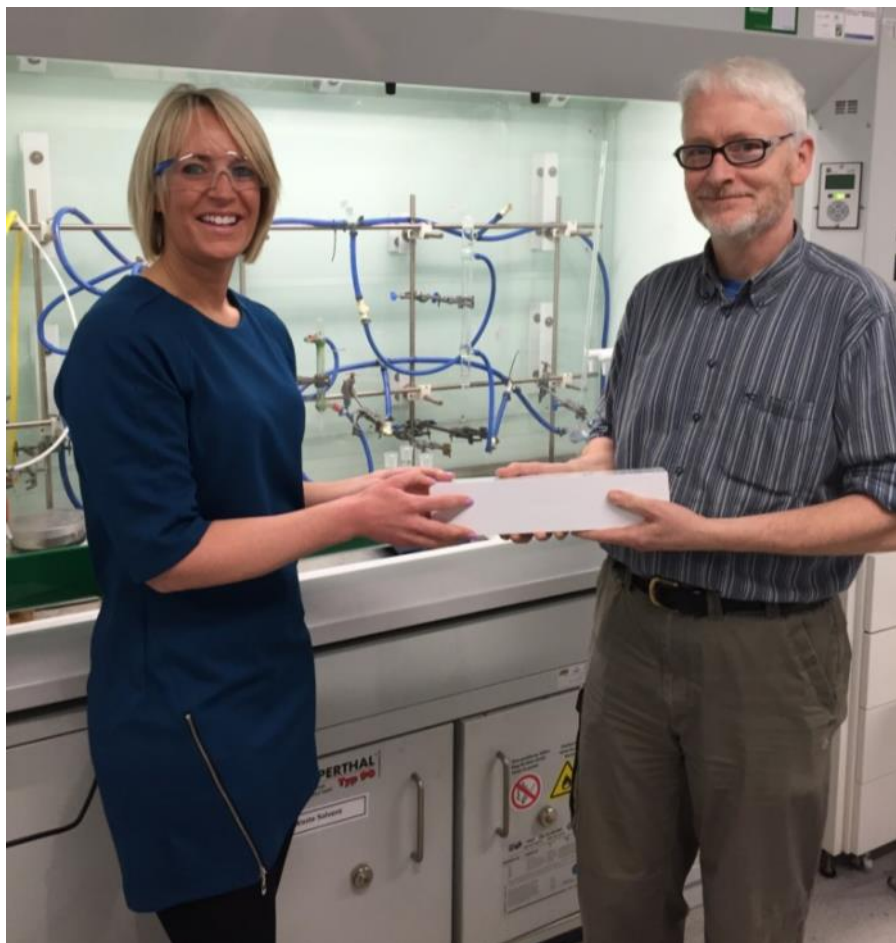
Lucy Milner, PDRA with Dr Jason Lynam

Room: E114; Extension: 2538; Email: lucy.milner@york.ac.uk

Paul Elliott Wins Apple Watch

Congratulations to Paul Elliott, Chief Technician at the Green Chemistry Centre of Excellence (GCCE), who has finally been presented with his Apple watch after winning the Asynt Lab Innovations Draw last year.

Paul has been a loyal customer of Asynt's for many years. Asynt's Kerry Elgie commented "We're now all waiting with baited breath to see how many calories he burns each day, how often he checks his wrist for emails and texts and whether he uses the inbuilt GPS for his bike journey into the University each morning."



Left: Asynt's Kerry Elgie presenting Paul with his Apple watch

A Card and Letter from Tim Elsworth

10 Littlegarth,
Nether Poppleton,
York,
YO26 6NH.

March 10, 2016

Dear all

Many thanks for all the beer, money and other things you gave me on my retirement. Since I retired I don't seem to have stopped with a couple of concerts and other meetings. We took the model railway from the Nursery in Poppleton to the model railway show in Pudsey last Saturday which meant getting up at 05:30!

My diary seems to be lighter for the next few days so hopefully I shall be able to relax and put my feet up. I shall be popping in from time to time to see how you are getting on.

All the best

Tim Elsworth



Rush hour in Beamish
1 September 2012 - Tim
Elsworth. For more see
<http://tinyurl.com/8ma>
v7h6

*Thank you
from
Tim Elsworth*



Chemical *Inter*Actions

Social Group Open to All in the Department of Chemistry

Continuing the series of career-related seminars about career paths and experiences.

The talks are aimed at a wide audience rather than being research specific.

**Professor Sir
John Holman
RSC President**



**Thursday 31st March
2pm in B101**



“A Career Teaching Chemistry to Young and Old”

John has taught chemistry continuously for nearly 50 years, first in secondary schools, more recently in university. During that time he's had many other great opportunities as a headteacher, government adviser, founder of the National Science Learning Centre, educational researcher, writer and lecturer, both here and overseas. But teaching chemistry is what he likes doing best.

Tea and cake provided

Email chemical-interactions-group@york.ac.uk

www.facebook.com/ChemInteractions

