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Calendar of Events

Promotions Seminar
Date: Tuesday 4 September
Time: 1.30pm
Location: A122

Open Day
Date: Saturday 29 September
Time: 9.30am—4pm
Location: TBC

CV and Interview Workshop for Research Students and Staff
Date: Wednesday 12 September

Organic Seminar
Date: Tuesday 18 September
Time: 2pm—5.30pm
Location: A101

Academic Staff Forum
Date: Wednesday 19 September
Time: 12pm—5.30pm
Location: Ron Cooke Hub

KMS Winners Seminar
Date: Wednesday 3 October
Time: 3pm
Location: A101
All welcome

Research Committee (studentships)
Date: Thursday 27 September
Time: 2pm—5pm
Location: A122
The Chemistry Department (University of York) held the first Open University summer school in August 1982. The residential school was part of the third level course S341 Photochemistry: Light, Chemical Change and Life. Soon it was joined by the CHEM777 summer school in 1989. CHEM777 was a discipline-based summer school for S343 Inorganic Chemistry and S344 Organic Chemistry: A Synthesis Approach. S342 Physical Chemistry: Principles of Chemical Change replaced S341 in 1996.

Since 2006, three residential school modules were introduced: SXR342 Physical Chemistry: Measurements of Chemical Change, SXR343 Transition Metal Chemistry: Synthesis and Structure, and SXR344 Organic Synthesis: Strategy and Techniques. Students have enjoyed their one week laboratory experience at York. Many students attended all three schools and found the experience immensely valuable.

The Department of Chemistry (HoDs: Prof. Robin Perutz, Prof. Paul Walton and Prof. Richard Taylor) always welcomed the OU summer schools and our students each year. Excellent facilities were provided and well-organised, which has been a tremendous help to us knowing that laboratories would run smoothly.

All these schools were supported by many dedicated York Chemistry Department staff: David Goodall, John Vernon, Dave Bettany and David Lindsey (all retired) and in recent years, Duncan Macquarrie, Helen Burrell, Phil Helliwell and Heather Fish, and a team of highly skilled and hard-working technicians. Several York academic and research staff also participated in the schools as tutors and demonstrators.

In fact, York Chemistry Department’s long association with the OU summer schools started before 1982. Whilst he was a lecturer at the OU (1975-79), Richard Taylor developed the honeybee Queen substance synthesis in the organic project and contributed to the nickel-phosphine complexes experiment for the inorganic project. These experiments have been modified and continued throughout the years. Richard also taught at the York Summer School before he moved here permanently.

It was appropriate, therefore, that the Current Head of Chemistry at the OU (Prof. Peter Taylor, right) presented the current Head of York Chemistry (Prof. Richard Taylor, left, no relation) with a set of beautifully designed plates to commemorate 30 years of the OU at York.
Dr Marek Brzozowski Awarded £1.8m from MRC

Dr Marek Brzozowski from the Structural Biology laboratory has been awarded £1.8m to investigate interplay between diabetes and cancer.

This is an interdisciplinary and international programme that targets the key molecular contacts at the insulin receptor complex. The programme has a two-tier approach combining fundamental and applied research. In the very long term we consider that the research will be relevant to experimental and even clinical intervention of both metabolic and mitogenic (cancer-related) pathways.

Human insulin and Insulin-like Growth Factors I and II (IGF-I/II) are closely related protein hormones. They acquired separate biological functions, with insulin becoming a key metabolism controller, while IGF-I/II are major growth factors. When released in the blood the hormones bind, tightly and specifically, to their very homologous receptors, (Insulin Receptor (IR) and IGF-1R respectively).
All the analogues used in treatment of diabetes are still based on the inactive/storage forms of insulin that must be different than in complex with the receptor. Insulin and IGFs cross-bindings with their receptors imply insulin not only in metabolic regulation but also in cell proliferation and growth. As IGF-I/II are also cancer-specific growth factors the identification of pure 'metabolic' and 'cell growth' structural signatures of insulin and IGF-I/II has a fundamental importance not only for the understanding of the biology of these hormones, but also for new, effective treatments of diabetes and cancer.

This is a multidisciplinary programme that employes structural biology (YSBL-York, Walter and Eliza Hall Institute of Medical Research, Melbourne (WEHI)), cell signaling (University College Cork), organic and protein chemistry (Institute of Organic Chemistry and Biochemistry of Academy of Sciences, Prague (IOCB)).

One of the ‘side-effects’ of this Programme will be a web-based York Centre of Insulin Research that will accumulate and maintain all current and future structural data about insulin/IGFs systems. Their format will be easily accessible for public, students and medical professionals invigorating progress towards more efficient treatment of these diseases.

**Atmospheric Chemistry Project on BBC News**

Atmospheric chemists from the University of York's Department of Chemistry have been involved in ClearFlo, a project to monitor pollution in London and the skies above it. Dr James Lee is one of the leaders of the project.

A report on the project was broadcast on the BBC News and on the [BBC News website](http://news.bbc.co.uk).

**A Message from Alice & Simon**

Thank you very much to everyone who signed our card and contributed to our present.

Alice and Simon
There was a time in February when we wondered if we would be able to run the Salters’ Chemistry Camps this year. We had had to cancel the Salters’ Festival of Chemistry in the spring, as we didn’t have access to the labs, so we were determined not to disappoint any more young people. For a week in August we welcomed fifteen year old students from all over Britain and Ireland to our two Chemistry Camps, we were impressed to see that over 70% of these young people were girls – the Athena SWAN message seems to be getting out there.

It has been a much bigger challenge than usual. We were asked to take 60 students per Camp (instead of the usual 50). Added to that, the gallant team of technicians had to operate without a prep room and without lab one. We had to contend with people coming and going to fit out the refurbished lab – with the associated noises of hammering and drilling. Through all this, the lab staff, lead by Sue and Charlotte, kept smiling and delivered all the equipment and chemicals with huge efficiency. They were ably assisted by a new member of the department, who will be joining Prof. Simon Duckett’s group in October to start her PhD. Kate Appleby spent 3 weeks in the teaching labs helping to prepare everything for the Camps and putting everything away afterwards.

We also had 10 of our undergraduates who volunteered to act as demonstrators in the labs, and as guides and mentors for the Chemistry Campers. Ben Aspin, Michaela Houchen, Maria Inam, Ayesha Kukaswadia, Charlie Parker, Heather Powell, Jacqueline Smith, Magdalene Teh, Ted Thornton and Mark Tooley did an excellent job and were great ambassadors for the department. Mark had attended a Chemistry Camp at York as a year 10 student back in 2007 and wanted to give something back.

But it is not just people helping in the labs that made the Camps such as success. Lisa Mayer organised coaches, ghost walks and refreshments. And Tim was there come rain or shine to photograph the campers for posterity! My thanks go to everyone for making the Chemistry Department at York such a friendly, welcoming place for our young visitors.

Annie Hodgson

Girl Power!
Kate Appleby shelters Tim so that he can take the group photograph

Charlotte scales the heights

A happy camper!

Discovering titrations for the first time
CIEC Promoting Science Wins Prestigious American Chemical Society Award

CIEC Promoting Science and the Green Chemistry Centre of Excellence, both working within the University of York’s Chemistry Department, have been selected as one of the four winners of the 2012 American Chemical Society’s Award for Incorporating Sustainability into Chemical Education. The American Chemical Society (ACS) is the world’s largest scientific society with over 160 000 members. The award seeks to ‘recognise those individuals and organisations that have made exemplary contributions to the incorporation of sustainability into chemical education’.

David Waddington accepted the prestigious sustainability award at the 243rd ACS Annual Congress in San Diego, California earlier this year.

“I am delighted with this award. It is an accolade which reflects on the excellence of the teaching and research on green issues by the many groups within the Chemistry Department at York.”

Particular attention was given to the CIEC Promoting Science teaching resources and Children Challenging Industry teaching programme; the primary school resources under scrutiny included Renewables Don’t Run Out, Plants for Products and Feel the Force which explores the recycling process for a range of materials. The recently published new edition of the post-16 publication The Essential Chemical Industry also attracted keen interest.

The undergraduate courses, Centres of Excellence, focussed teaching and resources to demonstrate green values from primary age through to undergraduates and beyond, all demonstrate the breadth of understanding of green issues at York.

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Roy Noakes’ Leaving Present

The glass and mechanical workshop made a glass ship in a bottle for Roy Noakes' leaving present.
A careers event for research staff and students was held on Friday 27 July. The theme of the day was the importance of sustainability in chemical industries and the need to be aware of the consequential pressures on business when applying for jobs.

The afternoon started with a talk from Paul Ravenscroft, a former director of GSK and now one of our external advisors. Paul told us about GSKs strategies to green the pharmaceutical process and how this has to be balanced with the cost/benefits and the impact of tight regulation.

This was followed by short presentations and a question and answer session with David Cantrell (from Lonza), Claire Saville (from Infineum) and Raymond Hale (from Veolia). They told us that businesses are looking for “self-starters” – people that can take a project outline and go away and work out a realistic answer without detailed supervision. They need people who are aware of the business impact – for example it is no good having a fabulously sustainable product if it is not saleable.

Other key skills include:

- Good people management, the ability to influence people at all levels and good team working.
- Technical expertise e.g. good formulation or lab skills and the ability to collaborate across disciplines in diverse teams.
- Problem solving e.g. how to get answers from a test (which could be very expensive to set up)
- Efficient communication and presentation skills.
- Able to work to different deadlines and have good time management skills

Some Industries also have substantial outreach teams working with local communities, schools or other business so experience in education communication is highly valued.

The panel emphasised the importance of taking the time to understand the company when applying for jobs. CVs should be carefully tailored to each application (generic CVs are easy to spot). Tell them what attracted you to the company and what you have to bring to the role – what makes you stand out! Another good tip is to send your CV as pdf to make sure your carefully formatted CV is not spoilt by a slightly different operating system. You also need to be able to summarise your project efficiently.
Another key fact is that only 25-30% of private industry roles are advertised! So knowing how to tap in to this hidden market is important. Work experience is often a very effective way of getting yourself known. Alternatively you can try sending speculative applications and building up your network of contacts.

Our second Talk was from Fabien Deswarte who works for the British Government Science innovation network in Paris. Fabien told us there are over 15,000 scientists and engineers in government roles and a wide range of organisations including the research councils. The Science innovation Network facilitates international collaboration and research partnerships, UK access to international funding and investment.

Finally Hannah Wright and Helen Grey told us about careers opportunities at the RSC and the many ways that the RSC can help with career development.

Thanks to all our speakers. If you would have an outstanding question for any of our speakers please let me know.

Sue Couling
Stepping up to Chemistry

In collaboration with our students we have produced a new online resource for pre-university students

Stepping up to Chemistry is a web resource aimed at pre-university students, prior to starting their course here at York. Developed in collaboration with our students, this material is designed to help students with topics that are generally found to be the most difficult (based on student feedback) and to ease the transition to university. We also help it will prove useful to our students during their first year of study.

Topics include quantitative chemistry, laboratory practicals, atoms, ions and quanta, and energetics. For each topic, alongside an introduction, there are sections that include a summary of key points, useful texts and web resources, worked examples, and practice problems with outline answers, including video clips showing walkthroughs of selected answers.

We thank our undergraduate chemists who helped develop this project, in particular, Katie Lee who instigated the project and Elizabeth Wilcock who expanded the material and added to it to the web. Katie developed the material as part of a project in the third year of her BSc degree, while Elizabeth was awarded a student internship to further develop the project over the summer between the second and third year of her Chemistry degree.
Accelerating the speed and increasing the number of experiments is a critical factor in research and development. Aligned within the completion of the Dorothy Hodgkin Research Building (housing approximately 100 researchers; £6.5 million investment) the University of York’s Department of Chemistry and Swiss-based Chemspeed Technologies have formed a collaborative partnership to speed up R&D. Chemspeed has invested about £750 K by providing two robotic platforms.

Chemspeed Technologies, a leading provider of high-throughput and high-output research and development workflow platforms, and the Department of Chemistry of the University of York, have teamed up to modernise the way chemical reactions are screened and evaluated. The fully automated platforms for parallel synthesis, Synthesizer SLT-II and Multiplant Prores, enable the academic groups to increase their number of experiments to find faster and more effective solutions to demanding challenges in the area of synthetic chemistry and catalysis. Furthermore, the higher output can leverage the success rate in finding new, greener and cleaner synthetic methods to valuable chemical intermediates, which are important drivers in research, not only for academics but also in industry.
The hi-tech robotic equipment which is designed and built by Chemspeed, will be housed within the new research facility of the Chemistry Department. Dr. Jake Grace (Workflow Architect at Chemspeed) will be based predominantly in York, contributing his technical expertise to the research programmes. Jake will interact closely with the research groups in York to identify mutually beneficial collaborative opportunities, which have the potential to transform productivity and diversify the portfolio of research projects being carried out at York.

If you'd like more information about this topic, please contact Dr. Jake Grace (Chemspeed) – jake.grace@chemspeed.com or Professor Ian Fairlamb (York) – ian.fairlamb@york.ac.uk

Protein Crystallisation Robot Highlighted as BBSRC Flagship Equipment Grant

BBSRC evaluated their previous Research Equipment Initiative grants and the York Chemistry bid and grant for a protein crystallisation robot was selected as one of three BBSRC flagships in terms of collaboration with UK industry and proper and most desired use of these funds.

This is listed on one of the main BBSRC web pages:
http://www.bbsrc.ac.uk/research/impact/uk-equipment-manufacturers.aspx

with a link to more detailed information available at:
http://www.bbsrc.ac.uk/publications/impact/equipment-manufacturers.aspx

Green Chemistry News

Professor James Clark gave the Plenary lecture at the Environment and Green Chemistry session at the Fall ACS meeting in Philadelphia. He then went to the IUPAC Green Chemistry conference in Iguacu, Brazil where he was joined by Helen Parker. James gave the Plenary lecture on “From waste to wealth using green chemistry” and Helen gave a talk on her research on her KMS prize-winning research on "Grow your own catalyst: natural solutions to the challenge of critical elements". James then went on to Rio for discussions at the Federal University including meeting two people who want to come to York on the Science without Frontiers scheme.
The controls for the data projectors in A101 have been upgraded. They are controlled from a touch screen and are more intuitive than the previous controls. Instructions for the new controls are available on the Chemistry intranet at:

http://www.york.ac.uk/chemistry/internal/staffinfo/workchem/av/ava101/

If anybody would like to have a demonstration of the new controls, could they contact Tim Elsworth or Adrian Whitwood.

Crisps for Roy

The Technician's Tea Club gave Roy a box of crisps on his last day. Roy generally had crisps with his morning coffee, the number of packets giving an indication of how the day was progressing. The Tea Club will be deprived of large revenue source with Roy's retirement.