



Chemistry Update

Newsletter 255, 28th November 2014

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Calendar of Events

UCAS Interview Afternoons

Date: 2, 4, 8, 11, 15 & 16 December

Time: 12.45pm—4pm

Organic Seminar

Date: Wednesday 3 December

Time: 4pm—5.30pm

Location: A122

Staff Forum to discuss Staff Survey Results for ART staff

Date: 9 December

Time: 9.30am

Location: A101

Staff Forum to discuss Staff Survey Results for Support staff

Date: 11 December

Time: 9.30am

Location: A102

Annual Review followed by Mince Pies

Date: Tuesday 23 December

Time: 2pm—3pm

Location: A101 followed by A122

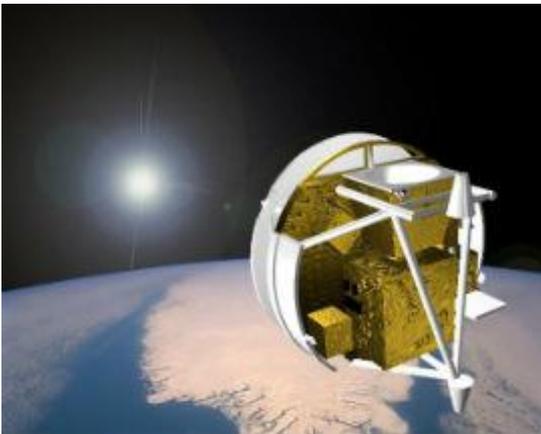
**Date of Next Issue:
19th December 2014**



Ozone Destroying Substances on the Rise - But Montreal Protocol on Track

An international team of scientists, including Peter Bernath, Emeritus Professor with the Department of Chemistry, have reported a recent increase in atmospheric hydrogen chloride (HCl), an ozone destroying substance.

The findings, reported today in the journal *Nature*, are based on measurements by a network with stations in Spitsbergen, Greenland, Sweden, Switzerland, Japan, Tenerife, Australia and New Zealand. These are backed up by satellite observations and model simulations. The increase in HCl concentrations was only observed in the Northern Hemisphere, while in the Southern Hemisphere HCl continues to decrease.



ACE satellite in orbit (credit T. Doherty, Bristol Aerospace)

The team found that the increase of HCl levels is related to a temporary but prolonged anomaly in atmospheric circulation, which is changing the balance between chlorofluorocarbons (CFCs) and their breakdown product HCl.

The research was led by the University of Liège, Belgium, and involved scientists from the United States, Japan, Germany, Australia, New Zealand and Canada, as well as the Universities of York and Leeds.

The study demonstrates that this unexpected increase has occurred in the Northern hemisphere since 2007 and that the circulation change has led to a temporary reversal in the decline of HCl which would be expected under the Montreal Protocol.

The Montreal Protocol is an international treaty for the protection of the ozone layer which banned the production of major ozone-depleting substances worldwide. By explaining the HCl increase through a change in circulation and refuting the possibility that rogue emissions of ozone-depleting substances are at play, the study confirms that the Montreal Protocol remains a success and that the ozone layer will likely fully recover during the second half of this century.

Professor Bernath provided data from the Atmospheric Chemistry Experiment (ACE) satellite mission which confirmed ground-based measurements of an increase in atmospheric hydrogen chloride. The satellite data also indicated that the HCl increase was in the lower stratosphere.

Professor Bernath said: "Our observations do not challenge the general view that the Montreal

Protocol is working. They rather show that atmospheric variability and perhaps climate change can significantly modify the path towards full recovery. It will be a bumpy ride rather than a smooth evolution.

“The recovery of ozone-depleting chemicals in the atmosphere is a slow process and will take many decades. During this time the ozone layer remains vulnerable.”

The ozone layer shields the biosphere from harmful UV radiation and is an essential part of the climate system. Solving the problem of ozone depletion depends on the success of the Montreal Protocol, which has essentially banned the production of chlorofluorocarbons (CFC) and similar compounds globally. These substances are responsible for the ozone depletion observed over the last 30 years. Thanks to the Montreal Protocol, their atmospheric burden has decreased during the last decade and scientists are optimistic that ozone levels will fully recover during the second half of this century.

Professor Paul Walton one of the RSC 175 Faces of Chemistry

Professor Paul Walton, chair of bioinorganic chemistry, investigates the structure, spectroscopy and reactivity of metal ions at the active sites of enzymes, also known as LPMOs. Gender equality is an issue that Paul takes seriously, and he has spoken on diversity issues on both national and international stages including the national headquarters of CNRS in France.



Paul has now been chosen as one of the Royal Society of Chemistry 175 Faces of Chemistry, which is aimed at highlighting and celebrating the diversity of the individuals, both past and present, who have helped to shape chemistry and science as a whole.

[Paul's faces of Chemistry page](#)

[Paul Walton's York web page](#)

Suggestion Box



Reminder: there is a Suggestion Box located next to the pigeon holes in the foyer of A Block and one outside Room K167 for YSBL staff. Suggestions from staff are most welcome. All suggestions are discussed at the departmental communications meeting.

Babatunde Okesola one of the RSC 175 Faces of Chemistry



Chemistry PhD student, Babatunde (Tunde) Okesola, has also recently been named as one of the RSC's 175 Faces of Chemistry. Tunde joined the Department in February 2012 to carry out an MSc by research with Professor Dave Smith. Following a successful first year, with the support of a Wild Fund Scholarship, Tunde transferred into the second year of a PhD. Working with Dave on supramolecular hydrogel, he aims to harness the power of supramolecular interactions to assemble novel small molecules into hydrogels. For his research, he has been awarded the Kathleen Mary Scott prize by the University of York and in 2013 recognised as a 'Human of York.' His works have also been published in reputable journals.

Read more about Tunde's experiences:

<http://www.rsc.org/diversity/175-faces/all-faces/babatunde-okesola-0>

MERRY
CHRISTMAS



*from
ChemSoc!*

Free refreshments inc.
mince pies! Chance to
mingle before the
holidays, with a raffle for
presents!

**Wednesday Week 10
C/A/102
2.30pm onwards**

New Starters



Alison Smith, temporary Administrator in the Undergraduate Admissions Office, relating to the Natural Sciences Degree Course which starts in 2015.

Ext: 2545/5899, Room: DS/111 (Chemistry Hub), Email: alison.smith@york.ac.uk

Dr Marvin Shaw has returned to the Department, working on the NCAS Q-TOF instrumentation project in the Atmospheric Chemistry Group.

Ext: 2565, Room: G116 (WACL Building), Email: marvin.shaw@york.ac.uk

Juliet Borgia, Research Support Technician, working in YSBL

Ext: 8268, Room: B/K234, Email: juliet.borgia@york.ac.uk

The Bruce Group welcomes Muhammad Tariq who is working in the group until the end of March next year.

RRB-11 in York



11th International Conference on
**Renewable Resources
and Biorefineries**
3-4-5 June, 2015 - York, UK



UNIVERSITY of York



We are pleased to announce RRB-11, the 11th International Conference on Renewable Resources and Biorefineries, which will take place in York, UK on 3 - 5 June 2015. Members of the Green Chemistry Centre of Excellence (GCCE), Biorenewables Development Centre (BDC) and Centre for Novel Agricultural Products (CNAP) form the local organising committee.

Delegates from university, industry, governmental and non-governmental organizations and venture capital providers will present their views on industrial biotechnology, sustainable (green) chemistry and agricultural policy related to the use of renewable raw materials for non-food applications and energy supply.

The conference further aims at providing an overview of the scientific, technical, economic, environmental and social issues of renewable resources and biorefineries in order to give an impetus to the biobased economy and to present new developments in this area.

Based on the previous RRB conferences, this conference is expected to welcome about 300 international participants from over 30 countries.

Departmental Chromatography Service: Gas Chromatography and HPLC - D127

A number of research groups have very kindly donated their under-used chromatography instruments to the Department to help create a new Departmental Chromatography Service; many thanks to Richard Douthwaite, Peter O'Brien and Dave Smith for their donations! Although still in start-up phase, the service now welcomes all staff and research students. The idea of the service is that anyone can be trained how to use a particular instrument, then they will be able to book a block of time to analyse their samples as required. One GC and one HPLC will be set aside for quick analysis as well, for example, one GC has a number of pre-set methods that will give you very quick results within 7-8 minutes.

The service is lucky to have a Waters HPLC capable of running analytical and prep scale samples, with UV and ELS detectors, as well as an analytical scale Shimadzu Prominence HPLC (also with UV detection). It is planned that one will run normal phase and the other reverse phase, although this can be changed depending on demand. Both HPLCs have autosamplers.

Both the GCs are Agilent HP6890s with FIDs. At the moment one has a non-polar, general purpose DB-5ms phenyl arylene backbone, and the other has a polar waxy column and can be set up to analyse aqueous samples. Again, other columns and conditions can be used depending on your chromatographic requirements, and again, both GCs have autosamplers.

The service is set up on the first floor of D Block, room D127. For further details or training requests please pop in to the instrument room, or send an email to chem-chroma@york.ac.uk or amanda.dixon@york.ac.uk.

We look forward to lots of chromatography in the future.

The Chromatography Service

(Next article: Chiral Gas Chromatography)

Annual Review Followed by Mince Pies and Mulled Wine



There will be an annual review by Professor Richard Taylor on Tuesday 23 December at 2pm in C/A101. All staff (academic, research, teaching, research support, administrative and technical) are welcome to attend. This will be followed by mince pies and mulled wine served in A122.

Tapping the Chemical Potential of Food Waste



Experts in the Green Chemistry Centre of Excellence are working on an innovative project to create value from the region's food waste by extracting natural chemicals which can be used by other local industries.

The WasteValor project helps companies who create or process food across the Yorkshire and Humber region to identify potential new income streams while reducing the amount of waste they

send to landfill. It also advises local industries who are potential users of the extracted material, from soaps and cosmetics companies to a furniture manufacturer, and links them with potential suppliers.

WasteValor Industrial Engagement Manager, Dr Jeff Eaves, is inviting companies who create or process food waste, or who may be able to use the materials extracted, to get in touch to find out if they are eligible for two day's free consultancy at the University. The work is funded by a grant from the European Regional Development Fund.

"Many small and medium sized companies don't have don't have the time or R&D resources to investigate if they can do more with their food waste," Dr Eaves explains. "Our scientists provide desk-based and laboratory research to analyse the feasibility of extracting useful chemicals, such as limonene and pectin from fruit peel, succinic acid from bakery waste or starch from potato peelings.

"We also work with companies who can use the natural chemicals from the waste. For example, the oils extracted from coffee grounds are a natural and ethical alternative to palm oil for soap and cosmetic formulations. We'd love to hear from companies in the region who use natural products in their business, or who would like to investigate using them to replace materials derived from crude oil.

"Scientists at York have come up with some very innovative uses for waste, such as processed starch as a green filter to remove contaminants from waste water and fruit waste as a potential source of natural antioxidants, flavours and fragrances."

WasteValor supports small and medium sized businesses in the Yorkshire and Humber region (excluding South Yorkshire). Companies who would like more information can contact the WasteValor team by emailing wastevalor@york.ac.uk, calling 01904 324966 or visiting www.wastevalor.org.

News from Departmental Committees



This new section in Chemistry Update aims to broadcast more widely what is going on in key departmental committees. Let's start with the birth of a new committee - the Departmental Management Team (DMT). The DMT has been borne out of a combination of the HOD Advisory Committee and the Departmental Planning Group and now serves as the main decision-making committee in the department.

DMT links to BOS and Research Committee and will report into the new Faculty Board once this starts in January.

Departmental members include:

- * HOD (Chair)
- * Academic Group Leaders (see below)
- * Departmental Manager (Helen Coombs), Management Accountant (Mike Clark), Operations Manager (Simon Breeden),
- * Chairs of Board of Studies (Dave Smith, Jane Thomas-Oates), Research Committee (Simon Duckett) and Equality and Diversity Group (Paul Walton)
- * Two elected non-Professorial representatives (Martin Cockett and Alison Parkin).

The first meeting of the DMT was held on October 15th and agenda items included:

- * The membership of DMT, meeting dates and its terms of Reference
- * The mechanism for electing the non-Prof reps
- * The remit of Academic Group Leaders
- * The areas for our next lectureship vacancy and the timing
- * RSC Prizes and Awards - suggestions for nominations
- * Normal standing items on Health and Safety and Diversity

The minutes will be confirmed at the meeting on 26/11/14 and we will get them on to the web as soon as possible (any sensitive items will have to be removed first):

<http://www.york.ac.uk/chemistry/internal/staffinfo/committees/>

Academic Group Leaders (AGL)

Chemistry has 6 personnel groupings of academic staff members and research staff, each with a senior member as an “academic group leader (AGL)” as follows:

Analytical staff and PDRAs: Jane Thomas-Oates

Biological staff and PDRAs: Keith Wilson

Green/Materials staff and PDRAs: Duncan Bruce

Inorganic staff and PDRAs: Robin Perutz

Organic staff and PDRAs: Peter O'Brien

Physical staff and PDRAs: Lucy Carpenter

The AGLs were last appointed (with unanimous agreement of all academic group members) in 2014 and will serve a 3 year term from 1/10/14. The AGL act as de facto line managers to academic staff in their group, provide leadership to the group (to academic colleagues and postdoctoral research staff) and represent their views on the Departmental Management Team (DMT). For the full list of duties see:

<http://www.york.ac.uk/chemistry/internal/staffinfo/committees/>

Design a Logo! Win a Prize!

The new Departmental Chromatography Service wants to increase awareness within the Department that we are now open for business! We are therefore running a competition to design a logo for the GC and HPLC services that are available. All staff and research students are eligible to enter.

The chromatography logo/signage should include a logo of your own design, and the words 'Departmental Chromatography Service' (although a more catchy name or catchphrase would also be considered). Ideally it will include our contact details as well: Instrument room: D127; email: chem-chroma@york.ac.uk; office: E110 extn 2541; email: amanda.dixon@york.ac.uk



Please submit your entries to chem-chroma@york.ac.uk by Friday 16th January 2015; the winner will be announced in the January edition of Chemistry Update (prize tbc).

Have fun, and good luck!

The Chromatography Service

Children's Drawings Reveal their Understanding of Science

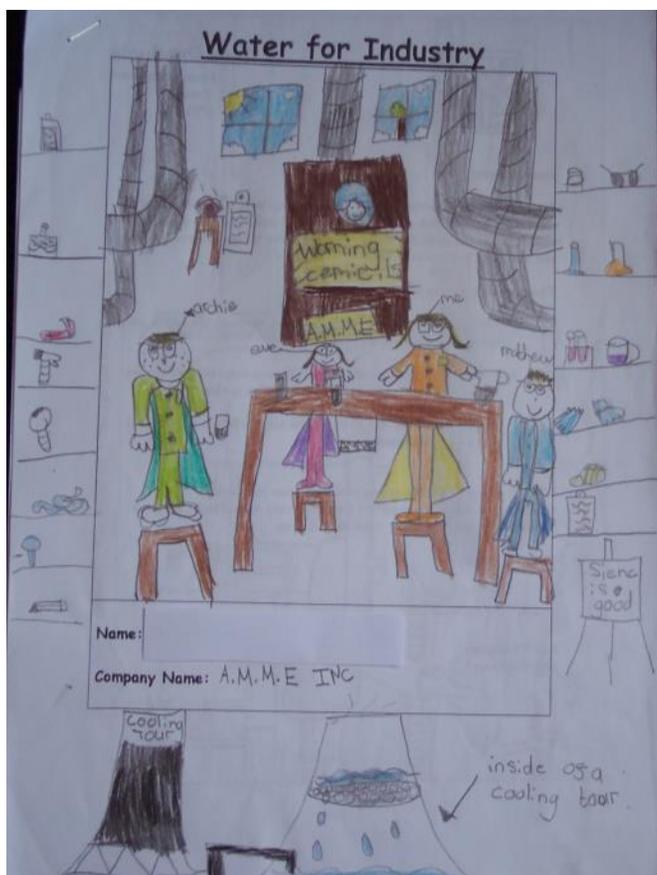
The Children Challenging Industry project has been running for several years now. The data collected during the project has included asking the children to draw a picture of what they understand industry to be. They were asked to draw their idea of what the inside and outside of the site they were going to visit before they visited. After they had completed their CCI sessions, which consists of an Advisory Teacher in the classroom teaching an activity set in an industrial context followed by site visit to see the science they had learned about in action, they were asked to draw the inside and outside of the site again.

The results can be seen at <http://www.cciproject.org/research/drawings.htm>

It is clear that following the CCI intervention their understanding of both science and industry is much improved. In particular their view of industry often changed from a grim Victorian view to a much more positive and clean image.

Recently the CIEC Advisory Teacher in the north east, Jenny Harvey, asked the Year 5 class at Billingham South Primary school to draw a poster advertising their 'company' formed during their work on Water for Industry.

These drawings reflect what the children learned during the intervention. In general better ability is reflected in a more informed drawing.



Understanding of the equipment used, cooling towers, the pipes on site



Understanding of pipes, equipment, safety glasses. Not great understanding of spelling!



Little understanding of the science or the site but appreciation of group work.



Understanding of equipment being used but without naming it. No reference to pipes, leaks, or the environment of the site.



Understanding of the pipes carrying water and the possibility of leaks (part of the activity carried out in school) and PPE

ChemSoc Presentation Practice

On Wednesday 5th November, ChemSoc hosted their third Presentation Practice event in A101. The well-attended event, run in collaboration with Dr Nick Wood and Stephen Bromfield, allows undergraduate students to practise giving presentations in a friendly and supportive environment, where, in addition to gaining valuable experience, they also receive anonymous structured feedback from the audience. A key feature of the event is the free choice speakers are given to talk about a subject that is interesting to them. This session saw talks covering the chemistry of itching, the catch -22 of a hangover and a guide to playing-the-odds when betting in poker!

Plus, Dr Andy Parsons joined in the fun by presenting an entertaining look at the process of creating the textbook Chemistry3. The afternoon concluded with host Stephen Bromfield passing on some words of advice for giving presentations, including a demonstration of what the Tweenies can teach us about Powerpoint. With several undergraduates having already put themselves forward to present in the future, it is anticipated that ChemSoc Presentation Practice IV will take place in Spring Term.

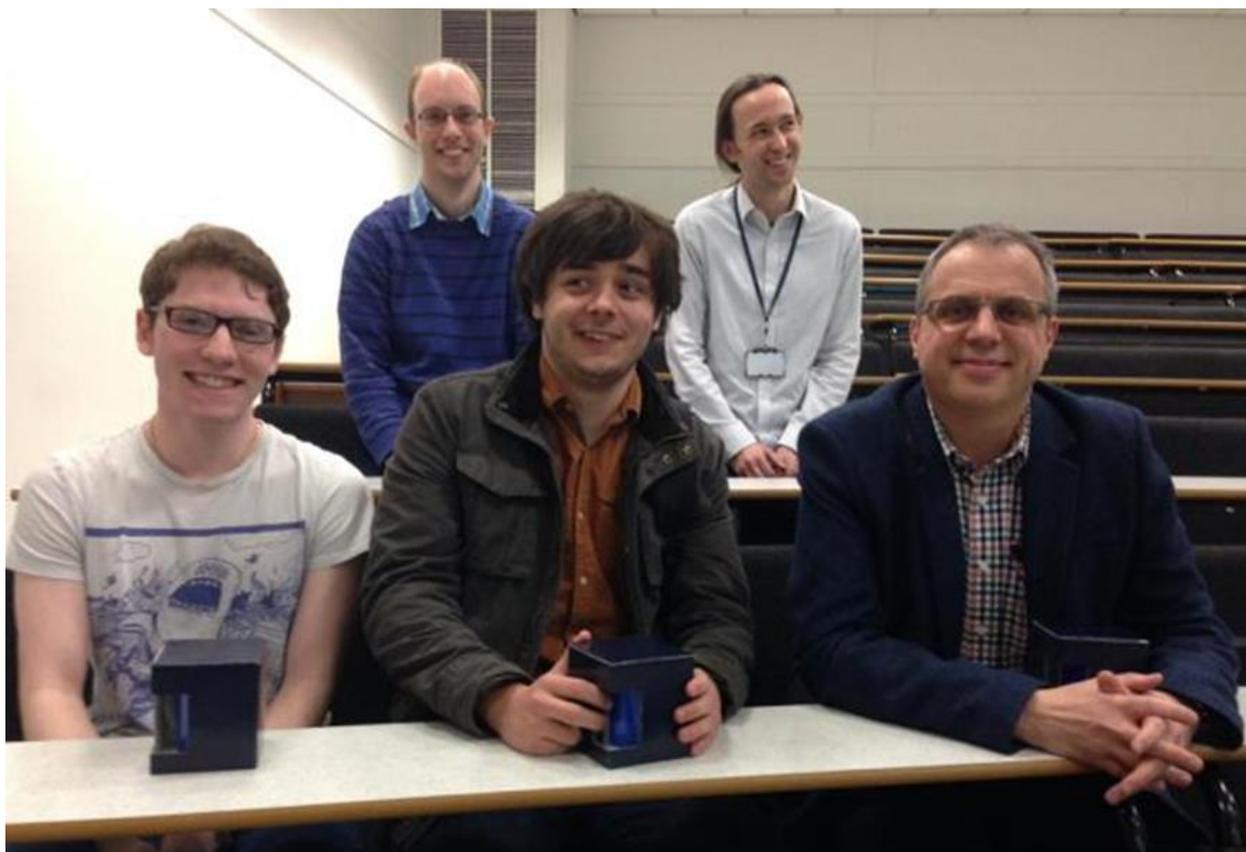


Photo: Some of the speakers from ChemSoc Presentation Practice