A flavour of success

We hope this newsletter will give you a flavour of some varied highlights in what has been a highly successful year for Chemistry@York.

Our achievements include the award of a number of high profile research grants in areas including atmospheric, materials and biological chemistry. We are also proud of the numerous Chemistry staff and students, who have been awarded prestigious prizes, and for the significant academic achievements of our students – for example, last year, over 84% of our MChem students achieved a first or upper second class Honours.

The results of the latest National Student Survey, (NSS) showing student satisfaction levels of 99%, confirm that York is one of the very best places to study Chemistry. Indeed, admissions to Chemistry@York is buoyant and our 2011 entrants achieved a record high average tariff score (equating to A-level grades of AAA).

Our new building programme is well advanced, with the second phase of the Dorothy Hodgkin Research Building due for completion in May. This will be followed by construction of an exciting new spacious

New Chemistry buildings

The University has initiated a £16.5 million phased redevelopment of the Department of Chemistry. New state-of-the-art facilities are being provided for both research and undergraduate laboratories. The first stage of this exciting development involves the completion of the Dorothy Hodgkin Research Building at a cost of £6.5 million, providing additional accommodation for about 100 researchers. Following completion on this building in May 2012, in a second development, a new two-storey building will be constructed. On the ground floor, state-of-the-art teaching laboratories will provide outstanding professional-standard training facilities for the scientists of tomorrow. On the upper floor, the building will house our Green Chemistry Centre of Excellence, a world leading research centre which aims to promote the development and implementation of green and sustainable chemistry and related technologies into new products and processes.
The Launch of Chemistry@York

Students applying for an undergraduate Chemistry programme for entry in 2012 or 2013 now have access from point of application, to a new, distinctive VLE site called ‘Chemistry@York’.

Prospective students access the site via a username and password. The site has been developed specifically to form an early engagement with students during the crucial decision-making ‘1-in-5’ stage and provides a unique insight into life as a Chemistry student at York. The site addresses four key areas:

- Application Information
- Our Courses
- Careers and Employability
- Featured Items

For example, under Our Courses there is detailed information on our diverse and innovative range of teaching methods and small group college-based teaching. We have also included a typical student week and 5 videos along with lab scripts, quotes from current students on each of the four main themes and screen casts explaining how our tutorials and workshops support our students throughout each year of their studies.

The creation of the site has been fully funded by the University’s Strategic Teaching and Learning Fund and it is envisaged that it will be an example of good practice for other York academic departments.

Chemistry Awards Bulletin Board

Ewald Prize
Professor Eleanor Dodson shared the ninth Ewald Prize for the enormous impact made in the area of structural crystallography. Invaluable contributions to the computational side of the field mean that daily, all over the world, thousands of crystallographers are profiting from their excellent achievements.

Vice Chancellors Awards
The following VC awards were awarded to the department last year:
- The Athena SWAN team in Chemistry was awarded a Gold Award for Outstanding Achievement in the Inclusivity Category
- The Green Chemistry team were awarded a Gold Award for Outstanding Achievement in the Sustainability Category
- Professor Simon Duckett (Chemistry) and Professor Gary Green (Psychology) were awarded a Gold Award for Outstanding Achievement in the Excellence Category
- The Chemistry Undergraduate Admissions Team were awarded a Silver Award for Outstanding Achievement in the Excellence Category

Analytical Prize
A York Undergraduate Chemist Katie Barnes won the Royal Society of Chemistry Analytical Prize for 2011 for her significant achievements in the area of analytical Chemistry.

Royal Society Honour
Professor John Goodby who specialises in research into liquid crystals, has been elected a Fellow of the Royal Society, one of the world’s top scientific honours. Professor Goodby’s research focuses on the uses of liquid crystals in a range of high technology applications, including large area flat panel displays, microdisplays, sensors, imaging devices, biomedical materials, surface coatings, and smart adhesives. Last year, Fellowships were also awarded to Professors Robin Perutz and Gideon Davies.

Wellcome Trust Fellow
Professor Sir John Holman has been appointed Senior Fellow in Education at the Wellcome Trust, to advise the Trust on education policy and strategy.

RSC Environment Prize
Professor James Clark received the Royal Society of Chemistry’s Environment Prize last year. Professor Clark views waste as future feedstock – he is interested in making chemicals, fuels and materials from chemical, food and other wastes, solving both the problems of increasing waste and decreasing resources. The award recognises Professor Clark’s “fundamental and applied research contributions to green chemistry, clean technology and sustainability”, and “his educational, publishing and public awareness contributions in the green chemistry area”.

Eliahou Dangoor Sponsorships
We are proud to announce that four of our first year Chemistry undergraduates have each been awarded one of the prestigious Eliahou Dangoor sponsorships. The sponsorships were created by Dr Naim Dangoor to give talented students the opportunity to study science, technology, engineering and mathematics subjects at leading universities in the UK, including York.

Departmental Vacation Bursaries
Last year the Department initiated a new scheme that offers up to 10 bursaries for our undergraduate Chemistry students per year, to undertake an 8–10 week research project over the summer vacation. The scheme is open to students who have completed their first or second year of studies, and it offers them the opportunity to work in a research group of an academic member of staff of their choice. As well as the opportunity to further develop their practical skills, our students learn more about a specific area of modern Chemistry, and receive £100 per week. Projects from last year included “Doing a lot in one-pot: a radical approach to shogaoi and related ketones”, “Stay cool: enhancing coolants using additives with phase transitions” and “Novel degradable polymers for gene delivery”. These placements are of particular interest to our students considering a career in research, for example, those contemplating a PhD degree.

www.york.ac.uk/Chemistry
Employability

Refurbishment of the area outside our campus was held in the Department on Wednesday 19 October. Professor Dave Smith and Dr Jason Lynam gave a series of excellent demonstrations and presentations, in front of a packed audience in our main lecture theatre. They competed against one another for a stunning labcoat inspired prize. Our student-run Chemical Society, ChemSoc, played a key part in helping to organise and plan the event. Dr Seishi Shimizu acted as the judge, complete with black cloak, white neck band and hammer, and it was a fantastic evening of entertainment.

“All of the virtues of the department came shining through – great teaching, great research, camaraderie, approachability, enthusiasm and a love of Chemistry.” Professor Richard Taylor, Head of Department

250th Anniversary of Chemist

The Department of Chemistry has celebrated the 250th anniversary of the birth of Selby scientist Smithson Tennant with a series of public events. Smithson Tennant discovered the elements of osmium and iridium and was known for his ability to enthuse his audiences to study science. He was holder of the 1703 Chair of Chemistry at the University of Cambridge, a Fellow of the Royal Society and winner of the Royal Society Copley Medal.

The North Yorkshire scientist’s legacy to science was celebrated with two major public lectures organised by the Department of Chemistry and David Lewis, a Selby historian and former York chemist. The celebrations took place as part of the International Year of Chemistry and were designed to mark Smithson Tennant’s birth on 30 November 1761.

Our Chemistry degree courses are designed to give our students a thorough grounding in all aspects of modern Chemistry and a qualification from the University of York is highly respected by employers. For example, our 2011 Chemistry graduates are going on to a wide range of careers, including:

- **Studying for a PhD degree** (at York and elsewhere) in topics ranging from biological chemistry, NMR spectroscopy, atmospheric chemistry, surface chemistry, polymers & colloids, organic synthesis and drug discovery & design – for example, one of our students will be studying for a PhD at the University of Helsinki, after completing a year at this university as part of our MChem Year Abroad programme.
- **Working in the chemical industry**, in areas including chemical analysis and drug discovery – indeed, some of our MChem Year in Industry students have accepted job offers to continue working at their placement company (in companies including Johnson Matthey and Unilever).
- **Studying for a PGCE** to gain Qualified Teacher Status and enter the teaching profession.
- **Various non-scientific careers** including finance, commerce, media and politics – for example, Chris Maughan has become Blackpool Borough Council’s youngest ever councillor.

Our Chemistry students have an excellent record of achievement and for our 2011 graduates, 70% achieved a first (1st) or upper second class (2:1) Honours degree and, of these, 84% of our MChem students achieved a first or upper second class Honours.

For 2012, a new Chemistry careers website has been constructed, with topics such as ‘CVs, interviews and applications’ and ‘interested in further study’. Also included is information on an Employability Tutorial, created by the university, to help our students think about what they might want to do when they finish their degree and articulate their own “employability plan”.

Teaching Initiatives and Staff Student Consultative Committee (SSCC)

Our students play an important role in helping us to evolve and improve our courses and the SSCC has played a particularly important and active role. Examples of recent initiatives prompted by the SSCC include:

- The introduction of new infrared heaters in teaching laboratories.
- At twice-termly supervisory meetings, personal supervisors now have a check list of topics to discuss – from careers advice to selection of option courses.
- Additional textbooks have been purchased and added to the main library, including Year 1 and 2 texts that support core lecture courses.
- Refurbishment of the area outside our main lecture theatre to create a small social area (pictured below).

Admissions Team – THES nomination

Members of the Chemistry Admissions team including Dr Andrew Parsons, Katrina Sayer, Dr Annie Hodgson, Dr Barry Thomas, and undergraduate student Mary Wheldon, along with Professor Taylor and Dr Helen Coombs, attended the 2011 Times Higher Education Leadership & Management Awards (THELMA) at a glittering ceremony at the Grosvenor House Hotel on Thursday 16 June. David Duncan, Registrar at the University of York attended the event and said:

“The shortlisting of the Chemistry Admissions Team for a THELMA was richly deserved. Chemistry goes to enormous efforts to make students feel they belong to the Department, and that progress begins long before they arrive in York. The Admissions team has a key role to play, and is miles ahead of its competitors in other universities”.

www.york.ac.uk/Chemistry
Chemist’s nanoscale fight against fatal lung disease

Over 9,000 people in the UK suffer from cystic fibrosis, an inherited condition that causes chronic lung infections and a life expectancy of just 37 years. Therapies under development at York could transform the lives of people who suffer from this cruel genetic disorder and the vehicle used to deliver them is only a couple of nanometres across.

No more free rides for ‘piggy-backing’ viruses

York biological chemists have collaborated as part of an international team to determine the structure of the enzyme endomannosidase, significantly advancing our understanding of how a group of devastating human viruses including HIV and Hepatitis C hijack human enzymes to reproduce and cause disease. The findings open the door to the development of new drugs to combat these deadly viruses that infect more than 180 million people worldwide.

Atmospheric Chemists awarded £900k

The atmospheric research group in the Department of Chemistry have had three new grants funded through the NERC standard grants scheme, totalling around £900k. The first project is a collaboration between Dr Jacqui Hamilton, Professor Ally Lewis, and Professor Dwayne Heard at the University of Leeds, to test current understanding of the sinks for the hydroxyl radical in urban environments. The second project is a collaboration between Professor Ally Lewis, Dr James Lee and Professor Nick Hewitt at Lancaster University, and with the Local Atmosphere division of Defra. This project will develop new technologies which allow for the measurement of regional fluxes of NOx using low-and-slow flying aircraft.

Large EPSRC Grant Win for Liquid Crystals Research

Professor John Goodby FRSE, Doctors Stephen Cowling and Isabel Saez and Professor Peter Raynes FRSE have been awarded a research grant by the EPSRC entitled “Self-Organisation and Self-Assembly in Aliphatic Based Liquid Crystals” to start at the beginning of 2012. The total value of the grant is over £800,000.

New Marie Curie Network in York

Dr Gideon Grogan (YSBL, Chemistry) and Professor Neil Bruce (CNAP, Biology) have been awarded £650,000 by the European Union for the Marie-Curie Network project P4FIFTY. The Network will be coordinated from York and will involve collaborator Universities in Germany, France, Denmark and the Netherlands, as well as industrial partners. The project, which combines chemists, biologists and biochemical engineers, will focus on the development of cytochromes P450 as industrial biocatalysts for green oxidation chemistry.

Putting sunshine in your tank

Scientists from the University of York are part of a team working on how to use the energy of the Sun to make fuels, which could help to solve the world’s escalating energy crisis. Together with researchers from the Universities of Manchester, East Anglia (UEA), and Nottingham, they are working to harness the vast energy of the Sun to produce clean fuel, using nanotechnology 100,000 times smaller than the thickness of a human hair. The scientists presented their research at the Royal Society’s annual Summer Science Exhibition which opens on 5 July.

‘Star Wars’ laser experiment improves understanding of Earth’s atmosphere

York chemists are part of an international research team exploring novel ‘Star Wars’ techniques to improve our understanding of the Earth’s atmosphere and of global change. As part of a project funded by the European Space Agency (ESA) and led by the University of York’s Department of Chemistry, researchers recently took part in a two-week experiment designed to test the feasibility of using new techniques on future space missions.
Our first year chemists have taken a closer look at the ‘typical’ components of a night on the town. In the summer term last year, as a new initiative for their practical course, our first year students investigated the chemical composition of samples of fast food, alcoholic beverage and tobacco products. Many of the samples were sourced locally. The food samples were analysed for fat content by saponification and subsequent Gas Chromatography (GC) and for protein content by Kjeldahl analysis. The levels of ethanol in a variety of beers, wines and spirits were measured using Benedict’s solution and UV-vis spectroscopy. Finally, cigarettes and cigars were burnt and their gaseous emissions passed through water, dissolving nicotine, before analysis using High Performance Liquid Chromatography (HPLC).

Throughout these experiments the students worked in groups, which gave them an opportunity to develop their team working and time management skills. They also had the opportunity to plan some of the experiments themselves. At the end of the project, they collaborated to produce a poster displaying their results and they also gave a group presentation. The project culminated in a summary lecture, where the results of all the groups were presented and compared.

“Liked the applied concept – more interesting”

“Good chance to practise techniques”

Student quotes

Industry Placement Interim Meeting Day 2012

"Year 4 in industry – a distinctive feature of our MChem course"

It is a big day for the Chemistry Department on Wednesday week 3 of the Spring Term. In 2012 this day fell on the 25th January and is when all our fourth year industrial placement students, together with their industrial supervisors, return to the Department to review their progress so-far and to discuss future research plans for the second half of their placement year.

Some students may have just travelled up the road from Reckitt Benckiser in Hull, Cytec in Redcar or Unilever in Leeds, whilst some may have crossed the Pennines from AstraZeneca in Macclesfield, Bristol Myers Squibb in Birkenhead or MEL Chemicals in Manchester. Others may have let the train take the strain north from GSK in Stevenage, Lubrizol in Derbyshire, Infuneum in Oxford, AkzoNobel in Slough or Cognis in Southampton, whilst some may have flown in from DSM and Voltea in Holland or Roche in Switzerland.

There is always a buzz around the Department on this day as our forty placement students meet up with each other, a truly international gathering of friends, and share stories of how their placements are going and the exciting things they have done. The interim meetings are also a time to discuss research progress with their York and Industrial supervisors. Over a sandwich lunch, there is the opportunity to showcase the research of the Department to our industrial partners and for our Graduate School to advertise possible PhD research positions to our placement students.

As everyone winds their way home at the end of a busy day, students will feel much better prepared for, and less daunted by, their final assessment meetings in May. Indeed the increase in self-confidence of our placement students after just a few months on placement is a delight to experience.

Dr Brian Grievson, Industrial Liaison Officer

York Chemist wins Taekwondo Gold

Danielle Williams, an MChem Year 4 student scooped Gold Medal at the recent UK National Taekwondo Championships. She fought off stiff competition in the female senior section, successfully winning three bouts, to become UK National Champion. Not content with one medal, Danielle also won Bronze in the female third dan black-belt patterns section. Danielle has been training in taekwondo since the age of 10 and now is black belt third-dan. She regularly represents England in the World Taekwondo Championships.

"I’m delighted with my haul of medals and would like to thank the Chemistry Department for their continued support allowing me to balance my chemistry workload alongside the rigours of training. In particular, I would like to thank my personal supervisor, for his guidance."

Year abroad update

This is a very exciting time for the MChem(Year Abroad) programme, which is proving to be an increasingly popular option for our undergraduate students. We have our biggest ever number of students out on MChem(Year Abroad) placements in 2011–12, with 12 students each spending the academic year in one of our partner universities around the world. This year we have students visiting Australia, Finland, Singapore, Germany, France and Spain. Next year looks set to continue the trend of increasing numbers on the MChem(Year Abroad) programme, with 15 students currently preparing for placements in 2012–13. The number of destinations available to our students is also increasing steadily. Placements at the University of Sydney and the University of Heidelberg have become available for the first time this year and both are already very popular. There are also exciting developments on the horizon, as we are involved in discussions with several potential exchange partners around the world that will hopefully allow us to send students to Canada in 2012–13 and potentially to India and Japan in the near future. Closer to home, we’re currently working on a series of web pages to inform undergraduates about the MChem(Year Abroad) programme and to help them prepare for their year abroad.
York Graduation
July 2012
The Chemistry Graduation Ceremony
will be held on Thursday 12 July 2012
at 3.30pm.

The National Student Survey (NSS) runs until
the end of April 2012 and we encourage
all chemists in the final year of their course
to complete the survey. This year the
Student Hardship fund will receive
£1 for every survey completed.
The University of York has an outstanding
reputation for teaching and research,
featuring consistently in the top few places
in the league tables of UK universities, and
we hope that this continues for next year.

Following on from last year’s NSS we will be
improving the way we inform students of
our actions to their feedback. This includes
asking module coordinators to detail the
changes to a given course on the basis of
student feedback and this information will
be published (e.g. on a noticeboard and/or
online).

New staff
Professor Mathew Evans’ interests lie in the use of models to
better understand the atmosphere and thus improve our predictive
capability of the composition of the atmosphere. He is also employed
by the Composition Directorate within the National Centre for
Atmospheric Science (NCAS). We are expecting another new member
of staff to join the department in the near future, as we recently held
interviews for a new Professor of Physical Chemistry.

Graduate Careers Day
The 10th of June 2011 was an important day for many PhD students in the Chemistry
department. Fourteen people from various careers and job paths (some pictured below)
had come in to talk to us and give advice about planning and thinking about future careers
that would be relevant to chemistry students. We started off in our first session with Life in
Academia – a lecturer, independent fellow, teaching fellow and post doc talked about their
experiences and how they got to where they are now. It was interesting to see the opinions
of each person in the different roles and to see how the path progressed along academia.
Advice on publications and tips for interviews were all discussed in a question and
answer session.

Useful Links:
The Careers Service
www.york.ac.uk/services/careers/index.cfm
The Careers Service is for all University of York students (undergraduates and postgraduates of all years and subjects
of study) and graduates. This service can help our students think about
their future career, with advice and information about the options open
to them. For example, current students can attend recruitment events and
workshops on aspects of job search, whereas recent graduates can access
individual careers guidance interviews. The Careers Service is on Facebook:
www.facebook.com/yorkcareers?

Chemistry Alumni
www.york.ac.uk/chemistry/alumni/
Following graduation, the Department is very keen to keep in touch with its
former students. We’d like to hear about their employment news, job changes,
personal achievements, life changes and any other news that they may have.
Our alumni can interact with us in
a variety of ways, including attending
our research seminars or Open Days,
talking about their careers to our
undergraduate students at careers
events, or contributing to Chemistry
Review, a full colour magazine
for post-16 chemists, which is
commissioned and edited at York.

Professor Dave’s Podcasts
Professor David Smith has produced a
series of podcasts on amazing molecules,
which can be viewed on youtube.

For the latest podcast by
ProfessorDaveatYork,
“Transplantation – a personal story
of the chemistry behind organ
transplantation”, see:
www.youtube.com/user/
ProfessorDaveatYork?ob=0

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