York chemist joins exclusive group of female scientists

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Green Chemistry News

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Calendar of Events

**New Building Opening**
Date: Wednesday 31 October
Time: 2pm—4.30pm
Location: A101

**SCI Careers Event**
Date: Wednesday 14 November
Time: 1.30pm—4pm
Location: A122

**UCAS Interview Afternoons**
Dates: 1, 5, 6, 8, 13, 19, 22, 27 & 29 November
Time: 12pm—4pm
Location: Hub DS/008

**BBSRC White Rose DTP Launch Event**
Date: Tuesday 6 November
Location: FERA, Sand Hutton

**Departmental Seminar—Dr Sharon Ashbrook**
Date: Wednesday 7 November
Time: 2pm—6pm
Location: A101

**Date of Next Issue**: 30th November
York chemist joins exclusive group of female scientists

A University of York chemist has been named as the Laureate for Europe in the L’OREAL-UNESCO Women in Science Awards for 2013.

Professor Pratibha Gai, Chair of Electron Microscopy, heads the York JEOL Nanocentre and is honoured for the excellence of her research.

The York JEOL Nanocentre is a major long-term collaboration between the University's Departments of Chemistry, Physics and Electronics, the European Union, Yorkshire Forward and leading electron optics manufacturer JEOL.

Professor Gai’s research was chosen by an International Jury chaired by 1999 Nobel Laureate Professor Ahmed Zewail. Nobel Laureate Professor Christian de Duve is Founding President of the awards. Professor Gai is the latest in a list of 72 women scientists honoured by the L’OREAL-UNESCO Women in Science Awards since 1998.

Each year, one Laureate representing each of five continental regions of the world - Africa and the Arab States, Asia (including Oceania and Pacific), Europe, Latin America and North America, is honoured. The 2013 Laureates will receive the awards in recognition of their contributions to science at a ceremony in Paris next March.

Professor Gai attended the University of Cambridge after initial education in India. She graduated with a PhD in Physics from the Cavendish Laboratory, specialising in electron microscopy, before establishing and leading the Surface Reactions group at the University of Oxford.

After senior research positions with DuPont, USA and as visiting professor at the University of Delaware, she came to York in 2007 as the Founding JEOL Professor of Electron Microscopy, with Chairs in the Departments of Chemistry and Physics. She is a Fellow of several scientific societies and was awarded the Gabor Medal and Prize of the Institute of Physics, UK in 2010.
University Awards £6 Million Contract to VINCI Construction UK

The University of York has awarded a £6 million contract to VINCI Construction UK to design and construct a new undergraduate teaching and Green Chemistry research building.

The project includes the construction of a two storey building on the site of a former Chemistry research building that is currently being demolished.

The facilities are part of a £29 million phased investment in Chemistry which includes new research and undergraduate laboratories. This next stage of development will provide a large teaching laboratory to accommodate 160 students, using 80 two-person fume cupboards.

Professor Richard Taylor, the Head of the Department of Chemistry at York, said: “These extensive training facilities will allow us to undertake a wide range of practical chemistry with supporting instrumentation, office and support areas.

“This exciting new development will enable our Green Chemistry Centre of Excellence to move into new research facilities to promote the development and implementation of green and sustainable chemistry and related technologies into new products and processes. Focusing on wider participation and collaboration, this new facility will provide a modern research laboratory to promote greater engagement with industrial partners.”

The project is due for completion late 2013 and aims to further enhance the Department of Chemistry's leading reputation which boasts top 5 rankings in The Times and Guardian University guides for 2013.

Keith Shivers, Regional Director, VINCI Construction UK, Building Division – North East, said: “We are thrilled to have been awarded this contract with the University of York and we look forward to working closely with the client to help them reach their short and long term objectives. The new Chemistry block will be a great addition to the Department and provide teachers with professional-standard facilities to educate their students.”
Opening of Refurbished Teaching Laboratory

Our refurbished teaching lab is ready for the start of the academic year.

Following a localised fire in February, the Department has been working closely with the University to remodel and refurbish the affected areas - one of the four lobes of our undergraduate teaching laboratories, an instrument room and a chemical preparation room. All of the work has now been completed, so that our undergraduate students can use these new facilities for the start of this academic year.

All areas are equipped with high quality fumehoods and laboratory furniture, and there has been a significant investment in the latest equipment. Around £150k has been invested in new state-of-the-art instrumentation, including infrared spectrometers and fluorospectrophotometers, together with £50k in new glassware and equipment.

The refurbishment has also incorporated aspects of modern building design, including numerous roof light domes, which has allowed natural light to flood into the lab, giving it a very light and open feel.

Head of Department, Professor Richard Taylor, noted "We are delighted that the repairs have been carried out on time and to such a high standard, and that all of the damaged equipment has been replaced with brand new state-of-the art kit. The refurbished labs will be superb to work in - and now that the construction of the new teaching labs has started, the new first year undergraduates will be the envy of students everywhere!".
New Partnership to ‘Accelerate’ Evaluation of Chemical Reactions

The Department of Chemistry has agreed a new partnership with a Swiss-based technology company to modernise the way chemical reactions are screened and evaluated.

Under the new partnership, between the Department of Chemistry at York and Chemspeed Technologies, the company will invest £750,000 to provide two robotic platforms to be housed in the Department’s extended Dorothy Hodgkin research building.

The fully automated platforms for parallel synthesis, designed and built by Chemspeed, will enable academic groups to increase the number of experiments to find faster and more effective solutions to demanding challenges in synthetic chemistry and catalysis.

Professor Ian Fairlamb, of the Department of Chemistry, said: “Accelerating the speed and increasing the number of experiments is a critical factor in research and development. The higher output, especially testing a greater number of experimental variables, can leverage the success rate in finding new, greener and cleaner synthetic methods which are important drivers in research, not only for academics but also in industry.”

Dr Jake Grace, a Workflow Architect at Chemspeed, will be based predominantly at York, contributing his technical expertise to the research programmes.

Dr Grace said: “I’ll be interacting closely with the research groups in the Department to identify mutually beneficial collaborative opportunities with the potential to both increase productivity and diversify the portfolio of research projects being carried out at York.”
New Scanning Technology Aims to Achieve Quicker Diagnosis of Disease

Groundbreaking research taking place at the University of York could lead to Alzheimer’s disease being diagnosed in minutes using a simple brain scan.

Chemists are working on new technology that could revolutionise the way in which Magnetic Resonance Imaging (MRI) scans are used to view the molecular events behind diseases like Alzheimer’s, without invasive procedure, by increasing the sensitivity of an average hospital scanner by 200,000 times.

The technology underpinning this project, SABRE (Signal Amplification by Reversible Exchange), has received a £3.6m Strategic Award from the Wellcome Trust to fund a team of seven post-doctoral researchers from this month.

The new grant brings the total support for SABRE from the Wellcome Trust, the Wolfson Foundation, Bruker Biospin, the University of York and the Engineering and Physical Sciences Research Council (EPSRC) to over £12.5m in the last three years.

A new Centre for Hyperpolarisation in Magnetic Resonance (CHyM) is being purpose-built at York to house the project. The building, which is nearing completion at York Science Park, includes a chemical laboratory, four high field nuclear magnetic resonance systems and space for 30 research scientists.

The SABRE project is led by Professor Simon Duckett, from the Department of Chemistry at York, Professor Gary Green, from the York Neuroimaging Centre (YNiC) and Professor Hugh Perry, from the Centre for Biological Sciences, University of Southampton.

Professor Duckett said: “While MRI has completely changed modern healthcare, its value is greatly limited by its low sensitivity. As well as tailoring treatments more accurately to the needs of individual patients, our hope is that in the future doctors will be able to accurately make diagnoses that currently take days, weeks and sometimes months, in just minutes.”
Professor Green added: “SABRE has the potential to revolutionise clinical MRI and related MR methods by providing a huge improvement in the sensitivity of scanners. This will ultimately produce a step change in the use and type of information available to scientists and clinicians through MRI, allowing the diagnosis, treatment and clinical monitoring of diverse neurodegenerative diseases.

The Centre for Hyperpolarisation in Magnetic Resonance will be officially opened by Sir William Castell, Chairman of the Wellcome Trust, in September 2013.

The Centre brings together scientists from a range of backgrounds including Chemistry, Psychology, Biology and the Hull York Medical School. Recent appointments include British neuroscientist Professor Miles Whittington and Dr Heidi Baseler, a lecturer in specialist medical imaging from the USA. Professor Jürgen Hennig of the University Hospital Freiburg, one of the world’s leading experts in the medical application of MRI technology, is also associated with the Centre.

The Centre for Hyperpolarisation in Magnetic Resonance was created to build on an exciting breakthrough in the use of hyperpolarisation in MRI by scientists from the York Neuroimaging Centre (YNIC) and the York Magnetic Resonance Centre (YMRC).

Hyperpolarisation involves the transfer of magnetism from parahydrogen to molecules making them more visible in MRI scans. The Centre’s SABRE programme will develop the chemical basis of this method to make it suitable for medical applications.

**SCI Careers Event**

The Society of Chemical Industry is hosting a careers event in the Department on Wednesday 14 November, 1.30—4.00pm in C/A122. Speakers will include:

Jason Lynam - Department of Chemistry
Gareth Ensor - Process Development, Astra Zeneca
Dan Woolaston - Patents, HGF
and speaker on Materials Knowledge Transfer

The event is open to all staff and undergraduate and postgraduate students and will include lunch. To help with catering please book a place by emailing sue.couling@york.ac.uk
Official Opening of second phase of Dorothy Hodgkin Building
Department of Chemistry, University of York
Wednesday 31 October 2012, 2.00pm onwards

14:00 – 16:20 Scientific Symposium (A101 Chemistry) chaired by

Professor Emma Raven (University of Leicester)
“The many faces of heme in biology”

Professor Dave Haddleton (University of Warwick)
“Polymer bioconjugates from living polymerisation - improved therapeutics”

Dr Jason Lynam (University of York)
“A mechanism-driven approach to the development of atom-efficient catalytic
transformations: An experimental perspective”

Dr John Slattery (University of York)
“A mechanism-driven approach to the development of atom-efficient catalytic
transformations: A computational perspective”

16:20 – 16:50 Tours of the new building
17:00 – 18:00 Exhibition and drinks reception in the NSLC*
18:00 – 19:10 Official Building opening and public lecture in the NSLC*

*National Science Learning Centre

Public Lecture

Professor Michael Grätzel
“Power from the sun, solar cells and mimic photosynthesis”
This is a ticketed event

To book your place or for further information, contact helen.coombs@york.ac.uk
For directions, see: http://www.york.ac.uk/np/maps/
New Atmospheric Building

The Chemistry Department plan to develop the first dedicated laboratory building in the UK for atmospheric chemistry research.

Supported in part by a £1.25M grant from the Wolfson Foundation, the facility will co-locate state-of-the-art global computer modelling facilities with laboratory science and instrument technology development plus calibration and logistics support for field observations. The Wolfson lab will bring together the atmospheric research teams in Chemistry as well as providing experimental and modelling infrastructure for interdisciplinary research across the University.

The new development will comprise a two-storey building of ~800m2 sited adjacent to the Department of Chemistry, and behind the current ‘Hub’ building. The location has been specifically chosen so that atmospheric chemistry research can remain closely connected to the wider chemistry department, providing opportunities for both undergraduate and postgraduates, whilst removing highly sensitive field instruments from potential solvent contamination. The building will contain laboratory space, a modelling suite with visualisation facilities, collaborative research and office space. It will house faculty staff, post-doctoral researchers, external research staff including from the National Centre for Atmospheric Science and Defra, postgraduates and undergraduates undertaking research projects. The building is currently planned for completion by summer 2013.
**Children Challenging Industry Key Stage 2-3 HEI STEM Project**

“I think the work that has been done so far has been really significant in terms of the children’s attitude towards the subject. There can be little doubt that the visit by the ambassador really helped to capture the children's imagination and, for many of them, it was the first time they have come into contact with someone who works in the field. This will be reinforced with our pending visit to industry!” (Y6 teacher and science coordinator)

These are the comments from just one of the teachers involved in an innovative project to communicate the excitement of STEM-related subjects and to show where career opportunities exist. 30 HEI ambassadors across 6 universities, 10 high school teachers and 50 primary teachers from across the North West, attended Sue Andrews’ training enabling them to work together using work-based contexts more effectively in teaching STEM subjects.

The aim was to establish and cultivate a sustainable network that would continue increasing capacity to disseminate information about opportunities in science through real people. The challenge was to ensure that children continue to be provided with this enriching experience, in the absence of the CIEC coordinator, instead supported by well trained HEI ambassadors and secondary school coordinators. Following this training programme and assuming an average class size of 30, potentially 1500 primary pupils could be exposed to practical science in real contexts and be inspired by ambassadors sharing expertise and enthusiasm in the coming year.

Exciting primary teaching materials, with proven impact, focusing on close links between STEM career opportunities and the National Curriculum are now freely available to all on the CIEC Promoting Science website.

“Having a ‘real’ scientist in the school was exciting and enthralling for the children. They want to carry out a lot more similar investigations now!” (Y6 teacher and science coordinator)

The project was funded by HEISTEMNW
Sam concentrating on making a fruit battery

January Graduation

The January 2013 Graduation ceremony for Chemistry will take place on Friday 25th January at 3.30pm. There will be a drinks reception held in the Department afterwards from around 4.45pm.

Members of staff who wish to attend the ceremony

If you wish to attend the ceremony, please email chemgrad@york.ac.uk before 19th November.

Research students wishing to graduate at this ceremony will need to have had their viva and submitted their final, examined and corrected thesis to the Exams office by Friday 7th December.

Examiner reports will need to be with the Chemistry Graduate Office by Thursday 6th December to allow time for them to be signed and taken over to the Exams office.

If you have any queries, please contact Rachel or Alice at chemgrad@york.ac.uk
Duncan Bruce Lectures in South America

Professor Duncan Bruce presented a seminar at the University of Buenos Aires at the beginning of August, before travelling to Florianopolis in Brazil, where he gave a Plenary Lecture at the XVI Brazilian Meeting on Inorganic Chemistry entitled: 'N-Heterocycles and their Complexes in Liquid Crystals: Phosphorescence and Heterogeneous Catalysis'. He was in fact part of a larger delegation of speakers, both established academics and completing PhD students, representing the Dalton Division of the Royal Society of Chemistry, who are working increasingly closely with their counterparts in the Brazilian Chemical Society. The group photo is shown below.

Duncan was also an invited Discussion Leader and Presenter at a recent meeting of the Society of Petroleum Engineers on the Algarve, on the subject of Advanced Chemicals and Fluids for the Oilfield.
Organometallic Jamboree

Jason Lynam, Neets Mistry, Dave Johnson, Lizzie Smith, Robin Perutz, Barbara Procacci, Marianna Fekete and Magnus Buchner all went to the organometallic jamboree (International Conference on Organometallic Chemistry) in a very warm Lisbon in early September. After a very prolonged view of Manchester Airport, we arrived at about 3.30 am on the day when the conference started.

This was a conference with 1200 delegates, at least 5 parallel sessions and posters in several buildings. Together we presented two talks and 5 posters. Approximately 600 posters were presented in 3 buildings in tropical conditions. While hot, the science was still warmly received.

Robin had the interesting experience of finding that his lecture was brought forward - the chairman of the session knew, but neither Robin nor anybody else was told until it was due to start. Also presenting without shocks was Jason, who successfully made his flight 1 hour after speaking.

The conference dinner was held at the riverside at the Museu da Electricidade, which was a former powerstation and now a museum and art gallery. There was also a hefty dose of Portuguese culture in the form of traditional Fado and a local university ‘Tuna’ (traditional musical band).

Ruth Wilkinson’s Leaving

Coffee and cakes were served for Ruth Wilkinson, Administrator in YSBL, who left the department to move to Germany on 19 October. Ruth’s leaving was combined with a jewellery collection for Breakthrough Breast Cancer, charity dedicated to finding the causes of breast cancer.
Bone Damage at the Molecular Scale

A team of mathematicians, chemists and archaeologists at the University of York have come up with a new way to triage old bones using mass-spectrometric methods.

The new approach reported in the journal *Analytical Chemistry* Anal. Chem., DOI: 10.1021/ac301333t was developed by Julie Wilson, working with the BioArCh team of Nienke van Dom and Matthew Collins. The method allows the rapid assessment of damage in bone collagen at the scale of single amino acids. The extent to which individual glutamine residues in bone are converted to glutamic acid shows a strong correlation with age when the thermal history of the bones is taken into account. This offers the exciting possibility that the extent of glutamine deamidation could be used to date collagen-based artifacts, such as bone or parchment.

For more details see the article in *Chemical and Engineering News*. 
New Starters for October 2012

Dr Alison Parkin, Anniversary Research Lecturer, joins us from the University of Oxford.
Extension number: 2561, Room: D112, Email: alison.parkin@york.ac.uk

Louise Highton, Experimental Officer in Magnetic Resonance Imaging (CHyM), working for Prof Simon Duckett.
Extension number: 5886, Room: B125, Email: louise.highton@york.ac.uk

Claudia Spandolf, Marie-Curie Early Stage Researcher, working for Dr Gideon Grogan in YSBL.
Extension number: 8258, Room: B/K267/B/K165, Email: claudia.spandolf@york.ac.uk

Stephen Andrews, Research Technician to work on the NCAS Composition, working for Prof Lucy Carpenter.
Extension number: 4525, Room: A057, Email: stephen.andrews@york.ac.uk

Teresa Spayne, Stores Assistant.
Extension number: 2521, Location: Stores, Email: teresa.spayne@york.ac.uk

Andrew Thompson, Research Fellow to work on the Dissection of Alpha Mannosidases, working for Prof Gideon Davies in YSBL.
Extension number: 8276, Room: B/K/266/B/K267, Email: andrew.thompson@york.ac.uk

Dr Graeme Coulthard, Postdoctoral Research Fellow in Synthetic Organic Chemistry, working for Prof Richard Taylor.
Extension number: 2596, Room: D216, Email: graeme.coulthard@york.ac.uk
KMS Winners' Seminar

The KMS Seminar took place on Wednesday 3rd October and was well attended by staff and students including many of our new postgraduate students who had arrived that week. Professor Lucy Carpenter, Chair of the KMS Panel, presented the certificates to the three winners who then each delivered a talk on their own research.

Congratulations to the winners:

**Will Edwards** - supervised by DKS
Component Selection in Supramolecular Gels

**Neetisha Mistry** - supervised by JML/JMS
Mechanistic Studies into the Catalytic Activity of Half-Sandwich Ruthenium Complexes

**Helen Parker** - supervised by JHC/AJH
Recovering value from waste: working towards a sustainable future
Establishing an Independent Career in Chemistry

On the 1st and 2nd of October Beatrice Demarchi attended the first Irène Joliot-Curie conference, “Establishing an Independent Career in Chemistry” at the University of Warwick. Aimed at postdoctoral researchers wishing to embark in a career in chemistry (in academia and beyond), this excellent two-day course focussed particularly on how women can achieve their goals and establish a successful career in today’s competitive environment.

A range of speakers tackled the different issues every young researcher has to face: making choices and achieving success (Lesley Yellowlees, first woman to be President of the RSC), publishing work effectively (Joanne Thomson, Deputy Editor on RSC Publishing), how to become a lecturer (Tricia Hunt, Senior Lecturer, Imperial College London), the necessity of writing confident cvs/applications (Liz Elvidge, Head of the Postdoc Development Centre, Imperial College London), how to introduce vision and creativity in research planning (Lesley Thompson, Director - Research Base, EPSRC), and how to shape the figure of a modern chemist (Rachel O'Reilly, Professor, Warwick University).

All the talks were inspiring, but perhaps even more important were the focussed group discussions throughout the two days, which included small-group debates, discussions over dinner, breaks and a poster session, all aimed at enhancing the opportunities to build a network between the researchers. This well-balanced mix of activities resulted in a very exciting exchange of connections, knowledge, and ideas and will undoubtedly produce excellent outcomes in the future. The second Irène Joliot-Curie conference will be held in 2013 at Imperial College London, and is definitely highly recommended!

More information (including a biography of Irène Joliot-Curie and some of the talks) can be found here: [http://www2.warwick.ac.uk/fac/sci/wcas/events/independentcareer/](http://www2.warwick.ac.uk/fac/sci/wcas/events/independentcareer/) and on the LinkedIn group “Collaborating in chemistry careers”, where information on forthcoming events will be posted.

Beatrice wishes to thank the Department of Chemistry, who financed her attendance at this conference.
Chemistry Postgraduate Open Day – Wednesday 28 November 2012

The University is not holding a Postgraduate Open Day this year. Following feedback from staff, students and applicants, Chemistry will hold two Postgraduate Open Days, the first, on Wednesday 28 November, will be for external applicants and final year York undergraduates. The second, on Wednesday 16 January, will also be open to 3rd Year MChem students who will spend their 4th year abroad or in industry.

Between 3pm and 5pm, potential research students will have the chance to meet individually for 20 minute informal chats with academic staff they are interested in working with (with 5 minutes between meetings).

Please could any academic staff who will be unavailable to meet with potential PhD and MSc by research students at this time, email Alice Duckett at chemgrad@york.ac.uk.

Alice will be contacting section heads/coordinators shortly to nominate staff and current students to speak to those attending and to help out with tours of the department.

A timetable for the day can be seen on the next page.

The University is holding an online open day for those interested in postgraduate study in the sciences on the afternoon of Friday 30 November.
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<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Conducted by</th>
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<tbody>
<tr>
<td>13:15 – 13:45</td>
<td>Welcome and Introduction to the Department</td>
<td>A101</td>
<td>Kirsty Penkman</td>
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<tr>
<td>13:45 – 14:15</td>
<td>Lunch</td>
<td>TBC</td>
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<tr>
<td>14:15 – 15:00</td>
<td>Sub-group stands with posters and information on available projects</td>
<td>A102</td>
<td>Academic staff/graduate students</td>
</tr>
<tr>
<td>14:15 – 14:45</td>
<td>Departmental tours for non-York undergraduates</td>
<td>Meet outside A101</td>
<td>Graduate students</td>
</tr>
<tr>
<td>14:30 – 14:45</td>
<td>Tour of DH Building for York undergraduates</td>
<td>Meet A102</td>
<td>Graduate students from relevant areas</td>
</tr>
<tr>
<td>14:45 – 15:00</td>
<td>Tours for York undergraduates:</td>
<td>Meet A102</td>
<td>Graduate students from relevant areas</td>
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<td> Green Chemistry</td>
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<td> YSBL</td>
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<td>15:00 – 15:25</td>
<td>Informal discussions with first proposed supervisor(s)</td>
<td>Graduate student to show to academic office</td>
<td>Academic staff (parallel sessions)</td>
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<tr>
<td>15:30 – 15:55</td>
<td>Informal discussions with second proposed supervisor(s)</td>
<td>To be collected from academic office</td>
<td>Academic staff (parallel sessions)</td>
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<tr>
<td>16:00 – 16:25</td>
<td>Informal discussions with third proposed supervisor(s)</td>
<td>To be collected from academic office</td>
<td>Academic staff (parallel sessions)</td>
</tr>
<tr>
<td>16:30 – 16:55</td>
<td>Informal discussions with fourth proposed supervisor(s)</td>
<td>To be collected from academic office</td>
<td>Academic staff (parallel sessions)</td>
</tr>
</tbody>
</table>
Green Chemistry News

Dr Thomas Farmer and Professor James Clark attended the kick-off meeting in Paris for a new multinational EU funded research project. “KBBPPS” involves pre-standardization research for bio-based products, the goal being to provide the European and global market with horizontal standards on biomass content and biodegradability that have been assessed on a first set of different products, such as solvents, plastics and lubricants. The KBBPPS project covers research and demonstration on bio-based carbon content determination, biomass content methods not solely dependent on 14C-analysis and biodegradability and eco-toxicity test schemes. Identification and resolution of functionality related bottlenecks with the view to developing, harmonising and validating test methodologies will also be undertaken. The possibilities for improving sample preparation, fractionation and thermal treatments will be studied in order to cover bio-based carbon and other bio-based elements determination. Additionally, practical solutions for stakeholders, lab and field tests on biodegradation or biological derived elements will be investigated. The overall objective is for the results to be copied one-to-one into European standards.

Professor James Clark gave the GSK-sponsored Public Lecture at Burlington House, London on "From Waste to Wealth using Green Chemistry"; the lecture was simultaneously broadcast on the web. James also gave an invited lecture at the University of Bath."

A Thank You Message from Abby

I would just like to say a big thank you to everyone who contributed to the Jewellery recycling scheme to raise money for Breakthrough Breast Cancer. Your support for the event was much appreciated.

I will let everyone know the total amount raised as soon as I know (though I think it can take a few weeks for the items to be processed etc.)

Many thanks again

Abby Storey