RSC NEWS

JULY 2015 www.rsc.org

The case for chemistry

What comes next for science funding?

ROYAL SOCIETY OF CHEMISTRY

▲Students from 15 schools across the northwest attended the Salters' Festival event at Liverpool JMU. (© Matt Thomas)

▲Basil McCrea MLA joins students at the Salters' Festival event at Queen's University Belfast. (© Queen's University Belfast)

▲Students enjoy solving puzzles with chemistry at Aberystwyth University. (© Centre for Widening Participation and Social Inclusion, Aberystwyth University)

▲Patiently waiting for results at Aberystwyth University. (© Centre for Widening Participation and Social Inclusion, Aberystwyth University)

▲Flash and bang demo at Queen's University Belfast. (© Queen's University Belfast)

▲Aoife Nash and Maeve Stillman from St Mary's College Derry at the Salters' Festival of Chemistry at North West Regional College. (© North West Regional College)

▶Level 3 forensic science student Dillon Donaghey offers some advice to some Thornhill College pupils during the Salters' Festival of Chemistry at North West Regional College. (© North West Regional College)

See more about the Salters' Festival on p19.

WEBSITE
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www.rsc.org/news/

Contents

JULY 2015

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THE QUEEN'S AWARDS FOR ENTERPRISE: INTERNATIONAL TRADE 2013

recycle

Snapshot

A look at the latest news from around the world

INBRIEF

Royal Society of Chemistry wins prestigious Membership awards

We scooped two awards and were highly commended in a third category at the 10th Annual MemCom Membership Awards. The prestigious awards, announced in May, are very competitive and recognise excellence and achievement in the membership sector.

The *A Future in Chemistry* website was the Outright Winner in the Digital/Online Communications Microsite category. The site was launched a year ago to provide careers information and guidance to school students who are considering a career in the chemical sciences. The judges noted that the site is 'demonstrably different from the main site; it offers the target audience a visually engaging, responsive and mobile friendly experience.'

Our International Accreditation programme, which included an international ChemCareers event, was Outright Winner in the International Development category. The RSC success in taking degree accreditation worldwide impressed the judges. Since 2010 we have accredited 16 degree programmes across five regions around the world and supported this with ChemCareers events in India, Malaysia, and Indonesia.

We were also Highly Commended in the Product/Service Development category for our ChemNet community. ChemNet supports a wide range of students studying chemistry across the UK. The judges felt that it was 'a great learning resource for 14-18 year olds with an interest in Chemistry, it was inclusive, live, dynamic and engaging'.

IMAGE COURTESY OF MEMCOM FACEBOOK ACCOUNT

Robert Bowles accepts the award for Digital/Online Communications Microsite from Anne Godfrey, Chief Executive, Chartered Institute of Marketing.

2015 RSC Elections

The results of the 2015 Royal Society of Chemistry elections are as follows:

The president elect, Sir John Holman, was elected with 58.4% of the vote, 3,930 votes. Richard Catlow received 2,802 votes.

Sir John said: "I've been an enthusiast for chemistry from the age of about 10, and my enthusiasm is undiminished today, so imagine how honoured I am to be elected President of the world's premier chemistry community. There should be no limit to what the RSC can achieve in advancing chemical science in industry, academia and the public realm."

These results will be formally announced at our Annual General Meeting in Burlington House on 8 July 2015 at 5pm.

President elect
Sir John Holman

Ordinary members of Council
Polly Arnold, Sabine Flitsch, Melissa Hanna-Brown, David Rees, Janette Waterhouse

Elected member of the Membership and Qualifications Board
Elizabeth Page

Elected member of the Science, Education and Industry Board
Pooja Panchmatia

Elected members of Analytical Division Council
Sara Evans, Steven Lancaster

Elected members of Chemistry Biology Interface Division Council
Laura Barter, Rebecca Goss

President elect of Dalton Division (without a ballot)
Emma Raven

Elected members of Dalton Division Council (without a ballot)
Scott Dalgarno, James Wilton-Ely

Elected members of Education Division Council (without a ballot)
Peter Banks, Karen Buck

Elected members of Environment, Sustainability and Energy Division Council
Carole Llewellyn, Andy Rudge

Elected members of Faraday Division Council
Carmen Domene, Katherine Holt

Elected member of Industry and Technology Division Council (without a ballot)
Mark Gronnow

Elected members of Materials Chemistry Division Council
Graeme Cooke, Sarah Staniland

President elect of Organic Division
Alison Hulme

Elected members of Organic Division Council
David Alker, Paul Davies

Outreach Conference

On 5 June, over 50 members from Local Sections and RSC Networks across the UK and Ireland joined the Outreach Team at the Museum of Science and Industry in Manchester, to celebrate and share experiences in outreach. The event saw Dr Marieke Navin, Tim Harrison, and Dr Mark Lorch share their experiences of success and failure in engaging hard to reach audiences, followed by a presentation and workshop detailing the Public Attitudes to Chemistry research. This stimulated a discussion amongst the delegates about the different audiences with whom we currently interact.

Chemistry Week: The afternoon saw a change in pace as we looked towards the future and considered how the findings from Public Attitudes to Chemistry may affect planning events for Chemistry Week, 14-22 November. This year the theme for Chemistry Week is 'new audiences', the 10 days will be centred on building opportunities for members to deliver outreach activities to audiences that they have not previously engaged with. Many of the themes discussed in the workshop considered how we find these audiences, whether that means embedding chemistry in existing events or creating new interactions with children through primary schools or families. Chemistry Week grants are open now to all RSC members and will close on 24 July. Apply at **http://rsc.li/ChemWeekGrants15**

Science and the Assembly 2015

Science and the Assembly drew a large audience to its eleventh annual event at the Senedd and Pierhead buildings in Cardiff Bay on 19 May. The theme for the day was Energy and the Environment, with a distinguished array of speakers drawn from academia and business.

The day also attracted a capacity exhibition, with 25 science societies and professional bodies taking part.

The event was sponsored by David Rees AM, Eluned Parrott AM, Nick Ramsay AM, and Simon Thomas AM.

Opening the event, our immediate past president Professor Lesley Yellowlees reflected on Wales's proud history in fuel cell development and looked ahead to how Wales would continue to innovate, while also protecting the environment. Council member Peter Knowles chaired the afternoon panels and presentations, revealing the high-quality research being done in Wales.

Ceri Davies, Director of Knowledge, Strategy, and Planning for Natural Resources Wales summed up the topics of energy and the environment by discussing some of the challenges Wales faces including climate change, energy security and affordability, and loss of biodiversity. She explained that if the Environment Bill becomes law, it will provide new tools, such as the State of Natural Resources Report.

"This will give an evidence base for action, and using that evidence we'll be looking at what needs to change, what we need to do, and others need to do, to ensure the natural resources of Wales remain available," she said.

In his speech to the event, Plaid Cymru Shadow Minister for Education Simon Thomas highlighted the need for Wales to obtain extra money for science research:

"The percentage of research money from the research councils to Wales has stayed the same for Science, Technology, Engineering and Mathematics (STEM) subjects over the last 20 years.

"We have to look again at the research councils to agree a way of raising the percentage of research from Wales, including investment in improving the capacity of our universities to bid for research money."

The Royal Society of Chemistry organises Science and the Assembly on behalf of, and in cooperation with, the scientific and engineering community in Wales. The event was held in association with The Royal Society, Institute of Physics, Society of Biology, Campaign for Science and Engineering, The Royal Astronomical Society, Society for General Microbiology, The Learned Society of Wales, the Geological Society, and other professional bodies.

© ROYAL SOCIETY OF CHEMISTRY / JAMES DAVIES

Practical support for member networks

Member networks now have access to a new web-based system that enables them to create and order their own promotional materials.

Run by members for their community, member networks organise an annual programme of events including scientific conferences, public lectures, schools activities and social events. On the Brand Centre, they can log in and create event flyers and pop-up banners, as well as order pre-printed items like branded pens and literature about the Royal Society of Chemistry's products and services.

The materials on the Brand Centre have been designed using the Royal Society of Chemistry's branding and there are editable templates, like event flyers, that incorporate their logo.

Fiona McMillan heads up the Member Networks team. "We are committed to providing our member networks with practical tools, like the Brand Centre, to help them with the work they do for our members and the wider chemical science community. Using the Brand Centre to create their promotional materials will help raise awareness of their group and the Royal Society of Chemistry within the chemical science community. This will make it easier for the people we communicate with to know who we are and what we do, and makes it easier for people to recognise us."

INBRIEF

Chemistry in Health Symposium

On 26 May we welcomed five world-leading scientists to Burlington House to present at the Chemistry in Health Symposium and receive one of our prestigious Prizes or Awards announced in 2014.

The symposium's programme was particularly apposite, resonating with the theme of developing new therapeutics, and coinciding with the release of the third report from the Review of Antimicrobial Resistance and agreement on the World Health Organization's global action plan on tackling antimicrobial resistance.

David Spring (University of Cambridge) spoke on the challenge of developing drugs for 'undruggable' targets; Edward Tate (Imperial College London) outlined his research in antimalarial drug discovery; Wilfred van der Donk (University of Illinois at Urbana-Champaign) spoke about the role of biosynthesis in developing antibiotics; and Gurdyal Basra (University of Birmingham) discussed his ground-breaking work on the physiology of the mycobacterium tuberculosis cell wall. Chas Bountra (University of Oxford) represented the Structural Genomics Consortium, who are creating improved platforms for collaboration through open innovation and public private partnerships to enable research and development to deliver the medicines of the future.

We were delighted to be joined by John Watson, Deputy Chief Medical Officer for England, who presented the winners with their medals and addressed the meeting on the importance of drug discovery and the development of new antibiotics to ensure effective healthcare in the future.

Nick Westwood, chair of the Awards Working Group, commented: "It was a great pleasure to chair the Chemistry in Health symposium – it represented a great opportunity to recognise the contributions of five of our outstanding Prize and Award winners, to hear them present seminal research and stimulate discussion in this increasingly critical area."

© MPP / ROYAL SOCIETY OF CHEMISTRY

The five prize and award winners received their medals and certificates from Professor John Watson, Deputy Chief Medical Officer, Department of Health (left) at the Chemistry in Health symposium in London.

One to one

Take advantage of a wide range of member services

Making the most of your membership

Getting more involved with our member networks is a valuable way to utilise your Royal Society of Chemistry membership; they can help you develop your skill set, offer peer support or even open up otherwise unknown opportunities.

© SCOTT WRIGHT

Within your scientific community

Our Interest Groups are a great way to meet others with a similar scientific interest to you. We have 72 Interest Groups, all based around various scientific areas, each run by a committee of volunteer members. Interest Groups run activities that benefit their scientific community, ranging from symposia and networking evenings to lectures. A large number of groups also offer awards or prizes, and most offer some form of bursary for members to attend conferences.

Whether you are in industry, academia, teaching or just interested in a certain topic, explore our list of Interest Groups – as well as specific areas of science, we also have groups that focus on consultancy, law, and secondary and further education.

You can join up to three of our Interest Groups free of charge as part of your membership. If you are unsure as to which group to join, their annual reports (which list group activities for past and upcoming meetings) are available on their webpages or take a look at our events website **rsc.org/events** to search for upcoming dates.

Within your local area

Meeting other members who are interested in the chemical sciences within your local area is also easy to do. The UK and Ireland are split into 35 different local sections, and each local area has a committee that organises events for members in that area. These events cater for all types of members, and some organise unique events; for example, the Kent Local section organised an evening of learning how to curl at England's Fenton's Rink – the only curling rink in the UK.

Local sections are often involved in outreach activities at schools, public events and during Chemistry Week – so if getting involved in outreach has been on your radar for a while, contacting your local section is a good place to start.

We have more than 20 local sections beyond the UK and Ireland, and many more countries have an RSC Representative. If you would like to find out more about how to represent the Royal Society of Chemistry in your country, please get in touch.

Within your career stage

Our Early Career Network, led by members who volunteer as ECN Representatives, facilitates representatives to organise events and activities that further the personal and professional development of members in the early stages of their career. One of our members describes his experience of organising an Early Career Network symposium in North Wales as an "opportunity to develop skills he didn't previously realise he had". He then went on to be the vice-chair and then the chair of another local section.

Keep an eye on our website for upcoming events – in particular pencil in 23 and 24 June 2016 for the next Early Career Members Symposium, which will be taking place at the University of Strathclyde.

If this isn't enough to convince you to get more involved in our networks, our careers specialists advise that only 20% of jobs are advertised – the rest are filled through word of mouth as a result of networking.

To find out more about any of these networks, have a look at our membership and professional community pages on our website or contact the Member Networks team at **networks@rsc.org**

PATENTLY SUCCESSFUL

We heard from one member, who for a number of years had contemplated becoming a patent attorney. After repeated unsuccessful job applications to patent firms, he decided to take a more proactive approach to job hunting. As a long-standing member of the Royal Society of Chemistry, he decided to see what we could offer with regards to networking and events. He joined our Law Group and attended a meeting on intellectual property law.

After overcoming his anxieties he settled down at the meeting, listening to the talks and chatting to as many other people as possible. After the meeting he sent out 50 more applications, was invited for an interview at a law firm in Nottingham, and to his surprise found that one of the senior partners was a member that he had met at the Law Group meeting. This calmed his nerves, he was invited back for a second interview and subsequently offered the job.

Profile

A closer look at our members and their interests

Emma Sackville MRSC is in the first year of a PhD at the University of Bath's Centre for Doctoral Training in Sustainable Chemical Technologies.

Emma Sackville

Meet the Famelab UK finalist making time for PhD research into a sustainable fuel future and enthusing audiences about science

Q What inspired you into chemistry?

A I always enjoyed science at school and ended up doing chemistry, physics, maths and Spanish at A-level. I sort of got into it via a physics project called Particle Adventure in year 10 or 11, which was about sub-atomic particles and I found it very exciting. I ended up picking science A-levels and found that chemistry was a lot more interesting than physics.

I think during A-level time I really strongly felt that chemistry was the central science and going to solve all the world's problems.

Q What's your PhD research about?

A I'm in the first year of my PhD, my second year at Bath as I'm on a doctoral training centre. I'm part of the Centre for Sustainable Chemical Technologies, so I did another Master's of research in my first year. We had extra courses of public engagement, courses about sustainability, two smaller research projects and I then picked one project to do for my PhD.

I just started that last September, so I'm looking at electro-oxidation catalysts. This is for water splitting, to get hydrogen out as a renewable fuel source and also for upgrading of biomass – upgrading biorenewable substrates to move away from a lot of the chemicals that we get from crude oil.

One of the things that really appealed to me about the course that I've ended up on was that it had an application and an end point to the research – to try to make an electrochemical that could do those transformations. I've got those catalysts and I'm also looking at immobilising them onto an electrode that you could use them in a cell that could do those transformations. So to get hydrogen out as a fuel source or to do CH-oxidation.

Q You've been involved in the science communications competition Famelab – how has the experience been for you?

A I first saw Famelab during my undergraduate degree. Someone in Bristol University got through to the regional final and I just looked it up and thought it sounded incredibly fun.

That led me into volunteering at Cheltenham Science Festival and I volunteered at *@Bristol*, a science learning centre. Public engagement, science communications interests just spiralled really. I did a bit of writing, edited the science section of the Bristol Uni student paper and then it's a big part of my course at Bath.

Three or four years after first seeing Famelab I finally got round to applying. It's described as 'X Factor for scientists' I think, which I guess is accurate. It's a combination of being absolutely terrifying and really, really fun. Thinking of new ways to describe chemistry is always challenging but really good fun.

The other thing that was lovely about it was that the other people doing it were really nice. We had a boot camp training weekend, which was very useful. Although we were all in competition it was just a really nice weekend – we've got a Facebook group now and will hopefully be seeing each other again in the future. Sort of a competition without being competitive.

Q What's the importance of making chemistry accessible to a wider audience?

A I guess it's twofold really. One, getting younger people interested in chemistry and the chemical sciences. The other thing – I think about it from a research point of view – if you're a tax-funded researcher you sort of have a duty to explain why what you're doing is useful and where people's money is going.

I think the researcher gets a lot out of it as well. It is for engaging the public and enthusing other people about science but it's also quite a nice distraction and addition to research and you get a lot of transferable skills out of it. Even in academic presentations, being able to have that presenting style and practice is really useful.

Q What advice would you give to someone reading this if they're interested in science communication?

A I'd say just get stuck in. There are so many different things you can do – science festivals, presenting, writing, radio – the possibilities are endless. It's a really fun and worthwhile thing to be doing.

We're going to be at Green Man festival in August, and doing some sort of stand-up science comedy shows as well, which is really exciting. It's definitely something I'll carry on doing in my PhD and I think it's definitely on the cards for when I finish.

"...I really strongly felt that chemistry was the central science and going to solve all the world's problems."

Making the case for chemistry

As the dust settles after the election we begin to get a clearer view of what comes next for science

Over the course of the last parliament we heard Chancellor George Osborne refer to science as 'a personal priority' and Prime Minister David Cameron talk about the life sciences as 'a jewel in the crown of our economy'. This vocal support was also combined with action, and in tight fiscal circumstances the (non-capital) science budget has been protected in cash terms. Although originally cut in 2010, the science capital budget has now been restored and protected in real terms until 2021.

This protection has not come from a deep-seated love of the search for knowledge, but instead from a recognition that the UK's future economic success lies in our development as a modern, knowledge-based economy.

Once upon a time the rhetoric went that we were good at science but no good at commercialisation, but times have changed. Of course, the former remains true – we place first or second in the world for quality and impact in a number of international science base rankings. Commercialisation has now caught up and the Global Innovation Index places the UK second in the world for innovation, a strength that both supports our own businesses and brings investment to the UK. Our knowledge economy now sustains a third of the UK's businesses and pays 40% higher than the average wage.

The Royal Society of Chemistry has played an important part in making this case to government. We have an ongoing programme of meetings with MPs, Peers, and civil servants to engage with them on issues relating to science and innovation support, and over 400 of our members have used our online tool to contact their constituency MP directly. We've been involved in the production of new evidence, commissioning work from economists from Imperial College, London and the University of Cambridge who were able to quantify returns on public investment in R&D, among other broader benefits. We've also made the case in the media with statements from our president and chief executive making the national and trade press, as well as penning articles that have featured on the Guardian's website.

We think we've been successful too. It is typically impossible to ascribe political action to work that has been done by any one organisation, but we were heartened to see a number of our concerns have been highlighted in the Government's Science and Innovation Strategy, as well as the pre-election materials from all parties.

What's next?

With the Conservative party now in a majority government it is anticipated that support for science will continue to at least some degree, but we stand on a knife-edge because the level and form of that support is still far from defined. In the emergency budget later this month, and Comprehensive Spending Review anticipated later this year, this government will set out their plans for the coming years. We'll be continuing to make the case for R&D support and are beginning that push by bringing some of the success stories from the Research Excellence Framework (REF) exercise to life.

We have selected nine case studies from across the areas of healthcare, materials, and energy, to bring the macroeconomic success of chemistry to life for policymakers. Each of the REF impact case studies provides an example of where research performed in the university laboratory has led to impact upon the wider world, but this specific collection also shows where significant value has been added to the economy; from the launch of spin-out companies that have been floated on the London Stock Exchange, to the development of technologies already available on the global market.

To bring these stories to the attention of MPs we are launching them in parliament on 7 July as a collection entitled, 'Inspirational chemistry for a modern economy' as part of a joint event, celebrating the value of scientific research, with the Institute of Physics. Both of our presidents, Professor Dominic Tildesley, and the president of the Institute of Physics, Dr Frances Saunders, will be attending, along with the researchers and companies involved in the case studies, members of our Councils, representatives from the research councils, and all MPs will be invited to drop in to the event. Bringing researchers who are creating new innovations into parliament, and giving MPs the opportunity to talk to them and interact with the innovations themselves, will bring the hard statistics to life.

Asks of government:

- Increase government investment in R&D to EU average by 2020-2021.
- Protect science non-capital funding in real-terms (at the least).
- Ensure that excellence is the primary metric for determining what science is funded.

Over the coming months you'll hear an increasing level of noise – from us and others – around the importance of scientific research to the UK. If you'd like to read more about that, or our overarching aims, there'll be information on our website. With many new MPs (and even those who have heard it before) now is an excellent time to remind them of the many valuable ways in which chemistry makes the UK a better place, and encourage them to support it through the coming parliament.

To help us make this case please visit our website campaigning pages and use the tool there to contact your MP. As a constituent your voice will be hugely powerful to your elected representative, and the greater support we have across the benches, the louder our collective voice is in parliament.

Together we can establish Britain as a world-leading knowledge economy, founded on cutting-edge science and innovation.

UK SCIENCE FUNDING GLOSSARY

Gross Expenditure on Research and Development (GERD)

Total amount spent on R&D across the whole economy, typically represented as a percentage of GDP – circa £27 billion or 1.63% GDP.

Business Expenditure on Research and Development (BERD)

Circa £18 billion or 1.05% GDP

Government-funded Research and Development

Circa £7.2 billion or 0.44% GDP (remainder primarily due to charities and higher education spending).

'Science Budget'

Non-capital government spending on research through research councils and higher education funding councils.

Held at £4.6bn (cash) since 2010.

Science capital budget

Assigned as above, but with additional large projects determined by government – initially cut in 2010 by 40%, formally restored in 2013 and protected at £1.1 billion (real terms) for 2015-2021.

WORDS
VICKI MARSHALL/RICH WALKER

Case studies

Chemistry analyses blood in 30 seconds

Measurement of salts in blood leads to development of point-of-care device used in hospitals, ambulances, and war zones.

Monitoring blood pH and concentrations of ions such as sodium, potassium and calcium is critical in most medical contexts. Slow, expensive external analysis of analytes present in the blood could literally mean the difference between life and death.

The solution

Professor AP de Silva, Queen's University Belfast, pioneered research into fluorescent photo induced electron transfer sensors in 1985, with a sensor containing a fluorescent unit and a receptor unit.

When electrons within molecules are energised with light they are able to transfer from one unit to the other, stopping a fluorescent response. However, if the receptor captures a suitable cation, such as sodium, electron transfer is prevented and fluorescence occurs.

Roche recognised its commercial potential and cassettes worth over $50 million were sold from 2008–2013.

The device can be used in GP surgeries, ambulances and veterinary practices, and blood test results can be available in less than 30 seconds. It is also easy to use – in Japan, doctors were able to immediately provide patients with test results in their surgeries, and paramedics in Sri Lanka and Libya were able to use the device in conflict situations.

Chemistry protects soldiers, footwear and smartphones

Research into nanocoating techniques leads to development of widely used industrial coating process, and three valuable start-up companies.

Surface functionalization techniques such as waterproofing and antibacterial coatings have an estimated value of $50 billion per year. However, most high-performance coatings tend to be energy intensive, unsuitable for industrial-scale production or substrate specific.

The solution

Since 1989 Professor Jas Pal Badyal, at Durham University, has developed surface functionalization techniques using low-cost materials that are better for the environment than solvent-based processes.

Badyal developed methods that allowed plasmas to selectively protect the surfaces of a range of different materials. This work resulted in the development of a quicker, single-step process that was selective, cheaper, and lower energy.

Badyal's research led to the formation of three start-up companies, including P2i, whose Ion Mask™ brand has protected the surfaces of 100 million pipette tips and three million pairs of shoes, 50 million mobile phones and 60% of the world's hearing aids.

A better future for Kibera

Strewn across public lands, railway tracks and water streams, Kibera, the world's third-largest slum, is an imposing sight.

Located just three miles from the vibrant, cosmopolitan charms of Nairobi, Kenya's capital city, it couldn't seem further away. Crumbling metal huts rub shoulders, while soot pervades the air and children play on the refuse filled streets – here even the most basic services, such as electricity and running water, are a luxury.

For Kenyan-born Preston Akenga, the daily realities of this impoverished neighbourhood are very real and personal. As an analytical chemist studying for his MSc. at Jomo Kenyatta University, he is one of the faces of the future in African science. Having attended a gas chromatography-mass spectrometry (GC-MS) course, run by the Royal Society of Chemistry's Pan Africa Chemistry Network (PACN) back in 2014, he is now the first Kenyan intern on a joint collaboration laboratory programme between PACN and Procter & Gamble.

Working daily in the hurried, narrow streets of Kibera, Preston is focusing his research efforts on ensuring clean water can one day be normal to the 300,000 (and ever-increasing) slum residents. "There is a major problem of access to clean water in Kibera," says Preston. "We are carrying out water quality assessment in the hope we can improve conditions and access."

He continues: "Drainage is awful in the slums, as you could imagine. The houses are like shacks where families of usually no less than five live in cramped rooms. We're hoping that through taking water samples and analysing different sources of water supply, we can make a difference to people's lives."

Overcoming challenges with science

Preston, three months into his six-month internship, is learning with every new experience in the slum. He has been touched by the local people's interest in the PACN/P&G team's work and is often asked questions about what a scientist does and how residents can help. Just three weeks ago, he was witness to a cholera outbreak in the settlement which led to seven fatalities. Most often it is e.coli bacteria that cause the contamination, but the scarcity of clean water between the Nairobi water company and the individual owned wells, is in stark contrast to the rising population.

"While taking water samples and moving around the settlement on motor vehicles, we see the gruelling conditions and urgent need for sanitation assistance," notes Preston, who specialises in the study of pesticides and residue – two water quality techniques. "It is clear that scientific input is all but essential to help improve living conditions and healthcare."

"I've learned a lot from Procter and Gamble in terms of critical thinking, improved analytical skills and I had no idea of the corporate world and how it works."

WORDS
ALEX JACKSON

Creating local opportunities

Preston Akenga is one of more than 150 scientists from across Africa to have trained on the PACN GC-MS courses over the last six years. Most recently the courses have expanded to West Africa with training taking place in Ghana, increasing local analytical skills to support chemical monitoring and water management activities.

Since the PACN was set up in 2007 – with the aim of establishing a sustainable and innovative science base across Africa – it has seen more than £1.5m investment and collaborations with 35 different organisations. Three PACN Centres of Excellence in Analytical Chemistry were established in Kenya, Ghana and Ethiopia, in partnership with Syngenta, who donated £1m (over five years) to increase scientific activities in Africa. Another two centres swiftly followed, in Nigeria, where Procter & Gamble, alongside the network, have been creating more opportunities for local talent to flourish in the chemical sciences.

"Some of the more major issues in African science lie in capacity and expertise, as well as lack of funding for equipment," says Erick O. Awas, who administrates PACN Kenya. "The network can help combat this by creating opportunities for multinational research where African scientists can work with researchers in more developed countries. We can also strengthen regional centres of excellence with varied training programmes to increase local knowledge."

He is buoyed by the success of the network and training opportunities, and believes this local expertise can be used to train another generation of scientists. The PACN annual congress has further made great strides to bring together academia, government and industry across the continent.

Research collaboration

Preston's ambitions are a reflection of a widespread desire in Africa to engage with science. He is quick to point out that there has been a steady increase in young people enrolling on science courses and believes there is a general appetite and interest from the public.

"The public is interested and hungry to know what we're doing as scientists in Africa. People in Kibera are keen to find out more about water quality. I often get children coming up to me to ask what I'm checking in the water samples and how they can join in. It's really rewarding to show science first hand and explain what a scientist's role is in tackling everyday challenges."

Collaboration is key to future innovation in African science and Preston is keen to see more activity and opportunities in future decades. "There is a huge strain on resources that often hampers scientists from carrying out their ideas and research projects," he says. "We have a long way to go and a crucial solution is through encouraging collaboration where African scientists and western researchers can share equipment, ideas and research in both academia and industry."

Broadening horizons

The internship has already provided Preston with a whole new perspective on the corporate world. "I can't compare myself to how I was three months ago. I've learned a lot from Procter and Gamble in terms of critical thinking, improved analytical skills and I had no idea of the corporate world and how it works. I feel a better, smarter person," he smiles.

Referring back to his work in Kibera, he is positive that science can play an important part in combatting the continent's future challenges. "I hope our assessment of water quality can be of huge benefit to African society and lead to a better future for Kibera's residents," he says.

Preston Akenga (right) using microbiological and chemical analysis to assess water quality across Kibera (left).

IMAGES COURTESY OF PRESTON AKENGA

Opinion

Letters and comments on RSC activities and issues

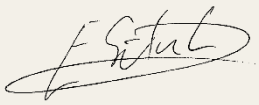
FROM THE EDITOR

It's been fascinating monitoring the reaction to our *Public Attitudes to Chemistry* research, as unveiled in our June edition (see across the page for more on that).

Our colleagues internationally continue with some inspiring work, facing up to challenges like providing clean water for a growing global population. One example is our partnerships in Africa, which have the potential to make a positive difference to the lives of some of the world's poorest people (p10).

While it may already seem a long time since the General Election, the fight for science funding continues. We continue to make the case for chemistry playing a vital part in an innovative, knowledge-based economy (p8).

Last but by no means least comes your news – our Snapshot and Notices cover the incredible things you do for our community. We're always on the lookout for more, so please write to me at the email address below, with your news and views on what you want to read here.



Edwin Silvester
rscnews@rsc.org

RSC News welcomes letters, which should be concise (normally less than 300 words) and timely. Those selected for publication are subject to editing for clarity and length. Letters should be marked 'for publication'; letters are not routinely acknowledged. **rscnews@rsc.org**

You can also let us know your thoughts and comments via Twitter or Facebook.

@RSC_Newsroom

facebook.com/RoyalSocietyofChemistry

Chemical reactions

Communication is a skill – and not one that we chemists necessarily practice every day. I reflected on this as we launched our *Public Attitudes to Chemistry* research at a live event in London last month; I was part of a panel responding to the fascinating research findings we can now all use to craft our future communications. By understanding the true public attitudes to chemistry – which are quite different from what we thought they were – we can develop that communication skill, channel our passion positively, and inspire everyone around us with chemistry, every day. We heard a really interesting range of interpretations of the research from my fellow panellists – here are some snippets of what they said, with choice tweets below:

Katherine Mathieson, from the British Science Association: "There's some interesting pointers about the potential stereotypes and barriers that I think we're facing. I was particularly surprised by the confusion between chemists and retail pharmacists, even though I myself use the word chemist when I mean retail pharmacist – in my head they're completely separate... it's not a case of the public necessarily being right or wrong but just that's what their view is and that should be our starting point when thinking about communicating with them."

Suze Kundu, science communicator and teaching fellow at Imperial College London: "If we play on the relevance of chemistry in people's lives, people find things interesting – food, solving global challenges – but I think also reminding people that chemistry is going on in them all the time, that's it's going on all around them, could be a really good way to make it a bit more relevant. I was really amazed by the results. I think chemists give themselves a hard time but actually the public quite like us, which is nice!"

Stuart Cantrill, editor of Nature Chemistry, spoke on the subject of chemicals: "I was very pleasantly surprised that people have a good awareness and understanding of what chemicals are - that some chemicals can be good for you and that some chemicals are maybe not good for you.... We should be heartened. Even though in the press chemical is not seen as a good thing, 55% of people in the survey said they were fairly neutral – more people were happy and excited about chemicals than were shocked, angry or sad."

Mark Peplow, science journalist: "What really jumped out at me from this research is the striking mismatch between public attitudes to chemistry and chemists' expectations of those attitudes. 84% of the public agreed that chemists made a valuable contribution to society. Only 12% of chemists in the survey thought the public would've said so. It's important not to tar chemists all with the same brush but it does seem that quite a few of them have a bit of a chip on their shoulder. They believe they're unappreciated, they're mistrusted and that an ignorant public is gripped by chemophobia, an irrational fear of all things chemical. I think the survey shows that's not the case and it suggests that some chemists have been fighting the wrong battle."

Jon Edwards, Royal Society of Chemistry strategic communications manager, Cambridge, UK.

Chemophobia, a chemists' construct

Following our *Public Attitudes to Chemistry* research, Mark Lorch thinks it's time for chemists to stop feeling so unloved

The other sciences seem to get pride of place in the media's science pages and TV shows. Whilst chemistry has no celebrity singing its praises, not a single chemist made it into *Science Magazine*'s 50 science stars on Twitter, and chemistry news just doesn't get the same coverage as the big physics projects (even when that project was about landing a chemistry lab on a comet).

As a profession we think we do some pretty important work. After all every modern pharmaceutical, synthetic material, cleaning product, fuel, battery, ink and electronic device contains our handy work. Which is why we get upset when an advertising campaign emblazons the dreaded words 'chemical-free' across some product or another. Or when the likes of *The Food Babe* (online pedlar of spurious opinion) decides to start an uniformed campaign against an additive, based on little more than the fact she can't pronounce it.

Sometimes we throw our toys about the pram and start ranting about how everything is made of chemicals and how fear of chemicals is rife. God knows chemistry bloggers, broadcasters and writers have gone on about this perceived chemophobia enough. Even *Nature Chemistry* joined in with a parody 'paper' detailing a comprehensive list of chemical-free consumer products (it contained two blank pages). However, with the publication of the RSC's study on public perceptions of chemistry, it seems those irate blog posts (mine included), radio programmes and lectures got it wrong.

Fear of chemicals?

What is particularly telling about the RSC's findings is not that the public doesn't understand chemists, but that chemists don't understand the public. The RSC started by asking its members how they felt chemistry was perceived. Sure enough most expected a negative attitude. The fear of chemophobia (chemophobiaphobia?) was certainly commonplace. But when the RSC turned to the public the fear of chemicals didn't materialise in anywhere near the expected levels.

Most people really didn't have strong feelings about chemicals one way or another: 60% knew that everything is made of chemicals – less than 20% of the public thought that all chemicals are dangerous or harmful. This is despite the use of 'chemical' to mean something dangerous being very common. When it came to perceptions of chemistry, 59% believe the benefits of chemistry are greater than any harmful effects (as compared to 55% for science in general). Once again most people were pretty neutral about chemistry as a subject. And it turns out people just don't know what chemists really do, unsurprisingly most people think we are pharmacists.

There's an important message here about what's going on when 'chemical' is used pejoratively. For most people it has a double meaning. So we shouldn't get upset when 'chemical' is used as a short hand for toxin, poison or caustic. I know I've written plenty that's contrary to this, but the RSC's study has really changed my thinking. People are quite capable of holding two meanings of 'chemical' in their minds and we should just try and ignore the use of the one that so grates. In fact it may even be counter-productive to try and combat others' perceived misuse of 'chemicals'.

Appetite for science

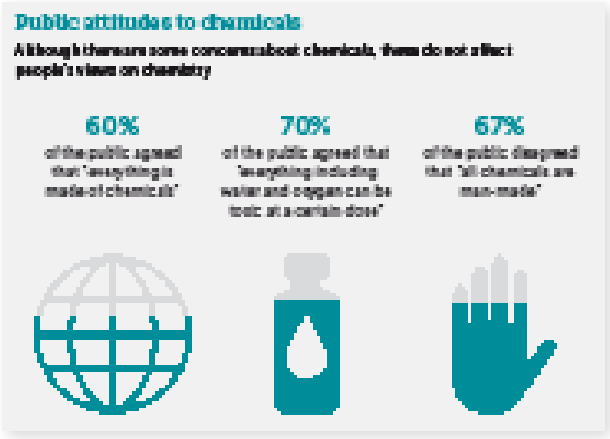
As the RSC study puts it: 'People's views of chemicals do not impact their view of chemistry or chemists. But if chemists talk about chemicals all the time, especially in trying to combat inaccuracies in the views of others – we risk activating existing fears.'

At the moment chemists aren't being tarnished with the 'chemicals – danger' association. But by continually banging on about how chemicals are in everything we run the risk of forging that link in people's minds.

Luke Gamon puts it very well in one of the many chemophobia posts in the chemistry blogosphere: "Don't denigrate, belittle or 'punch-down' ... lest we lose the battle for the public perception of chemicals."

The overwhelming message is that there is a void in the public's perceptions of what it is we do. And it's a gap that we should all help to fill by telling people about what we do. We all need to do our bit, whether on social media, during outreach in all its forms or even at parties.

There's a great appetite for science out there, we shouldn't assume that people aren't interested in what chemists get up to and we certainly shouldn't fear a negative reaction from the public. If we don't fill the void in public perceptions of chemistry then we run the risk of something – that we don't control and we don't like – filling it for us.



Mark Lorch MRSC is a lecturer in the department of chemistry at the University of Hull. As well as research, teaching and blogging he tweets **@sci_ents**

"...the RSC's study has really changed my thinking."

Diary

Your guide to all important events

IN THE DIARY

NOTICES

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That's Life: Find out what Esther Rantzen spoke about at Burlington House in June (see p17).

Further information

To find out more about any event on this page, see **www.rsc.org/events**

Call +44 (0) 1223 43 2254/2380

Or email **events@rsc.org**

RSC conferences

ISACS 18

Challenges in Organic Materials and Supramolecular Chemistry

19–21 November 2015
Bangalore, India

Oral abstract deadline: 6 July 2015

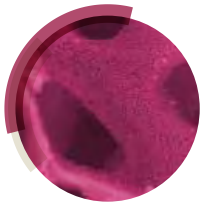
2015's International Symposia on Advancing the Chemical Sciences (ISACS) series culminates in Bangalore this November. This is the 18th ISACS conference but the very first in India and brings together world-leading expects from several fields under the broad research disciplines of organic materials and supramolecular chemistry.

The conference will provide an overview of some of the key challenges within the field, in an environment designed for interaction and networking. There will also be extensive poster sessions in the evening and questions after each talk.

Visit the conference website for updates.

http://rsc.li/isacs18

Faraday Discussion



Nanoparticle Assembly: From Fundamentals to Applications

7–9 January 2016
Mumbai, India

Full paper submission deadline: 17 August 2015

Complementing the Faraday Discussions meeting on Nanoparticle Synthesis and Assembly (Chicago, USA, April 2015), this Discussion focuses on the rapidly evolving field of nanoparticle self- and driven assembly.

Three distinct classes of materials where nanoparticle assembly holds significant potential for applications will be covered – with a view to determining common features of structural organisation on the nanoscale. As such, it is an excellent opportunity to consider the implications of these ideas for the broader field of soft matter.

Does your research align with any of our central themes:

- Synthesis and assembly of nanoparticles and their assemblies
- Modeling and theory
- Nanocomposites
- Applications to soft matter

http://rsc.li/assembly-fd2016

ANNOUNCING

Nanoparticles with Morphological and Functional Anisotropy (Faraday Discussion)
4-6 July 2016
Glasgow, UK
http://rsc.li/anisotropy-fd2016

DATES AND DEADLINES

Carbon Dioxide Utilisation (Faraday Discussion)
7-9 September 2015
Sheffield, UK
Early bird registration deadline: 20 July 2015
http://rsc.li/cdu-fd2015

Challenges in Chemical Renewable Energy (ISACS 17)
8-11 September 2015
Rio de Janeiro, Brazil
Early bird registration deadline: 20 July 2015
http://rsc.li/isacs17

Single-Molecule Microscopy and Spectroscopy
14-16 September 2015
London, UK
Early bird registration deadline: 27 July 2015
http://rsc.li/molecule-fd2015

Supramolecular Photochemistry (Faraday Discussion)
15-17 September 2015
Cambridge, UK
Early bird registration deadline: 27 July 2015
http://rsc.li/photochemistry-fd2015

Advanced Vibrational Spectroscopy for Biomedical Applications
21-23 March 2016
Cambridge, UK
Oral abstract deadline: 6 July 2015
http://rsc.li/vibspec-fd2016

Designing New Heterogeneous Catalysts
4-6 April 2016
London, UK
Oral abstract deadline: 20 July 2015
http://rsc.li/catalysis-fd2016

Events

Further information

The *RSC News* Diary this month lists Royal Society of Chemistry events from July to August 2015 that are held on our conference database. Further details on any of these meetings can be obtained from the named contact or from our conference website at **www.rsc.org/events**

You can search events by name, date or keywords and have the option to browse by location, subject area and event type.

EASTERN

Essex Section

Spectroscopy Workshops

1, 3, 6, 8 and 10 July
University of Essex
A hands-on day for A-level students to gain experience of spectroscopy in action. There is a charge of £10 per student, teachers gratis.
Contact Alan Osborne
0208 590 2021
dimequin@bushinternet.com

Mid Anglia Section

Annual Retired Members Lunch

20 August
University of Hertfordshire, Fielder Centre
Contact John O'Toole
01223 894174
john.otoole9@btopenworld.com

Other Events

Organic Division
24th International Symposium: Synthesis in Organic Chemistry

20-23 July
Churchill College, Cambridge
The flagship event of the Organic Division.
Contact RSC Events
01223 432254
events@rsc.org

Molten Salts Discussion Group
Summer Research Meeting

3-4 August
Fitzwilliam College, Cambridge.
The meeting provides an opportunity for the community to disseminate and discuss the latest findings in the area in an informal supportive environment. The MSGD are particularly keen to encourage early career researchers to participate.
Contact Andrew P Doherty
028 90974481
a.p.doherty@qub.ac.uk

INTERNATIONAL

Canada

International Network of Environmental Forensics 2015 Conference

4-6 August
Victoria College, University of Toronto, Canada
The conference will be a combination of plenary presentations, with oral and poster technical sessions and will provide an opportunity for people of all experiences to learn from environmental forensic experts practising and/or studying in this field.
Contact David Megson
+1 (416) 235-5774
inef2015@gmail.com

China

International Symposia on Antibacterial Agents: Chemistry & Mechanisms of Actio

25 & 27 August 2015
Lanzhou University / Tianjin University, China
The RSC is jointly organising these Medicinal Chemistry symposia comprising two events. The symposia will focus on understanding mechanisms of antibacterial drug resistance, fighting superbugs, addressing the challenges, and proposing potential solutions for the discovery of new antibiotics. It will feature a mix of high-profile international speakers and Chinese speakers from both academia and industry, providing a platform for medicinal chemists to exchange research information, discuss challenges, promote collaborations, and facilitate the transfer of new technologies.

CPA-RSC Symposium on Antibacterial Agents: Chemistry & Mechanisms of Action

Lanzhou University, Lanzhou,
25 August
Contact RSC China Events
00 86 10 59822317
chinaevents@rsc.org

RSC-TJU Symposium on Antibacterial Agents: Chemistry & Mechanisms of Action

Tianjin University, Tianjin,
27 August
Contact RSC China Events
00 86 10 59822317
chinaevents@rsc.org

South Korea

ChemComm Symposia

12-13 August
Ulsan National Institute of Science and Technology (UNIST),
South Korea
The symposia will bring together researchers for an outstanding plenary programme, together with an open lunch that will provide many networking opportunities. Hosted by Professor Mi Hee Lim. The symposia are free to attend but registration is required.
Contact RSC Events
+44 (0) 1223 434048
events@rsc.org

ChemComm Symposia

14 August
LG Convention Hall, Seoul,
South Korea
The symposia will bring together researchers for an outstanding plenary programme, together with an open lunch that will provide many networking opportunities. Hosted by Professor Wonwoo Nam. The symposia are free to attend but registration is required.
Contact RSC Events
+44 (0) 1223 434048
events@rsc.org

MIDLANDS

Other Events

Analytical Biosciences Group
Circular and Linear Dichroism Summer School

6-8 July
University of Warwick
The purpose of the event is to train researchers in circular dichroism and linear dichroism data analysis and related techniques and to see how they are used in current research. All modules will include principles of the techniques and practical implementation
Contact Professor Alison Rodger
024 765 74696
a.rodger@warwick.ac.uk

NORTH EAST

Other Events

Faraday Division
Solid Oxide Electrolysis: Fuels and Feedstock from Water and Air – Faraday Discussion

13-15 July
University of York
There is great interest in converting electricity overcapacity, e.g. from renewables, to fuels such as hydrogen and synthetic gasoline or for the conversion of nitrogen to ammonia
Contact RSC Events
01223 432380
events@rsc.org

Materials Chemistry Division
12th International Conference on Materials Chemistry

20-23 July
University of York
The Conference represents the flagship event of the Materials Chemistry Division. The meeting is organised into six themes run in four parallel sessions, with two poster sessions to allow maximum participation of all delegates. Six Plenary Lecturers will talk across the scope of the conference, while 24 Keynote Speakers will set the scene for different aspects of the six topics, supported by more than 100 contributed talks. Around 300 posters will be displayed over the two sessions.
Contact RSC Events
01223 432380
events@rsc.org

NORTH WEST

Liverpool Section

Catalysis: Fundamentals and Practice

20-24 July
University of Liverpool
The Summer School introduces catalytic science, engineering and business, and provides an opportunity to meet leading catalyst scientists.
Contact Jon Iggo
iggo@liverpool.ac.uk

SCOTLAND

Other Events

Energy Sector

1st Chemistry in Energy Conference

20-22 July
Heriot-Watt University, Edinburgh
The purpose of this Conference is to bring together scientists and technologists from academe and industry with interests in the applications of Chemistry in the Energy Industry. Given the wide scope of this conference, it is intended to hold multiple parallel sessions, with individual sessions which will identify fundamental chemical science subjects and will, for example, cover cross-cutting issues over the whole energy field, such as materials chemistry, corrosion, water/steam chemistry, etc.
Contact Maggi Churchouse
01359 221004
maggi@maggichurchouseevents.co.uk

Toxicology Group / Analytical Division – Scotland

Food Safety: Analytical, Toxicological and Regulatory Aspects

18 August
Glasgow Caledonian University
A one-day meeting on current analytical and toxicological challenges in food safety.
Contact Kate Jones
01298 218435
kate.jones@hsl.gsi.gov.uk

Carbohydrate Active Enzymes in Medicine and Biotechnology

19-21 August
University of St Andrews
Featuring Prize and Award Lectures from Sabine Flitsch – RSC Interdisciplinary Prize 2014, Gideon Davies – RSC Khorana Prize 2014 and Glyn Hemsworth – Biochemical Society Early Career Research Award.
Contact The Conference Office
+44 (0)20 7685 2450
conferences@biochemistry.org

SOUTH EAST

Chilterns and Middlesex Section

Newlands Lecture

1 July
Imperial College, London
A lecture entitled 'Landing on a Comet' to be given by Professor Monica M Grady
Contact Stephen Robinson
020 8546 7940
stephenrobinson_3@hotmail.com

Other Events

Analytical Division

Analytical Research Forum 2015

3 July
The Royal Society of Chemistry, Burlington House, London
The Forum provides a high impact scientific meeting for the UK analytical community with both high profile speakers and opportunities for younger researchers to present their work.
Contact RSC Events
01223 434048
events@rsc.org

Fullerenes – Past, Present and Future, Celebrating the 30th Anniversary of Buckminster Fullerene

15-16 July
The Royal Society of Chemistry, Burlington House, London
The RSC and Royal Society are jointly organising a two-day symposium to honour Professor Sir Harry Kroto's scientific achievements and to celebrate the 30th anniversary of the discovery of C60.
Contact RSC Events
01223 434048
events@rsc.org

Tertiary Education Group

University Teaching Fellows Network Meeting
23 July
University of Sussex
Contact Shane Lo Fan Hin
01273 678439
S.Y.Lo-Fan-Hin@sussex.ac.uk

Public Lecture – Feed the World: The Challenges of Global Food Security

13 August 2015
The Royal Society of Chemistry, Burlington House, London
Join Professor Tim Benton as he explores the challenges of sustainably and equitably providing food for a growing world population.
Contact RSC Events
01223 434048
events@rsc.org

Wikipedia Editathon

29 July
The Royal Society of Chemistry, Burlington House Piccadilly
A Wikipedia editathon – a collaborative event to improve Wikipedia content. All are welcome, but places are limited and so booking is required.
The focus will be on chemistry-related topics. Assistance will be available for people who have not edited Wikipedia before.
Participants will be able to access the society's extensive library and RSC staff will be able to provide access to papers from the society's journals.
Contact Andy Mabbett
01223 432243
mabbetta@rsc.org

WALES

North Wales Section

Drug Delivery Workshop

6-7 August
Bangor University, School of Chemistry
This Life Sciences Research Network Wales funded workshop will pull together experts in the field of drug delivery with the ambition to generate new research collaborations and future funding applications. Student participation in the workshop is encouraged.
Contact Chris Gwenin
01248 383741
c.d.gwenin@bangor.ac.uk

Notices

Benevolent Fund Volunteer Network Conference 2015

Our Benevolent Fund is one of the most valued services available to our members, offering advice and guidance to those in need, and financial assistance to members who may have fallen on hard times. We would not be able to provide the essential support and encouragement to members in need without our fantastic network of volunteers, and we were delighted to bring them together at the Benevolent Fund Volunteer Network Conference which took place at Burlington House in June.

The conference, which coincided with the UK's volunteers' week, included some notable speakers who discussed relevant research and support resources to both enhance understanding of where there is need, and how we can help. We welcomed Dame Esther Rantzen to Burlington House as a guest speaker, bringing her wealth of experience as a trained volunteer counsellor, campaigner and as president of Childline. Dame Esther spoke about her most recent work as founder and president of The Silver Line, a charity providing support to vulnerable older people, drawing upon her own personal experience of loneliness, which motivated the creation of a service to combat social isolation in the elderly.

As well as an engaging presentation from Dame Esther, delegates also heard from Senior Research Associate Matt Padley from the Centre for Research in Social Policy at Loughborough University. Matt gave an illuminating talk about income adequacy, focusing on the income people need in order to have a socially acceptable standard of living, generating much discussion from volunteers.

Two former beneficiaries also spoke at the conference, sharing their personal experiences of how they overcame adversity, with emotional and financial support from the benevolent fund and our volunteer visitors. These inspirational stories were identified by many as the highlight of the event, showing the difference that the benevolent fund can make to the lives of members and their families.

This biennial conference included volunteers from near and far, from Reading to Russia, and we've received some glowing feedback. "It was the most interesting and enthusiastic conference from the benevolent fund that I have participated in," said one volunteer, with another adding: "The opportunity to hear real beneficiaries' stories face to face shows what a worthwhile job we are involved in."

It was a wonderful opportunity to celebrate the contribution made by our benevolent fund volunteers and many thanks to all those who attended, making the event a huge success.

Sarah-Lou Tomlin, benevolent fund specialist

▲Dame Esther Rantzen speaking to delegates at the Benevolent Fund Volunteer Network Conference.

▲Our benevolent fund volunteers at Burlington House.

Take part in our Pay and Reward Survey

There is still time to complete this year's Pay and Reward Survey (previously known as Trends in Remuneration), which is running until 9 July. We run this survey every two years to provide an authoritative report on salaries in the chemical sciences. These results are an extremely useful tool for your career management and your contribution to this survey is essential to provide all our members with high quality information about pay in our sector.

As well as a written report, we will provide members with access to an interactive tool which you can use to directly compare your reward, using criteria of interest to you; from age, gender and geographical location through to qualifications and employment sector.

This year, as a thank you, we are also giving all members who take part in the survey an exclusive opportunity to preview the results before they are more widely released.

We are working with market research agency Research by Design, who fully comply with the Market Research Society Code of Conduct and will ensure all responses are completely anonymous. Please look out for an email from us titled Pay and Reward Survey 2015 – Helping You Plan for the Future, which will contain your personal link to the survey. We very much appreciate you taking the time to complete this questionnaire.

RSC outreach in China wins plaudits from government leaders and young students alike

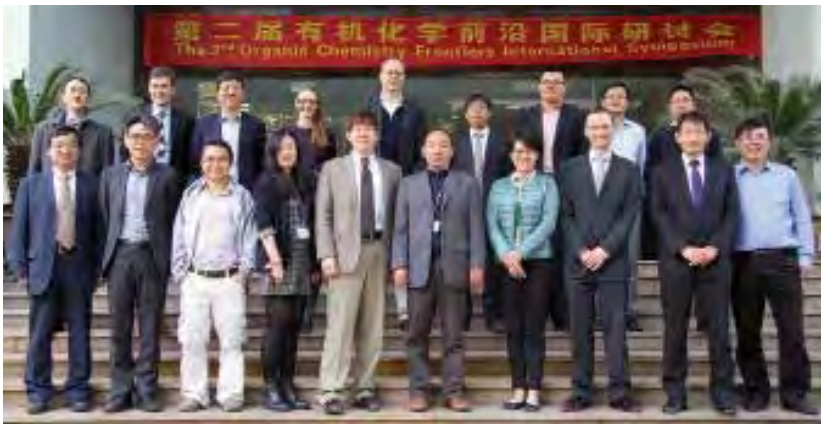
The Beijing Local Section was invited to participate in a flagship National Science and Technology Week event by the Chinese Ministry of Science and Technology held in Beijing in May. Local Section Chair David Evans, assisted by research students from Beijing University of Chemical Technology, gave young people – from four to 18 years old – an opportunity to carry out chemistry experiments for themselves.

Vice-Premier Liu Yandong, herself a chemist by training, joined in an experiment on the first day. Madam Liu said that the Chinese government attached great importance to science popularisation and valued our contribution to promoting its development in China. Secretary of the Beijing Party Committee, Guo Jinlong, and the Minister of Science and Technology, Wan Gang, also visited the RSC booth. In a poll of children and their parents the RSC lab was chosen as one of the 24 favourite activities, from among the over 300 on offer. David Evans was selected by the organising committee as one of three International Science Popularisation Ambassadors.

2nd Organic Chemistry Frontiers International Symposium

Zhejiang University hosted the second Organic Chemistry Frontiers International Symposium in Hangzhou, bringing together more than 220 participants from over 50 research institutions and industries in China.

In line with the purpose of Organic Chemistry Frontiers – publishing the very best research from China, Asia and the rest of the world to an international audience – the series of symposia will celebrate a new phase in international collaboration in scholarly publishing, and will promote the academic exchange and scientific interactions between Chinese researchers and the global chemistry community.



Chemistry of colours competition

The RSC-Deccan Local Section in India has conducted a drawing and painting competition for schoolchildren on the theme of 'Chemistry of Colours'. Children from five to 14 years of age took part in the competition, while RSC-DS gave prizes for the best paintings. Prof V Peesapati, Hon Secretary of our RSC Deccan Section reports that the competition was a thoroughly colourful success.

Bring more chemistry to Wikipedia

RSC members, other chemists and members of the public are all invited to help to improve Wikipedia's coverage of chemistry related topics, at two 'editathons', one at Burlington House in London on Wednesday 29 July, the other at the Catalyst Science Discovery Centre, in Widnes, Cheshire, on Saturday 8 August.

Wikipedia is the free encyclopedia, written, edited and illustrated by thousands of people, around the world. Since September 2014, the Royal Society of Chemistry has been host to a Wikimedian in Residence, Andy Mabbett, who works with our staff and members to improve chemistry-related content on Wikipedia and its sister projects such as Wikimedia Commons and Wikidata. The content of all these projects is freely available for reuse, by anyone.

The Catalyst event will include a tour of the museum – when photographs may be taken – and of its archives. Attendees at both editathon events will work on Wikipedia articles about chemistry and chemical companies, as well as biographies of chemists. No experience is necessary, as experienced Wikipedia editors, including Andy, will be on hand to help beginners. Attendees can use the venues' free Wi-Fi, but should bring their own laptop.

The events are free, but you must book in advance. See **bit.ly/RSC-BH2015** (London) and **bit.ly/RSC-Cat** (Widnes) for details.

NI retired members power trip

A power station on the north shore of Belfast Lough was recently the destination for 20 of our Northern Ireland retired members – Kilroot Power station, a coal, oil, and biomass fuelled station which produces one third of the country's electricity. After a safety induction, the group heard about the operation of the plant, and the issues around the provision of a constant energy supply taking into account the many factors which can affect supply in an integrated power grid. The members also heard about work being done on sustainable energy generation from wind, wave and solar energy and on energy storage. Having worked up an appetite visiting the turbine hall and 24-hr control room, the Members headed off for refuelling in nearby Carrickfergus.

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Dozens of events for hundreds of students in Salters' Festival

Hundreds of secondary students have had the chance to visit university chemistry departments around Britain and Ireland for a competition in hands-on chemistry in the annual Salters' Festival. The students were challenged to solve a fictional crime in the morning session of the events, as they worked in teams to try to catch the culprit of the 'Trouble at the Salt Mine!' murder. A wide range of challenges and demonstrations were on offer during the afternoon sessions.

The Universities of York, Leeds, Bradford, Newcastle and Sheffield all hosted very successful Salters' Festivals this year. After students from around the region put their analytical skills to the test to solve 'Trouble at the Salt Mine!' a university challenge in the afternoon gave them the chance to show off their problem-solving skills and creativity. The students loved the friendly atmosphere and the practical experience and went away bursting with enthusiasm for chemistry!

Nineteen schools from across Wales were able to attend events at Cardiff and Aberystwyth universities. At Cardiff, students from years seven and eight used flame tests and test tube reactions to carry out the work of forensic detectives. In their afternoon session the pupils were asked to create a new Rainbow pH indicator.

© MATT THOMAS

Liverpool John Moores hosted 40 students from 10 different schools, while the University of Manchester challenged students to work out how to time boiling grandpa's egg for one minute without using a watch, mixing a chemical solution so that a colour change takes place after 60 seconds.

Trinity College, Dublin, is unique within the Salters' festivals as it is the only festival that takes place on a Saturday. The evergreen John Daly entertained pupils from 19 schools with his accomplished exhibition lecture to perfectly round off a full day of lab based activities for the pupils.

The North West Regional College's event was the first time that the festival had ever been hosted in an FE college or equivalent within the UK and Ireland, and attracted 12 local schools. Pupils thoroughly enjoyed their day in the labs and were treated to a late afternoon chemistry show by Belfast-based science educators W5.

Queen's University's Salters' Festival also hosted an unusual event, when local MLA and chemical engineer, Basil McCrea, turned up to 'help' the students in the lab. Ten schools attended in Belfast and they enjoyed an exhibition lecture by Prof Chris Hardacre.

In Scotland, Heriot Watt University in Edinburgh hosted 14 high schools who saw a chemical magic demonstration in addition to solving their Salters' and University Challenges. The University of Glasgow kindly hosted 33 schools over two days in June. Around 130 students from across Scotland enjoyed taking the role of forensic scientists using chemistry techniques to identify the murderous culprit in the 'Trouble at the Salt Mine' activity, followed by a visually exciting demonstration lecture on the chemistry of copper, silver and gold.

The University of Greenwich challenge involved an iodine clock, while there were chemical magic shows on display in the universities of Kent and Reading.

See p2 for more photographs from Salters' Festival events.

Engineering for clean water across Africa

The 2015 Royal Academy of Engineering Africa Prize has gone to Dr Askwar Hilonga, a Chemical Engineer from Tanzania. We sponsored him – through our work with the Pan Africa Chemistry Network – to attend an IUPAC meeting in Durban, South Africa in 2014.

Dr Hilonga's innovation is a sand-based water filter that cleans contaminated drinking water using nanotechnology. Each Nanofilter is engineered for a specific body of water and absorbs the contaminants present – from heavy metals or minerals such as copper and fluoride, to biological contaminants like bacteria and viruses, and pollutants such as pesticides.

The United Nations reports that up to 115 people in Africa die every hour from diseases linked to contaminated drinking water and poor sanitation. In a 2014 report, former UN Secretary General Kofi Annan said AIDS, TB, malaria and other infectious diseases would not be defeated until the battle is won for safe drinking water, sanitation and basic healthcare. Dr Hilonga's trademarked Nanofilter is set for commercialisation within a year.

The Africa Prize encourages local researchers to find solutions to local challenges, and to develop them into businesses that will benefit Africans. Head judge Malcolm Brinded said: "Askwar Hilonga's innovation could change the lives of many Africans, and people all over the world.

"He has successfully incorporated the training and mentoring from the last six months into his business plan, and shows great promise."

See p10-11 for another example of the PACN's work to provide clean water through a collaboration in Kibera, Kenya.

A lifeline for families

Over the past 15 years, our staff have supported Cambridge-based charity East Anglia's Children's Hospices (EACH).

EACH supports families and cares for children and young people with life-threatening conditions across Cambridgeshire, Essex, Norfolk and Suffolk. Hamish Crawford and Bethany Johnson from our staff Sports and Social Club recently visited the charity to present them with our latest contribution, a cheque for £6,090. We've raised the money through a number of events, including concerts from our very own choral group, Choirality.

Karen Newton, Fundraiser at EACH, explains about the charity's work and how the money we raise is used. "Our care and support is tailored for the needs of all family members and delivered where the families wish – in their own home, at hospital, in the community or at one of three hospices.

"We deliver a wide range of services through short-break care, emotional and psychological support, symptom management, care at end-of-life, bereavement support and many activities and therapies. Both for families accessing care, and those who have been bereaved, EACH is a lifeline at an unimaginably difficult time. We rely on voluntary donations for the majority of our income."

The money we've donated will be used for their 'pay-for-a-day' scheme. "The scheme covers the cost of all the services EACH provides throughout Cambridgeshire in one day – including care provided at the Milton hospice, in hospitals, the local community and at families' homes," says Karen.

Karen reflects on the fundraising efforts of Royal Society of Chemistry staff members.

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"Long-term and loyal support is invaluable, not only by continuing to support EACH with cash donations but by providing volunteer support and raising awareness of EACH to your staff over many years. We are very grateful to the Royal Society of Chemistry and the Sports and Social Club for their continued support."

Future chemistry entrepreneurs motivated by Lahore workshop

The RSC Pakistan Section collaborated with the department of chemistry of the Forman Christian College (FCC) University Lahore in the organisation of a workshop on "Chemical Entrepreneurship". The workshop was attended by students and staff from FCC, other institutions and members of the local section.

More than 80 participants heard presentations on entrepreneurship, local projects and business planning, and students in particular appreciated the efforts of the Department of Chemistry FCC University and RSC Local Section.

Professor Ashraf Chaudhry, from our Pakistan Section, explains that it was the first workshop of its kind in Pakistan, and provided participants with information about successful ventures in chemistry, and encouragement for their own activities.

Professor Chaudhry said "The participants, who learned the role of chemistry as a foundation to start their own businesses, have been assured of assistance while establishing their chemical businesses in the future. "It has really been a rewarding event for all concerned."

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Admissions July 2015

Fellow (FRSC)

Christopher Abell, Richard Luke Ainsworth, David Andrews, Adriano Andricopulo, Marcella Bartoletti, Jonas Bergquist, Malcolm Berry, Huaqiang Cao, Emanuel Carrilho, Alain Chaintreau, NiBin Chang, Zhen-yu Chen, Andrew Chiffey, Kate Collison, Miles Congreve, Antony Davies, Kelvin J. A Davies, Marcel De Matas, Volker Deckert, Martin Duke, Robert John Errington, Antonio Facchetti, Qun Fang, Teruo Fujii, Ashok Ganguli, Jacinta Maria George, Mark Andrew Green, William Griffiths, Abraha Habtemariam, David Hall, Dai Hayward, Gareth Hinds, Mark Howarth, Yongsheng Hu, Tony Jun Huang, J Andrew Hunt, N C. Hyatt, Laura Itzhaki, Samson A. Jenekhe, Ning Jiao, David Robert Jones, Mercouri Kanatzidis, ChihMing Kao, Jayant Khandare, Deepa Khushalani, George Koutsantonis, Ilya Kuprov, Charles Langrick, David Law, Hian Kee Lee, Xingwei Li, Chunzhong Li, Jing Li, Hong Liang, Jun Lin, Zhuang Liu, Norberto Peperine Lopes, Alejandro Lucini, David Macpherson, Jacqueline Macritchie, Dilip Kumar Maiti, Chandrasekharam Malapaka, Tobin Marks, Robert McIntyre, Steven Meredith, Claudio Mota, Clive Mowforth, Prabha D. Nair, Boris Nemzer, Xiongwei Ni, Niamh Nic Daeid, Daniel G. Nocera, John Olesik, Anthony O'Mullane, Satanarayana Reddy Padala, Martin Padley, Siddharth Pandey, Vipulkumar Patel, Emily Jane Perry, David Pye, Badari Narayana Prasad Rachapudi, Ashok Raichur, Mohammad Rashid, David Read, Soumyajit Roy, Harry Salem, Alastair Sanderson, David Scanlon, Mohsen Shahinpoor, Ulrich Stimming, LiXian Sun, Shouheng Sun, K Sundararajan, Laxmikant Tiwari, Raewyn Town, Yong-Qiang Tu, Nutalapati Venkatasubba Naidu, Richard Wain, Xinchen Wang, Rory Waterman, Martin Whitaker, Richard White, Stephen Whittaker, Yijun Xu, Tao Ye, Jiaguo Yu, Xiaogang Zhang, Jin Zhang, Yong Sheng Zhao, Yihua Zhu.

Member (MRSC)

Nadia Abdul Karim, Pius Adelani, Mahmood Ahmed, Jiteen Ahmed, Megan Kay Aisthorpe, Bhagyaraj Akuthota, Mohammad Shahdo Alam, Karrar Alameed, Sam Alexander, Seth Chase Alexander, Zacharias Amara, P Anandha Ganesh, Zoe Anderson, Mohd Bismillah Ansari, Najib Aragrag, Claire Ashworth, Muhammad Sofian Asi Sihombing, Benjamin Nicholas Atkinson, Suzannah Attard, Sarah Austen, Jonathan Austwick, Carlos Avendano, Michael Bagan, Anil Bagha, Jennifer Bain, Helen Rachel Ballard, Afroza Banu, Matthew Banwell, Christopher Paul Barlow, Clement Barriere, Christopher Bate, Thomas Batty, Peter Bayliss, Mark Beard, Fern Bell, Jeremy Besnard, Chris Bester, Mark Betson, Daniela Bezuidenhout, Vishal Birar, Frederic Blanc, Rebecca Blundell, Jeanne Bolliger, Claire Marie Lucie Boncompain, Richard Bradshaw, Colin Brown, Katherine Brown, Eleonora Bruzzi, Tomislav Buric, Lee Alan Burton, Benjamin BurtonPye, Nathalie Busschaert, Callum Campbell, Robert Campbell, Paola Carbone, Thomas Carey, Renan Cariou, Emma Carter, Wayne Carter, Izabela Caskie, Olga Cavoura, Stuart James Chalk, Julia Chamot-Rooke, Balasaheb Chandanshive, Patima Chauhan, Prinessa Chellan, YuSu Chen, Xianfeng Michael Chen, Minyi Chiang, Samir Chikkali, Hamida Chishti, Lai Sheung Choi, Katherine Clark, Robert John Clarke, Leon John Clarke, Edward Cleator, Benjamin David Cons, Simon Cooper, Lewis Corbett, Anna Corrias, Lewis Couchman, Helen Coulshed, Lyndsey Cox, Gavin Craig, Charlotte Cree, Rachel Crespo Otero, Lewis Trayton Crouch, Lucy Culleton, Sinead Currivan, Madeleine Da Silva, Gangodawilage Dabera, David Daniels, Noviyan Darmawan, Raghunath Dasari, Michael Davey, Oluwafemi Davies, Philip Davis, Alexandra De Giorgio-Miller, Mohamed Deyab, Pamela Dickson, Adrian Dingle, Thomas Draper, Kyle D'Silva, Victor Dubina, Alexander Dudgeon, Scott Thomas Matthew Dunham, Jay Dunsford, Gabor Durko, Agnieszka Dybowska, Joanna Earle, Tracy Ehiwe, Nour El-Gendy, Angelique Bianca Ell, Nader El-Sisy, Bethan England, Matthew Evans, Solmaz Fahimi, David Fairclough, Olufemi Emmanuel Fakolujo, Kaizhong Fan, Riccardo Ferdani, Philippe Fernandes, Marco Flores Ferrao, Rosie Fielder, Laura Fisher, Penelope Fitt, Thomas Forder, Noam S. 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Diego Rota Martir, Majdouline Roudias, Aloduljabbar Rushdi, Andrew Rushworth, Steven Michael Russell, Orlando Santoro, Lauren Sargisson, Eoin Scanlan, Anja Schlott, Greig Scott, Aleksandar Sebesta, Stewart Selbie, Charu Seth, Anwar Shaikh, Humera Sharif, Sunil K. Sharma, Priyanka R. Sharma, Jonathan Sharp, Benjamin Showell, Claudia Marie Sievers, Vanessa Silvestre Gonzalez, Hayley Simmonds, Fern Sinclair, Sian Slater, Emma Smith, Daniel Edward Smith, Paula Poli Soares, Christodoulos Solomou, Yaouba Souabou, Michael Spooner, Vaneesa Nagalingam Sree, Latha Srinivasan, Claire Stanley, Kirsty Stark, Sean Stayte, Mladen Stojanovic, Huihui Sun, Timothy Taylor, Fiona Hestbaek Tennant, Alina Theisen, Michael Tomsett, Anita Toscani, MinhTrang Tran, Anne Trappe, Victor Ulian Antunes, Judith Unterlass, Bipin Uprety, Tamas Varga, Guilherme Vasconcelos Borghi, Rik Veenboer, Esmie Lyn Agustin Vergara, Renan Vidal Viesser, Zoe Vincent, Ben Wagstaff, Elizabeth Wala, Shaun Walker, Zonhkai Wang, Peter Juma Wanyama, Stephen Ward, Simon Watson, Anita Wester, Michael Wilde, Leon Fitzroy Willis, Robert Euan Wilson, Jonathan Wilson, Samantha Witty, Yin Wong, Joanne Woodhouse, John Geoffrey Woodland, Zhugen Yang, Jack Young, Risma Yulistiana, Amanda Zammit, Federico Zen, Meijiao Zeng, Xuan Zhang, Zhaoliang Zheng, Qing Zhou, Wenjuan Zhou.

Chartered Chemist (CChem)

Rebecca Beard, Christina Bird, Edward Brightman, Philip Brunsdon, Christopher Cartridge, Hannah Davies, Peter Karl Daniel Dawson, Victor Diaz Perez, Slimane Doudou, Susan Finch, Cara Finn, Sara French, Geraldine Garrs, Matthew Robin Gilbert, Vicki H. Grassian, Andy Hogben, Jemma Hunter, Garry Keilty, Paul Kemmitt, Marie Lacombe, Phillip Martin Mallinson, Erin Mitchell, Noleen Morgan, Finlay Morrison, Andy Noble, Siddharth Patwardhan, Juliette Reid, Stuart William Reynolds, Paul Rostron, Jonathon Speed, Alex Ttofi, Seth Wiggin, John Barrie Wright.

Chartered Scientist (CSci)

Mahesh Hariharan, Ndidi Ihekwaba, Andrew Stuart Kirk, Christian Lucas, Tung Man Kin Sam, Henry Paul McIntyre, Jane Elizabeth Moore, Noleen Morgan, Jennifer Nicholls, Juliette Reid, Stuart William Reynolds, Nicola Ryder, Mansoor Saeed, Helen Sarginson, Fraser Scott, Alison Scott, Steven Paul Tedds.

Registered Science Technician (RSciTech)

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Registered Scientist (RSci)

Stephanie Paige Bull, Megan R Carroll, Michael Davey, Richard Feetham, Joshua Anthony Kelly, Katie Isobella Pardoe.

Deaths

Dr David John Ager CSci CChem MRSC Principal scientist, DSM Innovative Synthesis BV. Died 25 April 2015, aged 62

Professor Norman Basco MRSC Emeritus Professor of chemistry, University of British Columbia. Died 10 April 2015, aged 85

Mr John Bravey CChem MRSC Retired consulting technologist, Courtaulds Coatings Plc. Died 26 April 2015, aged 86

Mr Trevor Frederick Bridges CChem MRSC Retired. Died 23 April 2015, aged 79

Dr Erminio Natale Costa CChem FRSC Self-employed consultant. Died 8 April 2015, aged 92

Mr Michael Peter Ford MRSC Date of death not supplied

Mr Gerald Malcolm Fryer MRSC Retired. Died January 2015, aged 81

Mr Cecil Victor Gittins CChem MRSC Died 12 November 2014, aged 85

Mr Warrington Clifford Harrison CChem MRSC Retired general manager, Harrison Lighting Corporation. Date of death not supplied

Mr Ian Chalmers Hood CChem MRSC Retired, regional sales manager, Nalco Ltd. Died 6 April 2015, aged 78

Richard David Johnson CChem FRSC(UK) Emeritus Professor, Ryerson University, Canada. Died 7 November 2014, aged 87

Dr Anthony Hamilton Jones CChem FRSC Retired HM inspector, Welsh Education Office. Died 8 March 2015, aged 82

Mr Arthur Schofield Jones CChem FRSC Retired development officer, Rowntree Mackintosh Plc. Died 27 March 2015, aged 88

Mr John Arnold Jones CChem MRSC Retired. Died 29 November 2014, aged 82

Professor Osvald Knop MRSC Retired, Dalhousie University. Died April 2015, aged 92

Professor Shalom Sarel MRSC Emeritus Professor. Died 30 March 2015, aged 97

Professor Norman Sheppard CChem FRSC Emeritus Professor of chemistry, University of East Anglia. Died 10 April 2015, aged 93

Mr John Derek Slater MRSC Retired. Died 29 March 2015, aged 85

Professor Robert Joseph Paton Williams MBE CChem FRSC Emeritus Professor, University of Oxford. Died 21 March 2015, aged 89

Mr John Ernest Withers MRSC Retired chemist, Blythe Burrell Colours Ltd. Died 19 April 2015, aged 86

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