

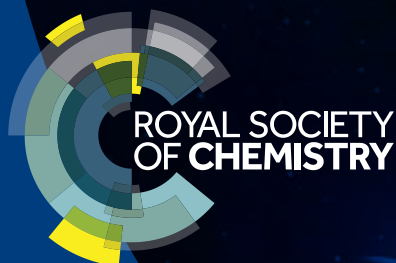
# RSC NEWS

JANUARY 2015 [www.rsc.org](http://www.rsc.org)

Global challenges,  
chemistry solutions  
Why and how we support the  
effort to tackle global challenges

Professional  
development for  
teachers  
p10

Expanding our  
regional networks  
p12







On 4 and 5 November, we held the 3rd RSC/P&G symposium at the University of Nairobi. With a focus on regulatory harmonisation, hygiene and sustainability, over 200 delegates from across Africa attended to share knowledge and form new connections. During the event, Raffaele Scoccianti from P&G Connect and Develop Africa (below right) announced that the company will support a new internship at the University of Nairobi to look at the sustainable provision of safe, clean water to urban communities.

This replicates the successful programme that we have established in Nigeria, and is a model that will enable us to work with new partners to support the Pan Africa Chemistry Network.



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JANUARY 2015

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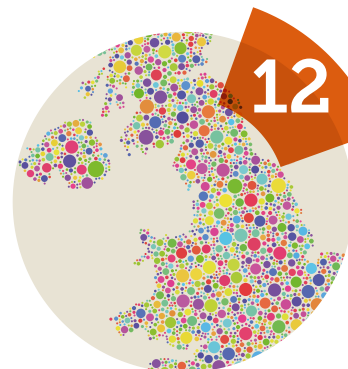
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# Snapshot

A look at the latest news from around the world

## INBRIEF

### Our community reaches 50K

We're pleased to announce that our membership now spans more than 50,000 individuals. Continuing the trend of year-on-year growth that we experienced in recent years, we welcomed new members from different countries to our worldwide community.

"All of our members – from those who have been loyal advocates for countless years to those who joined more recently – are an integral part of the Royal Society of Chemistry. And we are proud to welcome each and every one of our new members," said our Head of Membership, David Barr.

He continued: "Being a member of a chartered professional body like the Royal Society of Chemistry is an important part of a successful career. Through our history, expertise and connections, we are well placed to support individuals in their science and practice of chemistry and we will continue our work on developing an attractive range of activities and services for our growing community."

If you'd like to find out who our 50,000th member is, turn to our profile on p7.

### Education campaign in Wales

In December, we launched the Welsh branch of our specialist teaching campaign at a breakfast roundtable at the Welsh Assembly. The event was attended by Assembly Members from the Labour, Liberal Democrat and Conservative parties, as well as by representatives from our sister societies and other stakeholders.

In Wales there is a shortage of chemistry teachers with a chemistry background – only half have a chemistry degree compared with two-thirds in England. Only 4.8% of Welsh primary teachers have a science degree. We are therefore calling for all post-14 pupils to be taught by a chemistry specialist (someone with a chemistry or related degree or relevant experience), and for every primary school to have access to a science subject leader who is a science specialist (someone with at least one science A-Level).

The campaign was well received, with Assembly Members sharing our concerns around the shortage of specialists. We also achieved press coverage across a range of media outlets, including BBC Wales.

## Emerging Technologies Competition goes European

After two successful years of identifying promising new technologies in the UK, this year our Emerging Technologies Competition will be open to applications from small companies and academic researchers from across Europe for the first time. As in previous years, the aim of the competition is to reward the best new technology ideas in the chemical sciences. As the competition continues to grow, this year's applications will be judged in three themed panels; healthcare, energy and sustainability, and materials science.

Opening up the competition to Europe is in line with our vision for the chemical sciences, explains our president, Dominic Tildesley.

"We want to see an innovative chemistry sector flourish both in the UK and in the rest of Europe. Such a sector is founded on the sharing of ideas, skills, and support, and, in an increasingly connected and global economy, this has never been more important.

"Welcoming Continental European applicants to the Emerging Technologies Competition is just one way that we can realise this vision for chemistry, and we hope to see many applications from all across Europe."

Previous winners of the competition have benefited hugely from the prize package, forming long-lasting business relationships with our partners and raising their profile.

"The insight from working with our mentors at GlaxoSmithKline has been invaluable," says Dr Eleanore Irvine from Biogelx, one of the winners of our inaugural competition in 2013. "We've now got a much earlier sense of how we need to change and develop the product."

► **Competition finalists are invited to pitch their technologies at an event in London, which also offers the opportunity to hear from leading professionals and network with fellow entrepreneurs and investors.**

Dr Richard Ward from 2014 winner Catalytic Technologies adds: "Our mentor at Croda is brilliant – incredibly supportive and hugely keen to help us ... we have made good progress."

The feeling of mutual benefit for the winners as well as our competition partners is echoed by Dr Neil Lant from Procter & Gamble. He says: "We are super enthusiastic about helping [the winners] drive their technologies forward and ... helping them find home in one of our products or in other industries."

The impact of the competition is also demonstrated by the success that some of the winners have since had. For example, 2014 winner Dr Matthew Gibson from the University of Warwick was recently awarded €1.5m by the European Research Council to continue to develop his technology that mimics nature's own cold defence mechanisms to enable more efficient preservation of donated cells and tissues.

Designed to accelerate the commercialisation of the best chemical science technologies, the competition supports innovation in small companies and academia. This year's nine winners will receive a tailored package of business support from leading multinational companies, extensive promotion and a cash prize for further development.

To find out more about the competition and to apply, visit <http://rsc.li/emerging-technologies>



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## 100 Wikipedia editors receive access to our journals and databases

We have donated 100 'RSC Gold' accounts – the complete portfolio of Royal Society of Chemistry journals and databases – to be used by Wikipedia editors who write about chemistry. The partnership is part of a wider collaboration between our members, staff and the Wikimedia community, which aims to improve the coverage of chemistry-related topics on the online encyclopaedia and its sister projects.

Our recently appointed Wikimedian in Residence Andy Mabbett said: "Royal Society of Chemistry journals are the first port of call for many scientists and Wikipedia is the first port of call for both students and lay people. It absolutely makes sense for the two to work together to share knowledge, freely, for the benefit of everyone."

Stephen Hawthorne, Royal Society of Chemistry deputy chief executive, explains that this sort of partnership is part of our vision for the future. He said: "By granting access to our journal content, we are looking to forge stronger links with the volunteers who build those projects and to encourage more chemists to edit Wikipedia."

"Around the world, we invest in educating future generations of scientists, partner with industry and academia and promote collaboration and innovation. And we promote the talent, information and ideas that lead to great advances in science."

In order to verify its content, Wikipedia requires all facts stated to be given citations from reliable sources. The Wikipedia Library will arrange for the donated subscription accounts to journals and online archives to be allocated to Wikipedia editors who have demonstrated a commitment to working on projects in relevant topic areas. It, too, is run by volunteers, supported by the US-based Wikimedia Foundation.



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### INBRIEF

#### Chemistry on the road

Throughout November, we showcased the Royal Society of Chemistry and the many different ways in which we support our community at our first ever chemistry roadshows in India and South Africa.

Since we began the roadshows in 2011, we visited more than 40 UK and US universities. The visits include workshops on topics ranging from successfully publishing research and using the media to influencing policy and maximising career and funding opportunities.

In South Africa, employees, representatives of our South Africa Local Section and members of the South African Chemistry Institute visited universities in Johannesburg, Pretoria, Durban and Cape Town, where they shared information on publishing research, Open Access, membership and the Pan Africa Chemistry Network. Our India roadshows comprised three scientific symposia in Delhi, Hyderabad and Chennai on analytical and supramolecular chemistry. In addition to networking with other scientists, attendees had a chance to find out about our activities and publications.

For information on the next roadshows visit [www.rsc.org/events](http://www.rsc.org/events)

#### Summer party: save the date

Each year, we invite our members to join us at the Royal Academy of Arts, London for our Summer Party. It gives you a chance to celebrate with us our achievements and to meet colleagues and friends while viewing the largest contemporary art exhibition in the world.

This year, our Summer Party will take place on the evening of Thursday 16 July 2015. If you'd like to attend, keep an eye out for more details in *RSC News*.

#### Connecting jobseekers and companies

On 26 November, we welcomed more than 340 enthusiastic jobseekers through the doors of Burlington House for our second *Chemistry World Jobs Live* careers fair. In addition to being able to discuss career opportunities with representatives from 22 companies, the attendees had a chance to attend a popular science journalism workshop. The session, which gave jobseekers a taste of a particular career to help inform their choices, provided an opportunity to discover and appreciate science journalism techniques.

Next year, we will be holding one event in Manchester on 18 November and a second in London on 25 November.

## Support for South East Asian students through ChemCareers and accreditation

With the aim of supporting the chemical science community across all parts of the world, we have expanded our activities in South East Asia throughout the last year.

As part of our growing international accreditation portfolio – which included accrediting our first course at a university in the USA at Purdue – we formally accredited the bachelor's degree in chemistry at National University of Singapore (NUS) in December.

Professor Kian Ping Loh, Head of the Department of Chemistry at NUS, explained that the department was keen to gain internationally recognition: "We want to learn ways to strengthen our course further and raise the department's visibility to increase competitiveness and attract the best students. ... Gaining accreditation is also a way to highlight to my colleagues, and others outside the department, that good quality teaching is of key importance and highly valued at NUS."

To support existing accredited universities in the region we also brought together

researchers from South East Asia and the UK to form collaborations and exchange ideas at symposia on natural products, organic chemistry and drug discovery at Universitas Gadjah Mad, Indonesia, and International Medical University, Malaysia. In addition we held our first ever ChemCareers event in Malaysia. On 14 December, we welcomed more than 200 students from three RSC-accredited universities in Kuala Lumpur.

The attendees had a chance to find out about life beyond university and enhancing their employability. In addition to hearing personal accounts of successful careers in academia from two UK-based professors, the students also had a chance to explore careers in industry through presentations from industry representatives. In addition, Royal Society of Chemistry Career Management Specialist Julie Franklin shared practical tips on career planning, CV writing and effective job searching. One of the attendees commented: "It's made me think about my career in a different way. I know I can start to prepare now. There are lots of things I can do to influence my future. It's very exciting!"

# One to one

Take advantage of a wide range of member services

## Chemical science data at your fingertips

Our library at Burlington House is a treasure trove of chemical science information, but with our members being based all over the world, it's not easily accessible for everyone. This is why, in 2004, we introduced the Virtual Library as a way for our members to access high-quality chemical information easily and for free. In the last ten years, we have continually reviewed and improved our offerings to ensure that you get what you need most.

Our latest addition to the Virtual Library is the chemical information database Reaxys. Here, three of our members share how they have made use of the resource since its launch in May this year.

### Supporting research

"For anybody engaged in the practice of synthetic organic chemistry it is simply unthinkable not to have access to the largest database of published synthetic organic chemistry. Reaxys is superb!" said Dr Alistair Miller, a consultant based in Devon, UK. Calling the database a real life-line, he also explained that it is much more user-friendly than its predecessor, the Beilstein database on the old Commander server.

When we asked Alistair how he used the resource, he said: "Every time an idea pops into my head, Reaxys is more than able to answer the question whether other chemists have had the same idea, already put it to the test and, most importantly, published the data."

He also uses the Virtual Library to access other information: "The Library is a long way away from me, and my closest university no longer has a chemistry department, so I am nearly completely reliant on the Virtual Library. It is getting better and better, and I am constantly accessing *Tetrahedron* and *Tetrahedron Letters* through Elsevier's ScienceDirect. *Bioorganic and Medicinal Chemistry Letters* being added for 2015 is another feather in the cap."

### Developing expertise

Binod Maitin, who retired from United Spirits Limited in Bangalore, India last year and still works as independent technical consultant

found that Reaxys "proved extremely useful in updating my knowledge and strengthening my core areas of expertise." He mostly uses the database for literature searches, explaining that he also finds it "very helpful that the texts available for download can be exported to Mendeley or other reference managers."

Like Alastair, Binod also finds other offerings from the Virtual Library useful in his work: "I keep up to date on business developments with EBSCO, which features articles published in *Harvard Business Review* and the *Journal of Marketing* among others. And Science Direct helps me maintain my knowledge in my core areas of interest. I often browse a range of different journals."

### Accessing knowledge

Pip Hellier, a student at Imperial College London, UK, first heard of Reaxys through his university. "I use Reaxys as a means of quickly and easily accessing a wide range of chemical information, for instance spectral data and experimental procedures. When preparing for labs, analysing results and writing up lab reports, it has been a most useful tool.

"It also links directly to literature, which has been of great benefit to me when I wished to read the original literature in more detail or prepare reference lists. Reaxys has become more useful to me when doing independent research work in the later years of university."

Pip also makes use of some of the other tools we offer through the Virtual Library. "I use the Knovel and ScienceDirect collections most frequently, as the range of e-books and textbooks available has been of considerable use for studying for university courses."

### Make use of our resources

You can also use several of our own resources and tools to access the chemical information that is relevant to you. For example, we offer our members access to work published in our journals. With the start of this year, your access to Royal Society of Chemistry content will increase from 10 to 15 free articles downloads, and you will be able to access our entire journal archive of articles published before 2007 for free. In addition, you can choose one journal title from our collection, which you will be able to access for free. And with *Chemical Science* going Open Access this year, you will also be able to directly access all articles in this journal.

Our own database of chemical information, ChemSpider, is freely available to use. Growing daily, it currently contains 32 million different compounds and is a rich resource focusing on 'small molecules'. The simple interface allows you to search using many different text identifiers, chemical structures or even on a molecular weight or formula, and you can explore the literature with connections to PubMed, Google Scholar as well as our journals and books.



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# Profile

A closer look at our members and their interests



**Linda Maguire MRSC**

Linda's interest in chemistry led her to investigating how chemical compounds are metabolised in the environment and to becoming our 50,000th member.

## Linda Maguire

Meet the Environmental Fate Research Analyst who became our 50,000th member this autumn.

**Q What inspired you to study chemistry?**

**A** I was always more interested in science subjects than language and business subjects at school, and for my Leaving Certificate – the Irish equivalent of A-levels – I chose physics and chemistry. After that, I decided to go to University College Dublin (UCD) for a BSc Science course.

Initially, I had actually wanted to study physics. But the course was designed in such a way that you could take several subjects in the first year to find out what you enjoyed most, and, in the end, I didn't even take physics during the first year. In fact, I found the chemistry course and experimental work much more interesting, so I decided to concentrate on that area. I still found it challenging for the first few years, but once I settled into my fourth year and began to work on my own projects, I really enjoyed it.

**Q Was it the project work that convinced you to pursue a Master's degree?**

**A** After my degree, I wanted to travel, so I took the first job that came along, which was in a bank. I saved up and went backpacking in Australia for two years. When I came back, I returned to the bank for an interview but realised that this was not what I wanted to do. I had really enjoyed the environmental aspects of my chemistry degree, so I looked into Master's courses and was intrigued by the environmental science course at UCD. It had some chemistry in it, but also plenty of biology, something that was new to me. My thesis work involved assessing the water quality of rivers in agricultural areas using biological and hydro-chemical means. The combination of chemistry and biology was something that I really enjoyed.

**Q How did that experience lead you to your current role?**

**A** After I finished my Master's thesis, I found myself firmly in the depths of the recession, which hit Ireland very badly. I managed to get jobs here and there just to pay the bills. I then found a chemist placement through FAS, the Irish government's work scheme. I applied, but was told I didn't qualify as I wasn't unemployed. When I asked what I could do to find a job in my chosen profession, I was advised to consider emigration.

So a year and a half after finishing my degree, I moved to England and applied for as many science jobs as

I could. Within a month I had a successful interview for an Environmental Fate Research Analyst position at Smithers Viscient in Harrogate.

**Q What does your work involve?**

**A** We test how agrochemicals and pharmaceutical compounds are metabolised in the environment in accordance with the OECD guidelines. My role is lab-based and very hands-on. I tend to be working on two to three studies at a time, using radio-labelled compounds to trace how degradation might occur under certain conditions, such as through exposure to sunlight or microorganisms in the soil. The aim is to simulate environmental processes, to predict the likely route of degradation and the rate at which this happens. The majority of the studies take between one and three months, and it's very satisfying to see the process through from start to finish. I use a variety of analytical techniques and work with a range of pharmaceutical and agrochemical compounds, which keeps the job both interesting and challenging.

**Q What made you decide to join the Royal Society of Chemistry?**

**A** My friend's dad, who is a chartered chemist, recommended membership to me. He found great benefits to being a member, so I thought it would be a good idea to join. I'd like to use it keep abreast of the latest developments in chemistry, as new analytical techniques are being developed all the time. Also, members' access to journals will be very useful – having direct access to academic papers is an element of university that I really miss.

"When I asked what I could do to find a job in my chosen profession, I was advised to consider emigration."

### WELCOMING NEW MEMBERS

Our members include chemical scientists in 115 countries across the world. From students and teachers to those working in industry or academia and those who have retired, our community spans the breadth and depth of the chemical sciences.

We have seen our membership expand greatly throughout the last few years, and we are proud to welcome each and every one of our new members. This year, we exceeded the 50,000 mark for the first time in the history of the Royal Society of Chemistry, and we look forward to working with all of you, whether you've been a member for numerous years or only joined recently.

# Global challenges, chemistry solutions

WORDS  
DEIRDRE BLACK

The chemical sciences will play an important role in tackling global challenges. Find out why and how we support our community in contributing to this global effort.

From food security and access to clean water to environmental pollution and human health – our global society faces many challenges to which the chemical sciences can help to provide solutions. Just over five years ago, we published our roadmap *Chemistry for Tomorrow's World*, a document that presented hundreds of examples of ways in which advances in chemistry will underpin technological solutions to global challenges. Since then, we have worked to support people across career stages, to foster new interdisciplinary research networks, worked with the chemistry community to identify emerging areas and acted as advocates for making progress within them.

As 2015 begins, we can already look forward to another year of ambitious and exciting activities addressing global challenges across the chemistry community. But why is tackling global challenges a priority for us? What are the opportunities for us and our community? And what are some of the areas we are focusing on? Here, we share with you an overview of our plans.

## Sustainable development

*"New technologies are unlocking possibilities for sustainable development. The solutions that they can generate, and the levels of access that they can enable, will be crucial to our vision for the world beyond 2015."*

**Ban Ki-moon, UN Secretary-General**  
(December 2014)

At the beginning of the 21st century, the UN set its Millennium Development Goals with an original target of 2015. Although many of these goals have not yet been reached, they have provided an unprecedented impetus for dialogue and subsequent action and progress around the world.

Following on from the Rio+20 conference on sustainable development in 2012, an Open Working Group has been developing a proposal for post-2015 Sustainable Development Goals (SDGs), which will form the basis of the post-2015 intergovernmental process at the UN. Ending poverty in all forms tops this list. The remaining goals include many inter-connected global challenges, from eradicating hunger, providing education and empowering women, to supplying water and energy for all and promoting sustainable production and consumption.

Addressing these global challenges will require galvanising efforts across economic, political and social spheres. Science will also make an important contribution to tackling many of the challenges, for example through the development of low carbon technologies, membranes and sensors to purify and monitor water and air, new medicines and diagnostics for healthcare. Many of our activities planned for 2015 are aimed at advancing the science and technologies in these areas (see box).

## Economic opportunities

*"Not only is tackling climate change compatible with economic growth, it is only by tackling climate change in a systemic way that we can deliver growth for the global economy in the 21st century."*

**Paul Polman, CEO Unilever** (April 2014)

There are many reasons to search for solutions to global challenges, including fundamental concerns about human rights and quality of life, today and in the future. So solutions must focus on both environmental and economic sustainability.

At the same time, the development of new solutions brings new economic opportunities, and around the



world we see an increasing connection between research, innovation and global challenges. For example, over one-third of the almost €80 Bn budget for the EU Horizon 2020 framework is ear-marked for 'societal challenges'. In the UK, the 'Eight Great Technologies' that form a central plank of the current Industrial Strategy include agri-science and energy storage in addition to underpinning science that will enable progress in areas such as energy and health.

## Tackling antibiotic resistance

*"If we fail to act, we are looking at an almost unthinkable scenario where antibiotics no longer work and we are cast back into the dark ages of medicine where treatable infections and injuries will kill once again."*

**David Cameron, UK Prime Minister** (July 2014)

Antibiotic resistance or, more broadly, antimicrobial resistance (AMR) poses a global threat. It will take people from many different scientific disciplines – and from across academia, industry and clinical practice – working together to develop solutions to this challenge (also see p15). Chemistry is central not only to improving diagnostics, but also to understanding AMR and its causes, developing new therapies and mitigation strategies. This is why we have made this a priority for our advocacy and community support activities in 2015.

Since November, we have come together with six other learned societies, including the Society of Biology and the British Society of Antimicrobial Chemotherapy, in a partnership to lead the fight against AMR by supporting researchers and by engaging with government and other research funders to achieve funding and policy support for the AMR research community.

You can find out more about our work on AMR and the area of health in general at <http://rsc.li/global-challenges>

## Mitigating climate change

*"... if we continue on our current path, by 2050 between \$66-106 Bn worth of coastal property in the US will likely be below sea level, with \$238-507 Bn worth of property below sea level by 2100."*

**Risky Business report** (July 2014)

Another priority area is climate change mitigation. For example, chemists are already working on new energy and carbon mitigation solutions and helping crops tolerate changing conditions. We want to support the chemical science community in developing technologies to adapt to and mitigate climate change.

Last year our President, Dominic Tildesley, and his predecessors

## GLOBAL CHALLENGES IN NUMBERS

### Food

The total number of food-insecure people was estimated at 707 million in 2013.

### Environment

In 2012, 7 million people – one in eight of total global deaths – died as a result of exposure to air pollution.

### Energy & climate change

We will have used the entire carbon budget for this century by 2034 if global decarbonisation stays at its average rate for the last five years.

### Health

In 2012, 8.6 million people fell ill with tuberculosis and 1.3 million died from it, including 320,000 people who were HIV-positive.

### Earth resources

Sectors such as construction, chemicals, automotive, aerospace and equipment provide a total value added of €1,324 billion and employment for 30 million people in Europe. They all depend on access to raw materials

### Water

Worldwide, an estimated 768 million people remain without access to an improved source of water. Global water demand is projected to increase by some 55% by 2050.

Lesley Yellowlees and David Phillips released an official statement saying that "the overwhelming weight of scientific evidence indicates that human activity is the predominant cause of recent climate change." The statement was co-signed by Geoffrey Maitland, President of the Institution of Chemical Engineers, and his predecessors.

## Find out more

When the World Health Organisation presents its draft global action plan to combat antimicrobial resistance in May and the UN climate change conference starts in Paris in December, we know that chemists around the world will be part of delivering solutions to these – and many other – global challenges. To find out more about our progress and activities, visit <http://rsc.li/global-challenges>

## CHEMISTRY SOLUTIONS IN 2015

We support numerous events and activities that enable those working on tackling global challenges to share their knowledge, explore new ideas and form collaborations. Some examples of events taking place throughout 2015 are listed below. To find out more about individual events, visit [www.rsc.org/events](http://www.rsc.org/events)

If you would like to tell us about an activity that you are planning for 2015 or make suggestions, please contact us at [science@rsc.org](mailto:science@rsc.org)

- UK Antimicrobial Resistance Roundtable Series: Re-stoking the therapy pipeline – how to stimulate the development of new antibiotics, diagnostics and novel therapies (supporting the British Society for Antimicrobial Chemotherapy), February 2015, London, UK
- Directing Biosynthesis IV, 25-27 March 2015, Norwich, UK
- Corrosion chemistry: Faraday Discussion, 13-15 April 2015, London, UK
- Chemistry in Health 2015: Towards new therapeutics to fight infectious disease, 26 May 2015, London, UK
- Emerging Technologies Competition, 29 June 2015, London, UK
- Solid Oxide Electrolysis: Fuels and Feedstocks from Water and Air: Faraday Discussion, 13-15 July 2015, York, UK
- 1st Chemistry in Energy Conference (Energy Sector Interest Group), 20-22 July 2015, Edinburgh, UK
- 12th International Conference on Materials Chemistry, 20-23 July 2015, York, UK
- 24th International Symposium: Synthesis in Organic Chemistry, 20-23 July 2015, Cambridge, UK
- Carbon Dioxide Utilisation: Faraday Discussion, 7-9 September 2015, Sheffield, UK
- ISACS17: Challenges in Chemical Renewable Energy, 8-11 September 2015, Rio de Janeiro, Brazil
- Chemical Sciences in Society Summit on Water, 14-18 September 2015, Leipzig, Germany
- Supramolecular Photochemistry: Faraday Discussion, 15-17 September 2015, Cambridge, UK
- Renewable Chemicals from Waste, November 2015, London, UK

# Helping teachers make an impact

Through offering a range of online and face-to-face training courses, we help teachers make the most of their passion for teaching chemistry.

A single teacher can make a huge impact on hundreds of students. That is why a strong supply of enthusiastic, highly-qualified and confident chemistry teachers is important for fostering the next generation of skilled scientists, talented teachers and informed members of the public.

We are supporting teachers in a number of different ways, including encouraging and supporting their continuing professional development (CPD). By providing teachers with a range of opportunities to develop existing skills and acquire new ones, we help them to increase their subject knowledge, understanding of pedagogy and confidence in teaching difficult subjects.

## Face-to-face courses

With the aim of giving those teaching chemistry at secondary schools an opportunity to strengthen their subject knowledge and develop their teaching skills, we offer a series of face-to-face courses throughout the UK. The engaging, hands-on courses, which are designed by expert teacher developers, fall into three categories:

- Chemistry for non-specialists
- Inspiring creative chemistry teaching
- Developing expertise in teaching chemistry

The *Chemistry for non-specialists* course is designed for those who teach secondary chemistry but have a background in another subject. Across a total of four days, it covers subjects ranging from understanding key ideas in chemistry to teaching practical chemistry, in order to help develop confidence, flair and enthusiasm in teaching the subject at the pre-16 level.

The first few years in the classroom can be challenging for any teacher. As part of our strategy to support teachers, we have identified the need to avoid unnecessary attrition in the teacher workforce by ensuring an optimum teaching environment for chemistry. One aspect of this involves providing access to the necessary support and professional development opportunities. Our *Inspiring creative chemistry teaching* series is aimed specifically at trainee teachers and those who are relatively new to the classroom. Its three courses cover pedagogical approaches to chemistry teaching, practical chemistry and pedagogical approaches to teaching at post-16 level. They enable teachers to, for example, find out about active learning and teaching strategies, try out and evaluate classic chemistry experiments and demonstrations, and experiment with techniques such as group work and flipped learning.

Our *Developing expertise in teaching chemistry* courses are designed to give teachers an in-depth understanding of key concepts in chemistry at pre- and post-16 levels. They focus on a range of theoretical and practical aspects, making use of a range of resources, including those available on our Learn Chemistry website ([www.rsc.org/learn-chemistry](http://www.rsc.org/learn-chemistry)). The thirteen courses on offer cover topics ranging from organic, analytical and quantitative chemistry to structure and bonding, acids and bases and the use of models.

## Taking training online

Our face-to-face courses have proved a success so far. However, we also want to make sure that we provide all teachers with consistent access to professional development. As a result, we launched a series of online CPD courses for teachers earlier this year.

We have created the courses to develop and deepen teachers' knowledge and understanding of chemistry and associated teaching strategies in specific topic areas. Key aspects include: understanding the 'thread' of ideas for a concept, recognising, diagnosing and understanding 'misconceptions', and evaluating possible teaching approaches.

The first of our courses, *Quantitative chemistry*, is already available online ([www.rsc.org/cpd/teachers](http://www.rsc.org/cpd/teachers)), and we have plans to add thirteen additional courses on a range of subjects, including some hard-to-teach subject areas as well as courses relating to general chemistry teaching such as maths skills for chemists.

The series is designed to complement the *Developing expertise in teaching chemistry* face-to-face courses, and the online content provided includes a variety of formats ranging from text and animations to videos and self-assessment quizzes. There are links to articles to help contextualise the topic areas and additional resources and activities to help support teachers when it comes to planning their lessons.

For those who struggle to find time to attend face-to-face training, our online courses can be completed at the user's own pace. In addition, teachers can dip in and out of the content to suit their personal development needs. And by completing the self-assessment quizzes in each topic, they can judge and assess their progress.

Before completing a course, we encourage teachers to download and complete a course development plan, which gives them space to consider their aims in completing the course and record the impact this professional development will have on their teaching and wider department.





## WORDS

STEPHANIE MUSSON

The personal 'My record' area allows users to have oversight of what courses they have subscribed to and how much time they have remaining to complete the course. When all topics within a course have been marked complete, teachers receive a downloadable certificate for their records. At this point, they are able to return to their course development plan to reflect on their aims and the impact the course has had.

## What's next?

In addition to adding further online CPD courses, we are also working on improving the training experience for our users. Over the last year we have been developing an online assessment tool that we will

use to provide computer-marked quizzes that focus on providing detailed feedback. We will also be continuing technical developments that allow us to link our new assessment tool to the online courses. Self-assessment quizzes will help to identify the teachers' individual development needs and guide them to appropriate topics within the courses.

As part of our plans to increase our support for primary teachers we are also exploring the application of the online course model for a primary teacher audience. The focus will be on how to teach science subjects to a young audience. As with our other online courses, these courses will be designed to be completed at the users' own pace, and we will begin working on these in 2015.

# Expanding our network across the regions

From engaging teachers and inspiring students to supporting outreach activities and forming connections, find out what our growing regional teams are getting up to.

Inspiring and engaging the next generation of chemical scientists is one of our strategic priorities. Whether it's through chemistry demonstrations and lectures, outreach events and activities or videos, games and resources, we want to show children how chemistry relates to our everyday lives and pique their curiosity for the subject.

In order for us to broaden our activities and reach even more students all across the UK and Ireland, we expanded our network in 2010, putting in place nine Education Coordinators in the different regions to support and promote our high-quality educational activities (<http://rsc.li/ed-coordinators>). Working with teachers, students and advocates for the chemical sciences, they helped us to coordinate, support and promote our events, resources and competitions across the UK and Ireland. Through developing key relationships and networks within the regions, they have supported three of our activity areas:

- **Engaging and supporting teachers**

Since 2010, our Education Coordinators have reached thousands of teachers. In 2014 alone, they connected with 4,500 teachers and 1,450 trainee teachers at cluster teacher events, continuing professional development (CPD) events, local science festivals, through regional networks and the Initial Teacher Training scheme and many other activities and events. These connections enable us to share insights into our work, including Learn Chemistry, CPD opportunities and enrichment and enhancement activities available to students, such as ChemNet, the Global Experiment and our popular competitions.

- **Enthusiasing students with chemistry**

In addition to providing teachers with access to information and resources, our Education Coordinators also connect with students across the regions, showcasing the different ways in which we support those who study chemistry. In 2014, our Education Coordinators coordinated 79 ChemNet events that reached 2,861 students, in addition to supporting the delivery of 85 Chemistry at Work events and 313 Spectroscopy in a Suitcase visits.

- **Developing local networks**

Through the regional team, we have also built strong networks across the regions. From members in Local Sections to education support organisations, industry and those working in higher education, these connections have helped us to form partnerships and collaborations throughout the UK.

## Expanding our network

With the aim of building on this success and delivering even more activities, we decided to further expand our regional education network. This investment in local activities forms part of our outreach strategy (also see *RSC News* December 2014).

Growing our network of locally-based Education Coordinators will improve our visibility across the regions, increase the delivery of our outreach activities and better support our members and other advocates. In addition, we will have a more balanced geographical spread of contacts within each of the regions.

During the last few months, we have completed a competitive tender process to select hosts for an additional nine Education Coordinators – one more in each region. Our new hosts include universities, further education colleges and science centres, and will enable us to work in partnership across different sectors. After having selected nine organisations to host our new Education Coordinators, we are in the final stages of confirming the formalities. To find out about the new hosts and our new Education Coordinators keep an eye out for future announcements in *RSC News*.

To support the activities of our Education Coordinators, we have also recruited five Regional Programme Managers. Each of them





**WORDS**  
SAMANTHA MURPHY

manages and supports a team of Education Coordinators and oversees the activities within each region. They also engage with many of our partners and contractors supporting our outreach activities across their area. Overseeing these activities, they are able to ensure effective coordination and communication of all relevant activities and events.

## Looking ahead

Having put in place these changes across the UK and Ireland, means that we are now much better placed to achieve our ambitious plans to widen participation in and engagement with our education activities and resources. In addition, our regional network will allow us to embed new outreach activities.

In the coming year, we will specifically focus on:

- supporting teachers in their roles as high-impact influencers through the promotion of Learn Chemistry Partnership, CPD and the chartered science teacher (CSciTeach) award;
- supporting the recruitment and training of chemistry teachers by continuing to visit Initial Teacher Training providers to highlight our resources and organising events to promote careers in teaching to chemistry undergraduates;
- increasing participation in the chemical sciences beyond compulsory science education by increasing ChemNet membership and our presence at careers events; and
- engaging, enthusing and informing key audiences to increase understanding of the importance and impact of the chemical science, for example by supporting and coordinating schemes such as Chemistry at Work, Spectroscopy in a Suitcase, science fairs and other outreach events.

## Working with our members

Finally, we will continue to place strong emphasis on engaging and supporting our members in acting as advocates for the chemical sciences. The Cambridge-based outreach team is exploring the best way to coordinate this and discussed a number of options with members at the General Assembly in November. So keep an eye out for future announcements later in the year.

In the meantime, if you are interested in volunteering to support education and outreach activities in your local area, a great first step is to become an RSC STEM Ambassador. As an RSC STEM Ambassador you will get support from your regional Royal Society of Chemistry representatives and STEMNET to help you get involved in local opportunities. You can find out more and sign up at <http://rsc.li/schools-outreach>

If you would like to meet representatives of the Regions Team and hear more about their work, join us at our upcoming Regional Meetings in Canterbury, Chelmsford, Newcastle upon Tyne, Birmingham, Preston, Glasgow, Cardiff, Dublin and Bristol. You can find more details on the individual events in our Diary on p17.

# Opinion

Letters and comments on RSC activities and issues

## FROM THE EDITOR



December is fast drawing to a close, as I finish off this latest issue. As usual, the turn of the year is accompanied by a sense of something ending and

something new beginning. And this year, that's certainly true for *RSC News*.

From January, I will be passing over the reins as *RSC News* editor to my colleagues in the News and Media team, who will continue to bring you the latest news and updates from all around our organisation. It's been a real pleasure letting you know about all the exciting things my colleagues and our members get up to each month. And I look forward to seeing further developments of our online and print news offering throughout this year.

In the meantime, we share with you our work on tackling global challenges (p8), our offerings for teachers (p10), an update on our expanding regional network (p12) and much more in this issue.

I hope you enjoy reading it as much as I enjoyed putting it together!

**Annika Grandison**  
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](mailto:rscnews@rsc.org)

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



@RSC\_Comms



facebook.com/RoyalSocietyofChemistry

## What do we mean by the term 'chemistry specialist'?

Whilst reading the last couple of *RSC News* issues I've been concerned about the negative spin that is coming over about science teachers. Specifically, one article was about how the society is encouraging a bid for chemistry specialists to be appointed in every school. While this in itself has its merits, it implies that those without a pure chemistry background can't teach it as well as those with chemistry related degrees. My degree is molecular biology, so did contain quite a lot of biochemistry but I should not have to justify my qualifications if the school chose me over 'pure chemists'.

**Rachel Rees**  
Newcastle, UK

Thank you for getting in touch with your thoughts about our specialist teachers campaign. In response to your concerns, when we use the term 'chemistry specialist', we refer to people with a range of experience and not just those who have a 'pure chemistry' background. Specifically, our definition states that a chemistry specialist is someone who:

- has a chemistry degree, or a closely related degree (such as biochemistry); or
- has demonstrated sufficient expertise in chemistry through previous employment; or
- has undertaken a 24-week Subject Knowledge Enhancement course in chemistry.

In addition, we believe all chemistry teachers should have Qualified Teacher Status and that all existing chemistry teachers, regardless of subject background, should be supported in their role through the provision of subject specific CPD (see also p10).

**Vicki Butler**  
Public Affairs Project Manager, Royal Society of Chemistry

## Comments on the December issue

Letters in the December 2014 issue of *RSC News* on long membership of the RSC are those of due acknowledgement. Interesting though, is the fact that some of those who recently received their 70th anniversary certificates would have been among the first to join after the Institute of Chemistry came to be known by its new title of the Royal Institute of Chemistry.

My own 70th anniversary certificate and the earlier 60th anniversary certificate marked the dating of my membership of 19 November 1943 of what was the Institute of Chemistry of Great Britain and Ireland. And I'm especially proud that the President's signature on my 70th anniversary certificate is that of the Royal Society of Chemistry's first female President, Lesley Yellowlees, while that on the 60th anniversary certificate is that of Nobel Laureate Harry Kroto.

Another item of interest in the December issue is the feature 'A week of chemistry in Russia' that reminds me of having arranged for 18 chemists of the former Soviet Union to attend the Euroanalysis VIII in Edinburgh between 5 and 11 September 1993 on behalf of the RSC's Analytical Division.

**Emeritus Professor J D R Thomas CChem FRSC**  
Gresford, Wrexham, UK



# Collaborations are key to tackling antimicrobial resistance

Developing solutions to combat resistance require a long-term collaborative effort, advises Chris Schofield.

Antibiotic resistance has taken centre stage recently. About time, too, say many who have persevered in the field in the years when it wasn't fashionable or significantly funded. However, if we want to maintain interest for the time it takes to introduce new medicines, we must put in place long-term plans now.

Antibiotic resistance is not new: penicillin resistance was identified in the 1940s. However, the pharmaceutical industry was once exceptionally efficient at addressing it. In many ways, the industry was a victim of its own success – antibiotics worked so well most of the time and were so cheap that the motivation for innovation and investment were tempered to the extent that the supply of new antibiotic types dried up.

Today, antibiotic resistance has reached crisis levels in several parts of the world and there is global concern that resistance may become so biologically embedded that major classes of antibiotics may no longer work. Long-term solutions to the resistance problem will ultimately involve global controls over antibiotic use. But in reality, introducing such controls will be time-consuming, and policing them anything but trivial. So governments and funding agencies must be encouraged to think about what we do in a scenario in which one or more classes of antibiotics become useless.

## Combining expertise

Despite the advent of molecular biology and genetic engineering few – if any – new clinically validated antibiotic targets have emerged in recent years. To what extent this reflects a lack of focus on antibiotic research and development unknown. Nonetheless, it would appear that there have been few large-scale contemporary medicinal chemistry efforts on antibiotics that match, for example, the manner in which kinases have been targeted to develop anti-cancer treatments. Yet our methods and knowledge have advanced significantly since the 'golden age' of antibiotics. We now have detailed structural insight into bacterial cell walls and the protein biosynthesis machinery, while molecular biology and proteomics have enabled us to screen against isolated proteins and in cells. Synthetic methods, especially asymmetric catalysis, hold promise for generating natural-product-like compounds, which are the basis of most antibiotics, and rational biosynthetic engineering will be of use in generating structurally complex and synthetically inaccessible antibiotics. In short, the underpinning research scene is well set for the discovery of new antibiotics.

Pharmaceutical companies might be encouraged to focus on antibiotics by the increasing resistance problems and by advances in diagnostics that will enable targeting of specific bacteria. However, this is no certainty, so there is strong case for public efforts in

the antibiotic arena. But we can't forget that medicinal chemistry is expensive and challenging – particularly so in the antibiotics field, where demanding and highly-efficient synthesis is often required.

One of the problems is that, in Europe, there is a strong academic commitment to antibiotic research, but the clinical demand is not yet at the same crisis level as in some parts of the world. One possibility is for European scientists to link better with their counterparts in parts of the world where resistance is already a major issue. Intellectual property issues concerning specific compounds have, in the past, posed a constraint to such collaborations, but many antibiotics are now generic, and companies can make profits in antibiotics without patent protection. The bottom line is that we need to find ways of bringing multiple laboratories together while minimising legal and administrative barriers that are sometimes associated with collaborative research.

## Looking beyond antibiotics

We also mustn't forget that biological resistance is a much wider issue. Resistance to other types of antimicrobials, antivirals, anti-tumour agents and other pharmaceuticals is also of major medical importance. And resistance to pesticides and herbicides threatens existing agriculture with potentially disastrous consequences for food production.

At the scientific level, defining the differences and similarities in the chemical mechanisms that enable resistance in different biological contexts is of interest. It would seem unlikely that, in the short-term, a single field will deliver major advances. Work in the resistance field needs to be truly interdisciplinary, ranging from human population science to microbiology, and there is evidence that studying the chemistry behind resistance will be fruitful. For example, we already know that related types of enzymes and efflux pumps are involved in resistance to some antibiotics and anti-cancer agents.

In addition to collaborating on tackling the resistance problem, we also need to speak up publicly to ensure funding decisions are not made without chemistry's input. New antibiotics simply won't happen without a critical mass of high-quality synthetic chemistry that is closely linked to microbiology and helped along by the more modern tools of drug discovery.

From an organic chemistry perspective, many antimicrobial natural products are wondrous structures with remarkable mechanisms of action. Working on the chemistry required to develop new antibiotics is already immensely attractive. And working in an internationally coordinated manner that combines strengths in synthetic chemistry, modern structural, molecular and microbiology with expertise in medicinal chemistry may accelerate the discovery of the next penicillin.



**Professor Chris Schofield**  
FRSC FRS is Head of Organic Chemistry at the University of Oxford, and has a long-standing interest in antibiotics and antibiotic resistance.

"UK researchers should link up with scientists in countries where resistance is an immediate problem."

# Diary

Your guide to all important events

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## NOTICES



Through our Outreach Fund, we supported two days of chemistry demonstrations in Ramsgate (p21).

### Further information

To find out more about any event on this page, see [www.rsc.org/events](http://www.rsc.org/events)

Call +44 (0) 1223 43 2254/2380

Or email [events@rsc.org](mailto:events@rsc.org)

## RSC conferences

OS24

### 24th International Symposium: Synthesis in Organic Chemistry

20–23 July 2015  
Cambridge, UK

**Poster abstract submission deadline: 14 February 2015**

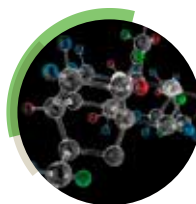
As a flagship event for the international organic chemistry community, the Synthesis in Organic Chemistry Symposium traditionally provides an international showcase for the core area of organic chemistry: synthesis.

Covering all aspects of contemporary organic synthesis, the conference provides a forum for the ever more exciting methodologies and strategies that continue to emerge.

**Registration is now open.**

Don't miss out on award-winning speakers, evening lectures and extensive opportunities for networking.

<http://rsc.li/os24>



ISACS17

### Challenges in Chemical Renewable Energy

8–11 September 2015  
Rio de Janeiro, Brazil

**Abstract submission – now open**

Brazil is considered to have the world's first sustainable biofuels economy, making it the perfect location for the latest conference in our International Symposia on Advancing the Chemical Sciences (ISACS) series. Leading scientists from across the world will meet in Rio de Janeiro to share scientific developments in renewable energy generation and storage.

The five themes for ISACS17 are:

- solar fuels and molecular catalysis
- photovoltaics
- biofuels
- battery technology/energy storage
- fuel cells

Challenges in Chemical Renewable Energy is set to be a significant milestone in the ISACS series. Abstract submission is now open so, if your research aligns with any of the above themes, take advantage of this opportunity to showcase your work in Brazil.

<http://rsc.li/isacs17>



## ANNOUNCING

### Nanoparticle Assembly: From Fundamentals to Applications (Faraday Discussion)

7–9 January 2016  
Mumbai, India

<http://rsc.li/assembly-fd2016>

## DATES AND DEADLINES

### Nanoplasmonics (FD178)

16–18 February 2015  
London, UK

Early bird registration  
deadline – 5 January 2015

Final registration deadline –  
26 January 2015

<http://rsc.li/fd178>

### Directing Biosynthesis IV

25–27 March 2015  
Norwich, UK

Poster abstract deadline –  
16 January 2015

Early bird registration  
deadline – 30 January 2015

<http://rsc.li/dbiv>

### Nucleation – A Transition State to the Directed Assembly of Materials (Faraday Discussion)

30 March–1 April 2015  
Leeds, UK

Poster abstract deadline –  
19 January 2015

Early bird registration  
deadline – 9 February 2015

<http://rsc.li/nucleation-fd2015>

### Corrosion Chemistry (Faraday Discussion)

13–15 April 2015  
London, UK

Poster abstract deadline –  
9 February 2015

<http://rsc.li/corrosion-fd2015>

### Challenges in Chemical Biology (ISACS16)

15–18 June 2015  
Zurich, Switzerland

Oral abstract submission  
deadline – 9 February 2015

<http://rsc.li/isacs16>

# Events

## Further information

The *RSC News* Diary this month lists RSC events from January to February 2015 that are held on the RSC conference database. Further details on any of these meetings can be obtained from the named contact or from the conference website at [www.rsc.org/events](http://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

### East Anglia Section

#### UEA School of Chemistry research seminar

14 January  
University of East Anglia  
• Dr Karen Faulds, University of Strathclyde  
Karen will give a lecture on her research in bio-analytical chemistry.

**Contact John Fielden**  
01603 593 137  
[john.fielden@uea.ac.uk](mailto:john.fielden@uea.ac.uk)

#### UEA School of Chemistry research seminar

21 January  
University of East Anglia  
• Dr Kate Kemsley, Institute of Food Research  
Kate will give a lecture on her research.

**Contact John Fielden**  
01603 593 137  
[john.fielden@uea.ac.uk](mailto:john.fielden@uea.ac.uk)

#### East Anglia Section gourmet dinner and AGM

27 January  
City College Norwich  
Whisky-themed gourmet evening that includes a talk and dinner in the Norwich City College Debut restaurant.

**Contact Tharin Blumenschein**  
01603 592 963  
[t.blumenschein@uea.ac.uk](mailto:t.blumenschein@uea.ac.uk)

#### UEA School of Chemistry research seminar

11 February 2015  
University of East Anglia  
• Prof Michael Greane, University of Manchester  
Michael will give a lecture on his research in organic chemistry.

**Contact John Fielden**  
01603 593 137  
[john.fielden@uea.ac.uk](mailto:john.fielden@uea.ac.uk)

## Other Events

### RSC Eastern Regional Meeting 2015

15 January  
The County Hotel, Chelmsford  
Our regional meetings provide a fantastic opportunity for members to meet representatives of RSC Council and to find out more about our strategic goals. It is also the perfect opportunity to discover the wonderful work of our member networks and the work we are doing to support your community, and network with RSC staff and members in your local area.

**Contact Marie Chapman, RSC**  
01223 432 274  
[networks@rsc.org](mailto:networks@rsc.org)

## INTERNATIONAL

### Singapore Section

#### Communicating as a scientist workshop

4 February  
British Council Professional Development Centre  
**Contact O. Koentjoro**  
+65 9062 1052  
[okoentjoro@hotmail.com](mailto:okoentjoro@hotmail.com)

## Other events

### Faraday Division Temporally and Spatially Resolved Molecular Science: Faraday Discussion 177

12-14 January  
Indian Institute of Science, Bangalore,  
The main aim for this discussion is to bring together crystallographers and spectroscopists from chemistry, physics and biology to promote new interdisciplinary research and to benefit from complementary approaches and techniques in the rapidly emerging areas of time resolved studies, leading to a greater overall understanding of structural dynamics.

## Teacher Training Scholarships

**Inspire** the next generation

Apply for a Royal Society of Chemistry Teacher Training Scholarship



<http://rsc.li/teacher-scholarships>



## Contact RSC Events

01223 432 380  
[events@rsc.org](mailto:events@rsc.org)

## IRELAND

### Other events

#### Analytical Division – Northern Ireland

#### Heritage smells lecture and Annual General Meeting

21 January  
Queens University of Belfast  
The lecture will describe the main scientific and heritage objectives of the Heritage smells interdisciplinary project.

**Contact Michael Harriott**  
02890 660 444  
[michaelharruiott47@hotmail.com](mailto:michaelharruiott47@hotmail.com)

## MIDLANDS

### North Staffordshire Section

#### Top of the Bench competition

24 January  
Keele University  
Local heat for our schools competition for KS3 and KS4 students.

**Contact Katherine Haxton**  
01782 734 209  
[nstaffchem@gmail.com](mailto:nstaffchem@gmail.com)

## Other Events

#### Education Division – Midlands

#### Sixth Form lecture: Atmospheric chemistry – myths and facts

20 January  
The University of Birmingham  
It's time to get to grips with the greenhouse effect, global warming, ozone depletion and climate change, and how these environmental issues influence UK and international policy. Tickets are free but registration is essential.

**Contact N Briggs**  
01827 311 205  
[briggswmctc@btinternet.com](mailto:briggswmctc@btinternet.com)

#### Education Division – Midlands Teachers CPD meeting: Using ICT to enhance teaching and learning in chemistry

3 February  
The University of Birmingham  
The meeting will explore ways of using ICT on tablets, computers

and mobile devices in the teaching and learning of chemistry.

Registration is free of charge and a certificate of attendance will be provided.

**Contact Sandy Wilkinson**  
01214 144 866  
[s.wilkinson@bham.ac.uk](mailto:s.wilkinson@bham.ac.uk)

### RSC Midlands Regional Meeting 2015

5 February  
IET Birmingham  
Our regional meetings provide a fantastic opportunity for members to meet representatives of RSC Council and to find out more about our strategic goals. It is also the perfect opportunity to discover the wonderful work of our member networks and the work we are doing to support your community, and network with RSC staff and members in your local area.

**Contact Marie Chapman, RSC**  
01223 432 274  
[networks@rsc.org](mailto:networks@rsc.org)

#### Energy Sector

#### Early career energy sector chemists symposium 2015

6 February  
Rolls-Royce Learning & Career Development Centre, Derby  
All chemists working in the energy area in the early stages of their careers and their supervisors are invited to attend. This includes industrial chemists, academic researchers, postgraduate students, undergraduate students and those with a background in chemistry but no longer working directly in the field. The top 30 abstracts will be invited to give a short presentation and present their poster.

**Contact Paul Brack**  
[P.Brack@lboro.ac.uk](mailto:P.Brack@lboro.ac.uk)

#### Education Division – Midlands

#### A lecture for Sixth Form students: Discovering new medicines – the role of the chemist

10 February  
University of Birmingham  
After a brief review of ailments through the ages, the lecture will look at the many roles chemistry has played in the modern drug discovery process.

**Contact N Briggs**  
01827 311 205  
[briggswmctc@btinternet.com](mailto:briggswmctc@btinternet.com)



## EVENTS

### NORTH EAST

#### Central Yorkshire Section

##### Top of the Bench schools competition local heat

19 January  
University of York  
Central Yorkshire heat to select a school for the final of this national competition. School teachers are invited to enter a team of four pupils.

**Contact Brian Grievson**  
01904 324 543  
brian.grievson@york.ac.uk

#### Hull and East Yorkshire Section

##### Café Scientifique

28 January  
The White Horse Inn (Nellies), Beverley  
An informal meeting with the opportunity to hear and talk about heart disease, red wine and the French paradox.  
**Contact Mark Lorch**  
01482 465 687  
m.lorch@hull.ac.uk

#### Other Events

##### RSC North East Regional Meeting 2015

22 January  
The Biscuit Factory, Newcastle upon Tyne  
Our regional meetings provide a fantastic opportunity for members to meet representatives of RSC Council and to find out more about our strategic goals. It is also the perfect opportunity to discover the wonderful work of our member networks and the work we are doing to support your community, and network with RSC staff and members in your local area.

**Contact Marie Chapman, RSC**  
01223 432 274  
networks@rsc.org

### NORTH WEST

#### Cumbria Section

##### Christmas meal

23 January  
Manor House, Cockerhouse  
The traditional RSC Cumbria Section's Christmas meal will take place in January to avoid clashes with other meals. Tickets are £10 per head. Please contact Kevin Webb by early January if you wish to attend.

**Contact Kevin Webb**  
01946 779 264  
kevin.j.webb@nnl.co.uk

##### Test the Chemist pub quiz

29 January  
The Chase Hotel, Whitehaven  
Mostly general knowledge questions with the odd chemistry question. Teams of four are invited to take part. When registering, please advise whether you are entering a team or would like to be part of a team.

**Contact Kevin Webb**  
01946 779 264  
kevin.j.webb@nnl.co.uk

#### Lancaster and District Section

##### Nanotechnology in our daily lives

13 January at 19.30  
University of Central Lancashire  
We will explain and discuss the impact and spread of nanotechnology in industry and commerce. If you would like to attend, please contact the organiser by 6 January.

**Contact Harry Clarke**  
01995 640 003  
hclarke906@btinternet.com

##### Science, Scientists and Cinema

10 February at 19.30  
University of Central Lancashire  
**Contact Harry Clarke**  
01995 640003  
hclarke906@btinternet.com

#### Other Events

##### RSC North West Regional Meeting 2015

12 February  
Harris Museum and Art Gallery, Preston  
Our regional meetings provide a fantastic opportunity for members to meet representatives of RSC Council and to find out more about our strategic goals. It is also the perfect opportunity to discover the wonderful work of our member networks and the work we are doing to support your community, and network with RSC staff and members in your local area.

**Contact Marie Chapman, RSC**  
01223 432 274  
networks@rsc.org

##### REACH and small businesses workshop

25 February  
Radisson Blu Hotel Manchester Airport  
We are partnering with REACHReady to deliver this one-day workshops on REACH. The programme has been specifically tailored for small companies in the chemical and downstream industries.

**Contact RSC Events**  
01223 432 380  
events@rsc.org

### SCOTLAND

#### Mid-Scotland Section

##### Alchemy or How to make gold

11 February at 19.00  
Ineos Exhibition Centre, Grangemouth  
• Dr John Hudson  
In his talk, John will take a light-hearted look at the long history of alchemy.

**Contact Mark Dennis**  
07859 027 868  
mark1\_dennis@hotmail.com

#### Tayside Section

##### Top of the Bench Tayside regional final

27 January at 18.00  
University of St Andrews  
The Tayside regional final for the RSC Top of the Bench competition will be contested by four local schools that have progressed through three previous rounds, with the winning school progressing to the national final.

**Contact Prof Douglas Philp**  
01334 463 800  
chem-rsc@st-andrews.ac.uk

##### Annual General Meeting

2 February  
University of Dundee  
The 34th AGM of the Tayside Section. After the formal meeting, there will be a tour of the Discovery Centre for Translational & Interdisciplinary Research, conducted by Dr David Foley, University of Dundee, and dinner at a local restaurant. Attendees are required to pay for their own dinner.

**Contact Neil Keddie**  
01334 467 254  
nsk@st-andrews.ac.uk

### Other Events

##### RSC Scotland Regional Meeting 2015

19 February  
IET Glasgow  
Our regional meetings provide a fantastic opportunity for members to meet representatives of RSC Council and to find out more about our strategic goals. It is also the perfect opportunity to discover the wonderful work of our member networks and the work we are doing to support your community, and network with RSC staff and members in your local area.

**Contact Marie Chapman, RSC**  
01223 432 274  
networks@rsc.org

### SOUTH EAST

#### Downland Section

##### Top of the Bench Downland heat

12 January  
Sir William Perkins' School, Chertsey  
**Contact Chris Williamson**  
01372 451 499  
chris\_williamson@btopenworld.com

##### Top of the Bench Heat

15 January  
Lancing College  
**Contact Chris Williamson**  
01372 451 499  
chris\_williamson@btopenworld.com

#### Other Events

##### Biomaterials Chemistry Group RSC biomaterials chemistry annual conference

5-6 January  
Royal Society of Chemistry at Burlington House, London  
**Contact Sanjukta Deb**  
0207 188 1817  
sanjukta.deb@kcl.ac.uk

##### RSC South East Regional Meeting 2015

6 January  
Canterbury Cathedral Lodge  
Our regional meetings provide a fantastic opportunity for members to meet representatives of RSC Council and to find out more about our strategic goals. It is also the perfect opportunity to discover the wonderful work of our member networks and the work we are doing to support your community, and network with RSC staff and members in your local area.

**Contact Marie Chapman**  
01223 432 274  
networks@rsc.org

Heterocyclic and  
Synthesis Group  
**One-day meeting  
and AGM**

9 January  
Institute of Cancer Research  
Three plenary speakers and three  
supporting talks.

**Contact Adrian Dobbs**  
0208 331 9689  
a.dobbs@gre.ac.uk

Joint Pharmaceutical  
Analysis Group

**Quality risk management:  
a pragmatic approach**

5 February  
GlaxoSmithKline, Ware  
An effective quality risk  
management process provides a  
key mechanism for the proactive  
identification and control of  
potential issues that may arise  
during product development and  
subsequent commercialisation.  
Scientific approaches are used to  
estimate the likelihood of any given  
risk. This symposium will look at  
the assessment of risk from an  
academic, regulatory and industrial  
perspective and will cover method  
development, specification setting,  
chemical purging and genotoxin  
risk assessment using in silico  
methodologies.

**Contact Amy Le Vannais**  
0207 572 2326  
events@jpag.org

**Drug Discovery  
Workshop**

6 February  
Society of Biology,  
Charles Darwin House  
This course is suitable for  
scientists considering a career  
in the pharmaceutical industry,  
academics who want to  
understand more about where  
medicines come from and a wide  
variety of people who interact  
with scientists working in the  
drug discovery arena. The course  
is run by the Society of Biology  
in collaboration with the Royal  
Society of Chemistry and the  
Biochemical Society. Members  
are entitled to a 75% discount.

**Contact Society of Biology's  
training officer**  
0207 685 2550  
training@asocietyofbiology.org

Environmental  
Chemistry Group  
Separation Science Group  
Analytical Division

**New developments in  
the analysis of complex  
environmental matrices**

6 February  
Royal Society of Chemistry at  
Burlington House, Piccadilly,  
London  
This new meeting aims to cover  
developments in analytical  
instrumentation that make it  
possible to simultaneously analyse  
numerous pollutants in complex  
matrices using minimal sample  
clean-up.

**Contact Roger Reeve**  
01915 152 596  
roger.reeve@sunderland.ac.uk

Faraday Division  
**Nanoplasmonics: Faraday  
Discussion 178**

16-18 February  
Royal Society of Chemistry at  
Burlington House, London  
Recent advances in  
nanofabrication and sub-  
wavelength optical characterisation  
have led to significant new  
advances in plasmonics. In  
addition to traditional top-down  
nanofabrication techniques,  
chemical-based fabrication  
has emerged as an inexpensive  
and viable alternative with  
electrochemical and self-  
organisation methods for  
fabrication of plasmonic  
nanoparticles and extended  
plasmonic structures. The meeting  
will focus on areas where progress  
is expected to have a most  
significant impact on a whole  
area of nanoplasmonics and on  
commercial exploitation.

**Contact RSC Events**  
01223 432 254  
events@rsc.org

Biological and Medicinal  
Chemistry Sector

**Mastering MedChem:  
1st RSC-BMCS symposium  
on mastering medicinal  
chemistry**

26 February  
Royal Society of Chemistry at  
Burlington House, London  
In the main there are two types  
of drug discovery programmes:  
those that hit serious problems and  
those that are going to hit serious  
problems. The difference between  
success and failure is how we, as  
medicinal chemists, tackle and  
resolve the problems.

**Contact Maggi Churchouse**  
01359 221 004  
maggi@maggichurchouseevents.  
co.uk

**SOUTH WEST**

**Bristol and District Section**

**Retired members' luncheon**

14 January  
The Westbury Park Tavern, Bristol  
**Contact Pam Day**  
01179 701 860  
pamday\_rsc@btinternet.com

**35th Annual General Meeting  
and lecture**

5 February  
BAWA, Bristol  
The AGM will be followed by  
a lecture titled 'Composites in  
aerospace: history, uses & testing'.  
A free buffet, for which booking is  
essential, will be available.  
**Contact Hilary Kitchen**  
01179 392 563  
papahil@blueyonder.co.uk

**Superconducting seaweed**

9 February  
Swindon Academy  
**Contact Tim Harrison**  
01179 288 663  
t.g.harrison@bristol.ac.uk

**Mid-Southern Counties  
Section**

**Kitchen chemistry  
family lecture**

10 January  
University of Southampton  
Atoms and molecules are all  
around us, and chemistry is used  
to control and change these  
molecules. The kitchen chemistry  
show uses simple equipment  
and readily available material to  
illustrate some of the principles  
involved. The demonstrations can  
all (bar one) be done in your own  
home.

**Contact Gill Reid**  
02380 593 609  
G.Reid@soton.ac.uk

**WALES**

**South East Wales Section**

**Synthesis and applications  
of cyclic carbonates**

19 January  
Cardiff University  
RSC Green Chemistry Award  
lecture  
**Contact James Redman**  
02920 876 273  
redmanje@cardiff.ac.uk

**2014 Faraday  
Lectureship Prize**

26 January  
Cardiff University  
The Faraday Lectureship Prize  
2014 was awarded for pioneering  
a molecular approach to catalyst  
design by bridging the gap  
between homogeneous and  
heterogeneous catalysis through  
the new field of interfacial  
coordination chemistry.  
**Contact James Redman**  
02920 876 273  
redmanje@cardiff.ac.uk

**3D printing of chemical  
reactors**

9 February  
Cardiff University  
No registration necessary.  
**Contact James Redman**  
02920 876 273  
redmanje@cardiff.ac.uk

**Modelling isotope effects in  
the supramolecular age**

16 February  
Cardiff University  
No registration necessary.  
**Contact James Redman**  
02920 876 273  
redmanje@cardiff.ac.uk

**Adventures with oxygen:  
A radical perspective**

19 February  
Neath Port Talbot College  
**Contact Bill George**  
01792 406 994  
bill.george@southwales.ac.uk

**Design of artificial  
metalloenzymes  
for applications in  
homogeneous catalysis**

23 February  
Cardiff University  
No registration necessary.  
**Contact James Redman**  
02920 876 273  
redmanje@cardiff.ac.uk

# Vacancies for elected positions on Council, Boards and Divisions

We would like the members serving on our governance bodies to represent the breadth and diversity of the chemical sciences, with reference to industrial and academic backgrounds, geographical spread, gender, ethnicity and age range. We are now looking for your nominations to fill the below vacancies to help us achieve this goal. All vacancies will be filled, in accordance with the current By-laws and Electoral Regulations, at the Annual General Meeting, which will be held in London on 8 July 2015.

## President Elect (to become our next President in 2016)

The RSC President is an advocate for the chemical sciences, ambassador for the Royal Society of Chemistry and Trustee of the charity.

Council's nominee is **Professor Sir John Holman CChem FRSC**, Emeritus Professor in the chemistry department at the University of York, where he teaches physical chemistry.

John chairs several national bodies, including the Salters' Institute and the Teacher Development Trust. He is an experienced Trustee, including having been appointed as Trustee of the Natural History Museum by the UK Prime Minister. He advises two major scientific trusts, the Gatsby Foundation and the Wellcome Trust.

He was the government's National STEM Director between 2006 and 2010 and he is accustomed to working with policymakers at all levels, including with ministers and permanent secretaries in the UK, and their equivalents overseas.

He is an experienced public speaker, being frequently invited to speak in the UK and overseas. Since 1990, he has lectured and provided advice on science education in over 30 countries across six continents. In 2013 and 2014, he worked in eight different countries. He is experienced in the media, both broadcast and print and has written numerous policy papers and reports, most recently *Good Career Guidance* (2014), which has been widely adopted as a basis for policy.

John is experienced as a teacher of chemistry at all levels from 11-year-olds to undergraduates. He was Headteacher of Watford Grammar School for Boys (1994-2000) and founding director of the National Science Learning Centre (2004-2010). He has guided strategy development in schools and universities and was a major contributor to the Royal Society's 2014 Vision project. He was awarded the RSC's Lord Lewis Award and the Royal Society's Kavli Education Medal in 2014.

He is committed to advancing the chemical sciences and believes that, with our current resources, leadership and international standing, there is no limit to what we can achieve both nationally and internationally.

## Ordinary Members of Council

Council encourages a good balance with reference to industry and academic background, geographical spread, gender ethnicity and age range, and the breadth of chemical sciences. Ordinary Members of Council are Trustees of the charity.

Council's nominees are:

**Professor Polly Arnold CChem FRSC FRSE**,  
Crum Brown Chair of Chemistry, University of Edinburgh

**Dr Peter Blenkiron CChem FRSC**,  
Senior Director, Skin Health R&D, GlaxoSmithKline

**Professor Sabine Flitsch CChem FRSC**,  
Professor, University of Manchester

**Professor Melissa Hanna-Brown CChem FRSC**,  
Associate Research Fellow, Pfizer Global R&D

**Dr David Prest CChem FRSC**,  
Managing Director, European Region, Johnson Matthey ECT

**Dr David Rees CChem FRSC**,  
Senior Vice President, Chemistry, Astex Pharmaceuticals

**Professor Robert Tooze CChem FRSC FRSE**,  
Managing Director, Sasol Technology

**Dr Janette Waterhouse EurChem CChem FRSC**,  
Pharmaceutical Consultant

**Mr Keith Wiggins HonFRSC**,  
Chief Operating Officer, Nanoco Group PLC

As there are five vacancies, we will hold a ballot.

## Board vacancies

Vacancy for one elected member of Membership and Qualifications Board (MQB) and one elected member for the Science, Education & Industry Board (SEIB). For further information go to <http://rsc.li/vacancies-elections>



## Division vacancies

### ANALYTICAL

Vacancies for two elected members of the Division Council.

<http://rsc.li/analytical-division-council>

### CHEMISTRY BIOLOGY INTERFACE

Vacancies for two elected members of the Division Council.

<http://rsc.li/cbid-council>

### DALTON

Vacancy for President Elect to become President in 2016, and vacancies for two elected members of the Division Council.

<http://rsc.li/dalton-division-council>

The Dalton Division Council nominee for President-Elect is **Professor Emma Raven CChem FRSC**, University of Leicester.

### EDUCATION

Vacancies for two elected members of the Division Council.

<http://rsc.li/education-division-council>

### ENVIRONMENT, SUSTAINABILITY AND ENERGY

Vacancies for two elected members of the Division Council.

<http://rsc.li/esed-council>

### FARADAY

Vacancies for two elected members of the Division Council.

<http://rsc.li/faraday-division-council>

### INDUSTRY AND TECHNOLOGY

Vacancies for two elected members of the Division Council.

<http://rsc.li/itd-council>

### MATERIALS CHEMISTRY

Vacancies for two elected members of the Division Council.

<http://rsc.li/mcd-council>

### ORGANIC

Vacancy for President Elect to become President in 2016 and vacancies for two elected members of the Division Council.

<http://rsc.li/organic-division-council>

The Organic Division Council nominee for President-Elect is **Alison Hulme CChem FRSC**, University of Edinburgh

Nomination forms, electoral regulations and guidance for candidates are available through the above links. General information on RSC governance can be found at [www.rsc.org/about-us/our-structure](http://www.rsc.org/about-us/our-structure)

## Election procedure

If you would like to go up for election for one of these vacancies, please submit your nomination using the form that is available on our website. It incorporates a signed declaration by the nominee that you are willing to make the necessary commitments if elected. A nomination must also be supported by the number of members specified. Members can only support the nomination of one candidate.

Members may also request a nomination form and additional information by emailing [election@rsc.org](mailto:election@rsc.org), or contacting Hilary Beckett by post (Royal Society of Chemistry, Burlington House, Piccadilly, London, W1J 0BA) or phone (+44 (0)20 7440 3341). The vacancy for which the information is required must be indicated.

Nominations must be received by the closing date of **6 March 2015**. We will contract an external provider to manage the elections, enabling electronic voting, with postal votes available to members who have not provided us with an email address.

# Notices

## Cool chemistry at the seaside

With financial support from the Royal Society of Chemistry Outreach Fund, volunteers in Ramsgate transformed an empty town-centre shop into a makeshift theatre in November, delivering free chemistry demonstrations to anyone who fancied coming in. The team were awarded £2,000 in August for their proposal to bring an enriching educational opportunity to the heart of a community that can face significant barriers to accessing learning opportunities.

The organisers teamed up with the University of Kent Physical Sciences Outreach Team, which – led by Ollie Brown – delivered 12 chemistry demonstrations over a two day period. They used audience participation to explain core chemistry concepts such as liquids, solids and gases, and brought the talk to life by demonstrating the effects of liquid nitrogen on bananas, balloons and bouquets of flowers.

Lead organiser Xanthe Pitt explained why she applied to the Outreach Fund: "We really wanted to bring something different to Ramsgate town centre. We wanted to make science accessible, ignite an interest in it and inspire people to learn more. By making the shop stand out from the usual high street offer, we wanted to entice members of the public, young and old.

"We tried to ensure that the event wasn't only perceived as being aimed at those with children by organising part of it during the working-week. It was clear that a number of adults were initially hesitant to take part, but once inside, we were able to show them some practical applications of chemistry and demonstrate that anyone can become a scientist. We are delighted that nearly everyone who completed our feedback said that they had learned something new and, more importantly, that they wanted to learn more!"

The Royal Society of Chemistry Outreach Fund provides financial support to individuals and organisations in order to enable them to run chemistry-based events and activities for public audiences. Through the fund we can support our members and other advocates to engage with different audiences, and provide people with an entry point into the chemical sciences. For more information, visit <http://rsc.li/outreach-fund>.



IMAGES COURTESY OF PETE BATESON

Ollie Brown from the University of Kent Physical Sciences Outreach Team used liquid nitrogen demonstrations to enthuse kids and adults in Ramsgate with chemistry.

## Take 1... minute for chemistry in health

We're looking for early-career researchers who can explain the importance of chemistry to human health in one minute. If you can think of imaginative ways to show a non-specialist audience how chemistry helps us address health-related challenges, then take part in our Take 1... minute for chemistry in health video competition for a chance to win £500.

The deadline for applications is 30 January 2015. For more details on how to enter, visit <http://rsc.li/take-1-videos>

## North West Trust closes its doors

After nearly 20 years of activity, the North West Trust of the Industry and Technology Division was closed at the end of 2014. Since its inception in 1995, the Trust donated more than £200,000 to a variety of activities in the North West, many of them aimed at primary and secondary school children. In that time, the Trust also kept its 5,500 regional members informed with 47 editions of North West Chemistry News.

"Highlights of the Trust's activities include the conservation of John Dalton's papers, which were damaged in Manchester during the Second World War and are now housed in the University of Manchester's John Rylands Library, and the production of a DVD for primary school teachers illustrating simple experiments for children using everyday items and ingredients," says David Karsa, one of the North West Trust's past Chairs.

## Make the most of your membership and come along to a Regional Meeting

Attending a Regional Meeting is a great way to network with members in your local area who share your interest in the chemical sciences. It's also an easy way to meet members of our Council, Boards and Committees, and to find out more about how you can get involved over a buffet dinner and drinks.

We know that members in several of our regions have experienced travel difficulties in the past, so for the first time ever, we will be piloting a parallel meeting in Aberdeen at the same time as the one that is taking place in Glasgow (streaming the presentations via a video link), to expand our reach and allow more members to participate.

To find out when and where some of the other events are taking place, take a look at our diary on p17. If you would like to come along to a meeting, please email [networks@rsc.org](mailto:networks@rsc.org) with your request for an invite (places are limited).

## Organic chemistry students take centre stage

On 1 December, 37 final-year organic chemistry PhD students battled it out to win £500 at the Organic Division Poster Symposium at Burlington House, London, looking to impress with enthusiastic presentations about their research. The event, which was headline sponsored by F. Hoffman-La Roche Ltd., puts poster presentations centre stage, allowing students to discuss their outstanding work with peers, leading academics, and industrial chemists from across Europe.

This year's participants presented work spanning the breadth of organic chemistry from synthetic methodology and natural products to designing molecular scaffolds for drug discovery. Professor Sue Gibson of Imperial College London, who has been chair of the organising committee for the past three years and one of the judges on the day, describes what makes the event unique: "Every single poster presenter deserves congratulations. The standard of chemistry presented was breath-taking, and it was a pleasure to see participants fully engaged in discussions from start to finish."

Along with Professor Julian Blagg, Institute of Cancer Research, and Professor Jonathan Clayden, University of Manchester, she had the difficult task of choosing our winners. The first prize went to Sonja Kuschel from the University of Manchester for her work on nanomachines for sequential peptide synthesis, with runners-up Antony Burton, University of Bristol, and Sarah Walker, Heriot-Watt University, winning £250 each. An additional prize, chosen by the students, went to Owen Davis from Imperial College London. As well as showcasing excellent research and providing invaluable networking



opportunities the symposium aims to inspire delegates to think about possible applications for their research. Antoine Maruani from University College London received a second £500 prize for his research on selective dual modification of proteins, which was deemed by the delegates from industry to have the greatest potential for industrial application.

The next poster symposium will open to applications next summer (<http://rsc.li/organic-poster>). In the meantime if you are a final year inorganic chemistry PhD student, why not apply for the Dalton Division's poster symposium at <http://rsc.li/dd-poster>

The winners of the poster competition from left to right: Sonja Kuschel (first prize), Owen Davis (participant prize), Sarah Walker (runner-up), Antony Burton (runner-up) and Antoine Maruani (industry prize).

## Kent Local Section takes members curling

With the aim of bringing together our members for some informal networking, the Kent Local Section organised an afternoon of curling at Fenton's Rink. Committee members, other members in the region, their partners and guests gathered at England's only curling rink on the afternoon of 29 November.

"The Section held a golf day in April, but we were looking for something different and new," explains Kent Local Section Chair Mark Botting. "The aim was to do something social apart from our usual visits to gardens or vineyards that would allow us to bring together members from across the age ranges."

Following an introduction to typical curling terms and a practice on the ice, the two teams fought a close battle that ended in a 7:3 victory for one of the teams after six ends.

To find out about other events organised by this or one of our other Local Sections, take a look at the Diary on p17 or our events database at [www.rsc.org/events](http://www.rsc.org/events).



IMAGE COURTESY OF MARK BOTTING

## Deaths

**Mr Albert Cain Birnie CChem MRSC** Retired analytical chemist, Macaulay Land Use Research Institute. Died 10 September 2014, aged 79

**Dr Oluf Christian Bockman MRSC** Retired scientific advisor, Norsk Hydro Research Centre. Date of death not supplied

**Mr Nathan Burak CChem MRSC** Retired adviser on regulatory affairs, Joseph Crosfield & Sons Ltd. Died 25 August 2014, aged 89

**Mr Neil Roland Colson CChem MRSC** Head, chemical analysis innovation, Unilever Plc. Died 12 October 2014, aged 55

**Dr Edwin Channing Coolidge MRSC** Retired. Died 15 August 2014, aged 89

**Dr Alan David Dale CChem MRSC** Retired senior analyst, Melbourn Scientific Ltd. Died 6 October 2014, aged 69

**Mr Robert George Nelson Davison MRSC** Operations manager, Environment Agency. Died 16 June 2014, aged 53

**Mr Peter John Gilbert Dawson CChem FRSC** Retired clinical research and development manager, BDH Ltd. Died 19 October 2014, aged 93

**Dr John Hilton Griffiths MRSC** Retired head of chemistry department, Pates Grammar School. Died 25 September 2014, aged 71

**Dr Norman Hardman CChem FRSC** CEO, Oxalis Partners LLC. Died July 2014, aged 68

**Dr David Norman Hingle MRSC** Retired self-employed technical consultant. Died 8 September 2014, aged 74

**Mr Martin Roger Humphries MRSC** Retired project manager, GKN Group Services Ltd. Died 14 January 2014, aged 73

**Mr David William Hunt CChem MRSC** Retired principal analytical chemist. Died 11 October 2014, aged 77

**Dr Colin Taylor Ironside CChem MRSC** Retired chemist, Glaxochem Ltd. Died 23 September 2014, aged 80

**Mr Frederick Hubert Lane CChem FRSC** Retired. Died 11 May 2014, aged 89

**Mr Gerald Lederer CChem FRSC** Retired self-employed consultant. Date of death not supplied

**Mr Raymond George Lidzey CChem MRSC** Retired. Died 26 September 2014, aged 87

**Dr Anne Elizabeth McCarthy CChem FRSC** Retired chemistry teacher, Edgbaston College. Died 1 October 2014, aged 87

**Mr Alexander Adrian Mieras CChem MRSC** Retired assistant general manager, technical support, BP Petroleum Development Ltd. Date of death not supplied

**Mr Michael John Owers CChem FRSC** Retired. Died 8 August 2014, aged 85

**Dr Noel Howard Poynton MRSC** Retired. Died 14 September 2014, aged 99

**Professor Benton Seymour Rabinovitch MRSC** Emeritus professor, University of Washington. Died 2 August 2014, aged 95

**Mr Rex Arthur Saunders CChem FRSC** Retired self-employed. Died 4 July 2014, aged 83

**Mr Geoffrey Brian Stapleton CChem FRSC** Retired scientist. Died 4 October 2014, aged 78

**Mr Geoffrey Tunstall CChem FRSC** Retired head of science, Thomas Preparatory School. Died 20 February 2014, aged 87

**Professor Joseph Zauhar MRSC** Retired professor in chemistry, Collège Militaire Royal de Saint-Jean. Died 20 October 2014, aged 84

To inform us of the death of an RSC member please contact the Membership Department on 01223 432141 [membership@rsc.org](mailto:membership@rsc.org)





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