

Report of the RSC Analytical Division.

June 2011.

Analytical Science in the 21st century

Analytical Science is fundamental to all areas of the chemical and biological sciences, ensuring that our manufactured goods are safe and fit for purpose. Without analysis, there would be no safe food, water or pharmaceuticals, no forensic capability to catch criminals and no means of measuring our impact on the world in which we live, through pollution monitoring. Innovative chemical measurement is firmly recognised in the RSC's Roadmap as a key enabling technology in all of the challenges. It is a truly multi-disciplinary field crossing scientific boundaries. The three key challenges which we will be focusing on over the next few years are: Human Health, Energy and Scarce Natural Resources. Analytical science will be critical in enabling the delivery of these solutions.

Analytical Division Council has had an extremely busy year and has been working on a number of fronts to ensure that analytical science in the UK can respond to these and many other challenges into the future.

Enhancing the profile of analytical science.

The Analytical Division Council is very aware that future developments in the measurement sciences will be likely to occur at the interface between different scientific disciplines. The traditional chemical disciplines of physical, organic and inorganic chemistry along with the biological sciences, and other disciplines all rely on high quality chemical measurements. With the Analytical Sciences Programme Manager, we have decided to concentrate on a number of areas which are important. These are outlined below, and will be addressed by a small working party over the next 18 months:

- ***Competitive Advantage***

Analytical science is critical to the success of all sectors of UK industry and will play a major part in increased innovation, better quality of information and increased global competitiveness.

- ***Convergence of the Life Sciences and the Physical Sciences.***

The boundaries between life sciences and the physical sciences are coming down. This is especially relevant in the roadmap challenge on human health. The Analytical Division Council will be addressing a number of issues to ensure that analytical scientists are at the forefront of this change. One example is closer collaboration with scientists working in other fields. Recently, the Radiochemistry Interest Group and the Analytical Division ran a very successful event entitled 'Metals, Peptides and Nuclear Medicine: Radiolabelled Peptides in Medical Imaging and Treatment'. This event brought together chemists, biologists, physicists and medical practitioners, cementing excellent collaborative relationships in the field of human diagnostic medicine.

Analytical Division Council has also been working closely with the Biochemical Society and the Chemistry Biology Interface Division to develop a series of workshops entitled 'Analytical Tools for the Life Sciences'. The first workshop of the new series will be held in spring 2012 and will cover new developments in glycoside analysis. It is anticipated that this will be followed by a series of themed workshops.

- ***Analytical Science for the 21st Century.***

Analytical Science will play a key enabling role in economic development, particularly in Africa and other developing regions. Science & technology has a major role in the development of new greener industries and commodities, as outlined in the recently issued report on green chemistry '**Wealth Not Waste: Green Science and Engineering for Sustainable Growth in Africa**'. These developments will require new analytical techniques which will provide cheaper, portable analysis in real time, on systems and processes.

To drive these areas forward, Analytical Division Council have recently put together a small team of leading innovators in analytical science to look at all of these issues and to ensure that the recognition of, and funding for, analytical science into the future is maintained. This team will produce an action plan which will be reported at a future date.

Influencing government policy

It is critically important to constructively influence our policy makers, especially in times when budgetary restrictions are impacting on the chemical sciences in the UK. To this end, we have been active in ensuring that the concerns of all of our members are heard by parliament. We have been particularly active in responding to the House of Commons Science & Technology Select Committee's call for evidence into the closure of the Forensic Science Service and the House of Lords Science & Technology Select Committee call for evidence on nuclear research & development capabilities in the UK. In both cases, we collated and submitted evidence from expert members of the analytical community, which has been very well received by policy makers.

Education and training.

One of the major challenges for us as professional chemists is to enthuse and encourage the next generation of scientists. The Analytical Division has continued to support the very successful Schools Analyst Competition. Last year 19 teams competed in the final, which was hosted at Huddersfield and won by Charterhouse School (South East Region). This was a culmination of competitions organised by both the Regions and Local Sections and involved more than 200 teams of Y12 students currently studying AS level chemistry.

Outreach and Developing World Scholarships.

A number of scholarships were awarded by the Analytical Chemistry Trust Fund (ACTF). Outreach scholarships provide the opportunity for UK or Republic of Ireland citizens to visit a Developing World country to disseminate new analytical science knowledge, or experience of analytical science teaching, learning or training methods. Developing World Scholarships are designed to provide the opportunity for citizens of the Developing World to visit a host institution in the UK or Republic of Ireland to acquire new analytical science knowledge which will be applied on return to their home country.

Analytical Science Network (ASN)

The ASN is a self-help group of early career analytical scientists, which facilitates networking and professional development amongst early career analytical scientists. It held its 16th and very successful Emerging Analytical Professionals (EAP) conference in Kettering. Delegates enjoyed a programme of scientific lectures, professional development and social events over a weekend in May 2011. ASN events continue to be particularly successful at attracting delegates from industry, many of whom return year after year.

Analytical Research Forum (ARF)

The Analytical Research Forum (ARF) is a major event for researchers in analytical science and is run by the RSC with funding from ACTF at a location in the United Kingdom or Republic of Ireland. The meeting is aimed primarily towards early career stage analytical scientists (PhD students and postdoctoral researchers). The invited lectures have been selected to reflect the broad range of research interests giving attendees exposure to a number of analytical science applications. ARF 2010 was held in Loughborough and was attended by 130 delegates. ARF 2011 was held in Manchester and the format of this meeting included a workshop, held in the Manchester Interdisciplinary Biocentre (MIB). This workshop demonstrated some of the advances that are being made in addressing biological problems through new analytical techniques and methods developed and applied at the MIB. The first session consisted of a series of talks providing an overview of four key analytical research areas. The second session comprised a tour around the laboratories, allowing delegates to experience the type of facilities required to pursue this cross disciplinary work and to gain practical insight to the work presented in the first session.

Other activities.

The Analytical Division Awards Symposium was held at Strathclyde University in April this year and featured lectures from the recipients of a number of RSC awards. These included the Robert Boyle Prize (Professor Gary Hieftje), The Harrison Meldola Memorial Prize (Dr Nathan Lawrence) and the Theophilus Redwood Award (Professor Paul Bohn).

The Division's strong regional network continues to organise and host a number of national and international activities driven by a hard working and enthusiastic membership. Over the past 12 months, Analytical Division Council has worked hard to strengthen links with the regions by implementing a networking and communications event at the Annual Congress. The first such event was held in 2010 in Birmingham and was very successful and will be held again this year. Analytical Division Council now invites two Regional representatives to each of their Council meetings, so all Regions should get a chance to contribute to decisions taken, on an 18 month rotating basis.