

# Educational Activities for Schools and Colleges

## ► Materials to support the curriculum

The RSC produces material to support the curriculum through the annual secondment of a Teacher Fellow, its Committee for Schools and Colleges, the Schools and Colleges Publications Service and the free circulation of *Education in Chemistry* to all UK secondary schools and colleges. The RSC also collaborates with other providers in joint projects.

## ► Teacher Fellows

RSC Teacher Fellows are responsible for developing major curriculum projects and activities. Recent accomplishments include:

- *Chemistry for the gifted and talented* - a book and CDROM containing a range of differentiated activities for use with more able chemistry pupils in a mixed ability group. These aim to interest, challenge and excite gifted young chemistry students.
- *Inspirational chemistry* - a book, website and CDROM crammed with exciting and original material – including games, practical activities and student worksheets - to support the new science GCSEs and other 14-16 curricula.
- *Using ICT to enhance teaching and learning in chemistry* – a comprehensive resource which offers practical advice on how to integrate ICT into chemistry teaching and provides a range of useful and adaptable examples.
- *Contemporary chemistry for schools and colleges* – a book and CDROM containing a wide range of chemical science concepts in modern and exciting contexts to support the teaching of 11-16 year olds.
- *That's chemistry!* – an exciting resource for primary school teachers about materials and their properties.

Other titles include:

- *The Nature of science* series – *The Nature of science*, *Climate change*, *Health, safety and risk*, *Chemists in a social and historical context* and *Green chemistry*
- *Classic chemistry experiments*
- *Classic chemistry demonstrations*
- *Microscale chemistry*

## ► Curriculum Projects

The RSC offers support to curriculum development projects through its Committee for Schools and Colleges.

Recent examples of such projects include:

- *Particles in motion* – a DVD featuring a collection of flash animations and video clips to support the teaching and learning of changes of state, rates of reactions and related topics.
- *Chemical Jigsaws* – colourful, tactile, plastic jigsaws which can be used to model ionic and covalent formulae and as a tool for visualising and balancing equations.
- *Video material for teachers of chemistry* – a DVD containing a collection of video clips showing teachers how to carry out a range of demonstration experiments, plus two programmes filmed in association with *Teachers' TV*.
- *ChemClings* - a set of transparencies designed to brighten up classroom windows with images of chemistry.
- *Kitchen chemistry* – an eye-catching book and CDROM that provide a wide range of activities dealing with the chemistry of food and cooking. The material includes teachers' notes, student sheets and video clips available on a supporting website.

We have also produced a range of websites designed to support the curriculum. These include:

- *ChemistryTeachers.org* ([www.chemistryteachers.org](http://www.chemistryteachers.org)) – a web-based portal offering access to a huge range of curriculum materials which can be searched by curriculum section, area of chemistry or a free text search.
- *Practical Chemistry* ([www.practicalchemistry.org](http://www.practicalchemistry.org)) - a comprehensive website which brings together all RSC, Nuffield and Salters' experiments and demonstrations in an easy-to-search format.
- *Chemistry for biologists* ([www.chemsoc.org/networks/learnnet/cfblindex.htm](http://www.chemsoc.org/networks/learnnet/cfblindex.htm)) – a website aimed at post-16 students taking Biology (or related subjects). It aims to explain the chemistry concepts behind many biological topics.
- *Chemistry and sport* ([www.chemistryandsport.org](http://www.chemistryandsport.org)) – a sports calendar linked to a variety of web-based teaching resources which explain the chemistry involved in a range of popular sporting events.
- *Periodic table of data* ([www.chemsoc.org/networks/learnnet/ptdata/welcome.htm](http://www.chemsoc.org/networks/learnnet/ptdata/welcome.htm)) – an interactive web resource that provides a wealth of information about the elements of the Periodic Table. Users can obtain tables of data, plot graphs to investigate trends, view energy level diagrams and test their knowledge using the games.
- *Oil Strike* ([www.rsc-oilstrike.org](http://www.rsc-oilstrike.org)) - a fun online game for 14-16 year olds, based on the extraction and processing of oil. It tests the players' knowledge of hydrocarbon chemistry.

Materials previously available on CDROM can now be accessed online. These include *Spectroscopy for Schools and Colleges*, *Alchemy?*, *the RSC Electronic Data Book* and *Practical Chemistry for Schools and Colleges*.

Details of all our publications can be found at: [www.rsc.org/publications](http://www.rsc.org/publications).

## ► LearnNet

*LearnNet* is an online network designed for chemistry educators and students at all levels.

*LearnNet* offers access to products and information, relevant to the study of chemistry, from the RSC and various other sources. It provides a wide range of useful links, information and data about products such as award winning posters, CDROMs, websites and books, many of which are available in their entirety for FREE online. [www.rsc.org/learnnet](http://www.rsc.org/learnnet)

## ► Schools and Colleges Publication Service (SCPS)

An affordable subscription package for schools and colleges which brings together quality resource material from around the world, all related to chemistry teaching. In addition to *Education in Chemistry* the backbone is provided by five overseas journals:

- *Chem Matters* from the US
- *Chem 13 News* from Canada
- *Chem NZ* from New Zealand
- *Chemistry in Action* from Ireland
- *Chemistry Review* from the UK

Subscribers receive a bi-monthly package containing these journals plus a range of other resource material. The cost is £63 (UK); £79 a year (elsewhere). [www.rsc.org/scps](http://www.rsc.org/scps)

## ► Education in Chemistry

*Education in Chemistry* is the only magazine in the UK aimed at chemistry teachers at all levels. It is written by its readers, for its readers and contains relevant news, feature articles on frontier and historical chemistry, practical activities and much more.

The magazine is accompanied by *InfoChem* – an engaging student supplement containing articles and activities for 15-18 year olds.

The RSC sends a free copy of *Education in Chemistry* to every secondary school and college in the UK. Many institutions supplement the free copy by subscribing to the SCPS. [www.rsc.org/eic](http://www.rsc.org/eic)

## ► Consultation and policy work

The RSC has significant input into education policy. We respond to numerous government consultations and work proactively by commissioning reports that provide hard, fact-driven evidence on current issues and problems and can act as a tool for lobbying for change. These include: *Surely that's banned?*, *The Economic Benefits of Higher Education Qualifications* and *Improving School Laboratories?* [www.rsc.org/edpolicy](http://www.rsc.org/edpolicy)

The RSC contributes to debates and consultations about the school science curriculum at all levels. We are regularly consulted by the Department for Children, Schools and Families (DCSF), the Qualifications and Curriculum Authority (QCA), the Training and Development Agency for Schools (TDA), and other major policy making bodies.

The RSC has recently responded to the proposals for the National Curriculum in Science, AS and A-levels.

The RSC is involved in the national Science, Technology, Engineering and Mathematics (STEM) programme in England, through our membership of the Science Community Partnership Supporting Education (SCORE).

## ► Education Initiatives Fund

This fund is a source of small amounts of financial support for novel educational activities aimed at school and college aged students. Applicants must apply by email or post. [www.rsc.org/initiativesfund](http://www.rsc.org/initiativesfund)

## ► Activities for teachers

The RSC is the largest non-government provider of in-service training (INSET) for teachers in the UK, organising Summer Schools, Industry Study Tours, Hands-on Symposia and Management Workshops.

### Summer schools for teachers

The RSC organises residential Summer Schools in Materials Science.

### Industry study tours

The RSC Industry Study Tours are held at various locations throughout the UK and mainland Europe and aim to bring industrialists and educationalists together. Over a short residential period, teachers see chemical processes in action and are able to discuss the nature of industrial processes with those employed in the chemical and pharmaceutical industries.

During these sessions teachers often produce curriculum material suitable for use in teaching.

### Symposia for teachers

The RSC runs a number of hands-on one-day symposia throughout the UK. These focus on topical issues relating to the teaching of chemistry in schools and colleges.

Recent symposia for teachers have focused on areas such as modern analytical techniques, how science works, ICT, assessment for learning and cooperative learning.

### Management workshops

The RSC runs a series of residential events entitled *Leading teaching and learning* for heads (and aspiring heads) of chemistry and science departments. Themes include managing the introduction of a new curriculum, differentiation, total quality management, managing change and leading improvement. [www.rsc.org/inset](http://www.rsc.org/inset)

### Chemistry for Non-Specialists

An affordable, high quality training programme designed to provide teachers with the confidence, flair and enthusiasm to teach chemistry to 11-16 year olds. It is specifically aimed at those who are not chemistry specialists.

The four-day courses comprise a two-day residential and two one-day follow-up events at approximately one term intervals. They cover key chemistry concepts and provide hands-on experience of both student practical work and teacher demonstrations.

*Chemistry for Non-Specialists* is part financed by external funding from GlaxoSmithKline and the DIUS. [www.rsc.org/chemnonspec](http://www.rsc.org/chemnonspec)

## ► Activities for students

The RSC provides a wide range of careers advice through our publications, our website and the UK-wide *Chemistry at Work* events. We also run a number of competitions for students.

[www.rsc.org/studentzone](http://www.rsc.org/studentzone)

### Careers information

Young people need help to make informed decisions about careers. The RSC produces a variety of literature aimed at students from age 11 upwards. Details can be found at [www.rsc.org/careers4students](http://www.rsc.org/careers4students).

This material is supplemented by colour posters promoting careers in chemistry. These include the series:

- *Chemists in their element* – eye-catching, colourful posters that illustrate the wide range of ways in which chemical scientists contribute to our everyday lives.
- *That's chemistry!* – a poster series which highlights the wide applicability of chemistry.
- *Not all chemists wear white coats* – images of chemical scientists in a variety of roles that challenge common perceptions of what chemists do.

We have also produced a CDROM – *Chemistry: More than white coats* – which comprises three presentations accompanied by speaker's notes:

- *Chemistry: More than white coats* – highlights the career opportunities available to those with a chemistry qualification.
- *Chemistry in our community* – emphasises the role of chemistry in our everyday lives.
- *Natural or man-made chemicals* – underlines some common misconceptions about chemistry and the effects of chemicals.

All these careers resources are available for free from the Education Department.

The RSC is currently involved in a project led by the Science Council, which aims to develop a *Careers from Science* website. This website

will contain information related to science course choices and career opportunities for those who study science.

[www.sciencecouncil.org/projects.php](http://www.sciencecouncil.org/projects.php)

### Chemistry at Work events

These events help school students appreciate the role of chemistry in everyday life and the world of work, with particular emphasis on what is happening in their local area. A typical event lasts three days (although one and two day events also take place). Over 40 events are organised around the UK each year.

Local organisations are invited to give 20 minute presentations – lectures, demonstrations, hands-on experiments – to groups of students, who in the course of a morning or afternoon attend around six such sessions.

Although most of the events are aimed at 14–16 year olds, both primary and sixth form events also take place. [www.rsc.org/caw](http://www.rsc.org/caw)

### Top of the Bench

A competition for teams of four 14–16 year old students, who are selected to take part in the National Final (held at the Science Museum, London) through regional heats organised by the RSC Local Sections. [www.rsc.org/tob](http://www.rsc.org/tob)

### Chemistry Olympiads

Each year the RSC organises the selection of the UK team for the *International Chemistry Olympiad*. The first round of the competition consists of a challenging written paper taken at the student's own institution in early spring. All participants receive a certificate.

The second and final qualifying rounds involve both written and practical tests and take place in late spring. In early July, the four successful team members represent the UK at the international final, which is held in a different country each year and provides a fantastic opportunity to travel and meet fellow chemistry enthusiasts from all over the world. Students entering the Olympiad competition are generally in the Upper Sixth (or equivalent).

An online Olympiad is available - from June to September - for Lower Sixth students (or equivalent), with prizes for the top scoring students. [www.rsc.org/olympiad](http://www.rsc.org/olympiad)

### Chemistry Check-Up

An online multiple choice test for Lower Sixth students designed to challenge their knowledge of key topics at the start of their AS Level (or equivalent) chemistry course. Students receive individual email feedback at the end of each test.

[www.rsc.org/check-up](http://www.rsc.org/check-up)

### RSC Bill Bryson Prize

This science communication competition – sponsored by Bill Bryson and his publishers, Transworld – is open to all school and college students and is judged in two categories: primary school and secondary school. Pupils are required to submit entries, in any format, related to the annual theme for the competition.

Entries are judged on their originality, creativity and accuracy. Cash prizes for both the schools and students are available for the winning entries and all participants receive a certificate.

[www.rsc.org/billbrysonprize](http://www.rsc.org/billbrysonprize)

### Schools' Analyst Competition

A national competition run by the RSC's Analytical Division (AD). It is aimed at Lower Sixth students studying AS level Chemistry or equivalent. The AD Regions hold heats to select teams of three students to go through to the National Final in London.

[www.rsc.org/analystcomp](http://www.rsc.org/analystcomp)

### ChemNet

A membership network for 16–18 year olds, designed to support students during their chemistry studies. ChemNet members regularly receive a range of publications jammed full of up to date chemistry information including *InfoChem* and *Chemistry World*, have the opportunity to visit universities and chemical companies and gain access to the ChemNet website and a members-only discussion board. [www.rsc.org/chemnet](http://www.rsc.org/chemnet)

### Chemistry Camps and Festivals of Chemistry

The RSC supports the Chemical Education Group's week long residential Chemistry Camps for 14 year olds. Approximately eight camps have been held annually at universities around the UK since 2002, when the RSC became involved.

[www.salters.co.uk/camps](http://www.salters.co.uk/camps)

The RSC also supports the Festivals of Chemistry organised by the Salters' Institute of Industrial Chemistry. These one day events are open to students in Year 7 and/or 8 in England and Wales or their equivalents in Scotland, Northern Ireland and the Republic of Ireland. [www.salters.co.uk/festivals](http://www.salters.co.uk/festivals)

### Chemistry for our Future

This two year £3.6m pilot programme, funded by the Higher Education Funding Council for England, is designed to ensure a strong future for chemical science higher education. The programme began on 1 September 2006 and includes some of the following initiatives:

- **Chemistry: The Next Generation** – this project promotes the excitement of chemical sciences and career opportunities available to school and college students through a range of activities including Chemistry at Work events, careers fairs and demonstration lectures.
- **Teacher fellowships** - a fellowship scheme for school teachers that aims to enhance understanding between school and university level chemistry to smooth pupils' transition to higher education.
- **Smarter use of higher education laboratories** - exploring the use of university facilities with local schools and colleges.
- **Careers** – a review of careers advice for school and college students and the production of new careers resources.

## ► Activities coordinated by RSC Divisions and Local Sections

As well as the initiatives coordinated centrally by the Education Department, there are many activities organised by the Divisions and Local Sections of the RSC.

The Education Division promotes the study and dissemination of knowledge of the various aspects of chemical education at all levels. It has five specialist interest groups which aim to foster the interest and channel the enthusiasm of RSC members interested in education.

There are 35 RSC Local Sections throughout the UK and the Republic of Ireland that cater for the local needs of members. Their committees often include teacher members and frequently have links with schools and colleges in their areas, providing a valuable link between schools, colleges, industry and tertiary education. In particular, Local Sections organise school and college lectures, careers talks and local competitions, thereby providing a valuable local resource.

## ► Membership of the RSC

There are four categories of membership: Fellow (FRSC), Member (MRSC), Associate Member (AMRSC) and Affiliate. The RSC also awards Chartered Chemist (CChem) and has a licence from The Science Council to register Chartered Scientists (CSci). As a member of the European Chemist Registration Board, the RSC administers admissions from members for the European Chemist (EurChem) designation.

### **Affiliate**

Available for those not qualified, or not yet qualified for any other category of membership. Generally, Affiliates are either undergraduate students or those with a general interest in the chemical sciences.

### **Associate Member (AMRSC)**

Open to those who can demonstrate a recognised level of attainment in chemical science by means of formal education and/or training. Primarily intended as a category for new graduates in the chemical sciences.

### **Member (MRSC)**

The main category of membership denoting the educational and/or vocational achievement that is required for AMRSC, followed by the development, through professional experience, of key skills at an appropriate level over at least three years.

### **Fellow (FRSC)**

This is the most senior category of membership. It is open to those with substantial career progression, seniority and maturity of experience in the chemical sciences.

### **Chartered Chemist (CChem)**

The Chartered Chemist designation recognises an experienced practising chemist who demonstrates an in-depth knowledge of chemistry, significant personal achievements based on chemistry, professionalism in the workplace and a commitment to maintaining chemical expertise through continuing professional development. All Chartered Chemists must be either MRSC or FRSC with an education or training based on the chemical sciences.

### **Chartered Scientist (CSci)**

The Chartered Scientist qualification (CSci) reflects best practice in science and is set at a benchmark level throughout the science professions.

### **European Chemist (EurChem)**

The EurChem designation has been developed by the European Communities Chemistry Council. It is open to members of participating national chemical societies who can demonstrate a prescribed level of academic attainment in chemistry and extensive postgraduate professional experience. RSC members seeking to become EurChem must already be Chartered Chemists.

For details on all of these, visit [www.rsc.org/join](http://www.rsc.org/join).

## ► For further information please contact:

Education Department  
Royal Society of Chemistry  
Burlington House  
Piccadilly  
London  
W1J 0BA

Tel: 020 7440 3345

Fax: 020 7287 9825

Email: [education@rsc.org](mailto:education@rsc.org)

Website: [www.rsc.org/education](http://www.rsc.org/education)

## The Royal Society of Chemistry

The Royal Society of Chemistry (RSC) is the largest organisation in Europe for advancing the chemical sciences. Supported by a network of 43,000 members worldwide and an internationally acclaimed publishing business, our activities span education and training, conferences and science policy, and the promotion of the chemical sciences to the public.

The RSC is the largest non-government supporter of chemistry education in the UK. The Education Department provides activities for teachers and students, curriculum support resources for teachers and careers material for students.

We strive to modernise curricula and work closely with the UK government, subject associations, professional bodies and learned societies to ensure a coherent approach to science education.