



ARMOURERS &
BRASIER'S COMPANY

RESOURCES FOR MATERIALS TEACHING IN SCHOOLS

2009

The support of **Materials Science** is the principal charitable aim of the Armourers & Brasiers. Financial help is given at all educational and professional levels from primary school to post-doctoral studies, culminating in the Royal Society Armourers & Brasiers' Medal for outstanding achievement. The impact of this work is much enhanced by educational partnerships with major industrial companies, currently the Armourers/Corus, the Armourers/Rolls-Royce and the Armourers/AWE Schemes. The Company takes a special interest in encouraging materials-related teaching in schools and is associated with the resources for this purpose shown in the following pages: 1.Courses for Teachers, 2.Courses for Pupils, 3.Other Educational Resources. Each item is provided and/or sponsored by the organisations shown in brackets. Copies of this list may be obtained from:

The Clerk, Armourers' Hall, 81 Coleman Street, London EC2R 5BJ
or the Company's website: www.armourersandbrasiers.co.uk

February 2009

1. COURSES FOR TEACHERS

Summer Schools on ‘The Science of Materials’

[Royal Society of Chemistry, Institute of Materials, Minerals and Mining (‘IoM³’) and Armourers & Brasiers]

These annual residential Summer Schools are designed to introduce materials science to teachers of chemistry at pre- and post-16 levels. Included in the course in 2009 will be polymers, nanomaterials, biomaterials, fuel-cell technology, careers in materials science and experiments suitable for school use. The science of conservation will be demonstrated by visits to the V&A Museum and the National Gallery. The course dinner will be held in Armourers’ Hall with a prominent materials scientist as speaker. The Summer School will take place in **London at Imperial, Queen Mary and London Metropolitan** (5 - 8 July)

Contact: Lorraine Hart: 020 7440 3350 (hartl@rsc.org)

Updates for Physics Teachers

[Institute of Physics and Armourers & Brasiers]

The Institute of Physics runs three Updates each year for all teachers of physics. Each course includes a lecture, usually accompanied by a demonstration or practical work, to introduce physics teachers to materials science. In 2009 Updates will take place at **Manchester** (31 March - 2 April), **Birmingham** (7- 9 July) and **Cambridge** (12-14 December).

Contact: Leila Solomon: 020 7470 4800 (physics@iop.org)

Master Classes in Materials Science/Engineering

[Rolls-Royce, Armourers & Brasiers and Birmingham University]

Residential courses for teachers of physics, chemistry, technology and general science at pre- and post-16 levels to introduce the academic and industrial aspects of materials. They consist of lectures, laboratory work and seminars at Birmingham University with a works visit to Rolls-Royce at Derby. The next Master Class and associated works visit will be held at **Birmingham** (21-22 September) and at **Derby** (15 October).

Contacts: Erica Tyson: 01332 248654 (erica.tyson@rolls-royce.com)

Carolyn Green: 0121 4145175 (c.a.green@bham.ac.uk)

Teachers’ Conferences on Materials Topics

[IoM³ and Armourers & Brasiers]

One-day conferences on aspects of materials in the national curriculum that are often found challenging to teach. These will be held twice each year, alternately in the north and the south, at universities, science learning centres or IoM³ regional centres. The next conferences will be on *Smart Materials* at **Exeter** (26 March) and on *Flying High with Materials* at **Manchester** (8 October t.b.c.). Courses from spring 2010 will cover *Nanotechnology* and *Materials in Sport*.

Contact: Dr. Diane Aston: 01476 513882 (diane.aston@iom3.org)

2. COURSES FOR PUPILS

Headstart Courses in Materials

[Royal Academy of Engineering, Oxford University, Armourers & Brasiers, and Corus]

Residential courses for 17 year-olds aim to raise awareness of materials science with lectures, practicals, departmental and industrial visits, and competitive design activities in the Department of Materials at **Oxford** (17-20 August).

Applications: www.headstartcourses.org.uk/default.asp?page=courses.asp

General: Dr. Adrian Taylor: 01865 283227 (adrian.taylor@materials.ox.ac.uk)

Diane Taylor: 01865 273709 (diane.taylor@materials.ox.ac.uk)

Materials Science in Salters' Chemistry Camps

[Salters' and Armourers & Brasiers' Companies, Merchant Adventurers of York, Rolls-Royce and Universities of Manchester, St. Andrews and York]

The well-known Chemistry Camps run by the Salters' Institute aim to develop enthusiasm for chemistry among 15 year-olds. To widen their appreciation of the applications of chemistry there will be a half-day devoted to materials science teaching at each of the Camps in 2008 at **Manchester** (29 July-1 August), **St. Andrews** (10-13 June) and **York** (18-21 August).

Contact: Stephanie Amos: 020 7628 5962 (camps@salters.co.uk)

3. OTHER EDUCATIONAL RESOURCES

Armourers/Corus Sixth Form Scholarships

In September 2009 ten scholarships of £350 each will be offered by the Armourers/Corus Scheme to sixth-formers likely to be interested in reading a materials-based course at one of eleven participating universities (**Birmingham, Cambridge, Imperial, Leeds, Liverpool, Loughborough, Manchester, Oxford, Queen Mary, Sheffield** and **Swansea**). The scheme is run from the School of Metallurgy & Materials at Birmingham University. For those students who go on to take materials-related courses, the scholarships will continue at £350 p.a. for their whole period of studies up to BEng or MEng level.

Contact: Carolyn Green: 0121 4145175 (c.a.green@bham.ac.uk)

Entry Scholarships for University Materials Courses

The Company also provides entry scholarships for materials courses at the Universities of **Birmingham, Leeds, Liverpool** and **Swansea**, as well as one for *Forensic Engineering* at **Sheffield Hallam**.

The regulations for these awards vary and enquiries should be made directly to individual universities.

Schools Affiliate Scheme

[Institute of Materials, Minerals & Mining]

The Scheme has been running since 1999 and has almost 500 member schools nationwide. Its aims are to support the teaching of the materials-, minerals- and mining-related topics in the secondary school curriculum and to promote careers in these areas as challenging, exciting and rewarding. These aims are achieved by the provision of teaching resources, a lively Newsletter and interactive presentations to teachers and pupils. Members also get first notice of events for teachers and pupils designed to raise achievement. See website: www.iom3.org/education/sas.htm.

Contact: Dr. Diane Aston: 01476 513882 (diane.aston@iom3.org)

Equipment Grants for Schools

[Armourers & Brasiers and Rolls-Royce]

Each year grants are made to schools for science equipment and projects. Typically these are up to £600 for primary and to £1000 for secondary schools. Funds are finite and will be allocated on a first come first served basis in each year starting on 1 April. Applications, outlining the nature of the science equipment or project, including approximate costs and nominating a point of contact, should be sent to:

The Clerk, Armourers' Hall, 81 Coleman Street, LONDON EC2R 5BJ

Publications for School Use (The publisher of each resource is underlined)

'Materials Matter in Schools' (2nd Edition 2009): interactive CD-ROM for helping pupils at Key Stages 3 and 4 with important materials-related concepts in the national curriculum for science. For use by individuals, small groups or for classroom demonstrations. On every screen there are activities for the pupil, always with feedback, and many animations and thought-provoking questions. Distributed free to schools on application to UKCME* or the Schools Affiliate Scheme (see above). Also available in web-form at http://dev.matter.org.uk/matter_for_schools/

[UKCME, MATTER*, Armourers & Brasiers, Royal Society of Chemistry, IoM³ and Salters' Institute]

'Learning about Materials' and other booklets on the chemistry of important materials at pre- and post-16 levels, written by teachers in curriculum workshops after Summer Schools on 'The Science of Materials' (see 1. above).

[Royal Society of Chemistry, IoM³ and Armourers & Brasiers]

'Materials Interactive': interactive CD-ROM for teachers and others talking to secondary schools or to the public on materials science or materials engineering. The CD contains a PowerPoint presentation on careers in materials, a movie on materials applications for use on laptops at science fairs, and a series of interactive games on different aspects of materials.

[UKCME, MATTER, Armourers & Brasiers and Corus]

* MATTER (Materials Education Resources) and UKCME (UK Centre for Materials Education) are based at the University of Liverpool.