



# Mineralogical Society of Great Britain and Ireland

[www.minersoc.org](http://www.minersoc.org)

Welcome to this, our first contribution to *Elements* for 2009. This year will be a busy one for meetings: several are being organized by, or involve, the special interest groups (SIGs). Please visit the appropriate web pages for information. Students should note that they may attend many SIG events for free. Bursaries are available from several of the SIGs to help cover travel/accommodation costs. These smaller, often one-day, events are ideal opportunities to make a first formal academic presentation.

First in this issue, however, is an interesting and very topical piece on recent activity in the UK's nuclear industry.

## THE GEOLOGICAL DISPOSAL OF RADIOACTIVE WASTE IN THE UK



Kym Jarvis

Following the UK Government's announcement during 2008 that nuclear energy is firmly on the agenda, a flurry of consultations, meetings and workshops have been held across the country to help interested parties to find out more about the process outlined in the White Paper<sup>1</sup> for the geological disposal route. There is clearly a renewed interest in all things nuclear amongst the geological and environmental communities, and the question of the resources, people and science which will be needed during the

next 30 years has to some extent been explored. The Committee on Radioactive Waste Management (CoRWM) set up by the Government under their Managing Radioactive Waste Safely programme has been holding a series of meetings with research councils, learned societies, regulators and the industry over the past nine months, with a remit to report back to the Government in June 2009.

The scientific issues involved in site selection and characterisation for the Geological Disposal Facility (GDF), including the application of exclusion criteria and views of the geosciences community, and the research and development needed to deliver the GDF have been considered at a series of recent meetings hosted by the Geological Society in London. The issues raised at these meetings covered a number of important areas, such as the science which would be needed, the use of modern geophysical non-invasive approaches to site characterisation, and the concept of 'volunteer communities', amongst others. The model of asking potential local communities to offer to host the GDF may at first seem somewhat 'cart before the horse'. What if they are willing but the geology is inappropriate? How will they become informed about local geological issues which could be important to their bid? Whatever the limitations of such an approach to site selection, it is certainly one which has worked well elsewhere in Europe.

The role of the learned societies is interesting. One idea with which they are in full agreement is that they should remain independent of other interested parties and that they could/should have an important role in the dissemination of information to the geological community. Their members and fellows are in many cases the scientists who will carry out the required research and development. They are also the one group that could perhaps best communicate to the interested public the issues and developments surrounding this complex subject.

One question which has been discussed at every meeting I have attended on the issues of radioactive waste disposal, and the GDF in particular, is that of who will carry out the needed research and development. In the UK academic scene, nuclear research has been off the agenda for essentially 12 years. Many of the geoscientists whose research interests would be relevant to the waste-disposal issues have moved into other areas where funding was more forthcoming. The PhD students they have taken on since that time have similarly been working in other

areas of specialism. These factors have left us not only with a potential skills shortage in the geosciences, but without any realistic way of filling this gap in the medium-term future. A number of initiatives and funding routes are offered by the Nuclear Decommissioning Authority which are certainly ensuring a good supply of nuclear engineers at all levels. Only one scheme, EMPower<sup>2</sup>, operates in the UK; this programme encourages young environmental and Earth science masters students to consider employment or research careers in the 'nuclear' sector. It is the view of many academics that secure, long-term funding is needed if universities are going to be able to train appropriately skilled people for the tasks ahead.

We await the publication of CoRWM's report in 2009. In the meantime, dissemination of information to the Societies' members, the Earth science community and members of the public is a priority.

**Kym Jarvis, Chair**

Geochemistry Group of the Mineralogical and Geological Societies

### NOTES

1. Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal. UK Government White Paper 2008
2. [www.EMpowerinfo.org](http://www.EMpowerinfo.org)

### MEETINGS

#### *Environmental Mineralogy Group Research in Progress Meeting*

**8 May 2009**

The next EMG RiP meeting takes place at the University of Leeds, UK. Oral and poster presentations are welcome in any branch of environmental mineralogy, including contaminant-bearing minerals; bacterial-, fungus-, lichen-, worm-mineral interactions; acid mine drainage; minerals and human health; mineral weathering; characterisation of 'environmental' minerals; stability, structure and crystallinity of 'environmental' minerals; and minerals and waste disposal. A keynote talk will be given by Prof. John Farmer of the University of Edinburgh. For information, contact Imad Ahmed, School of Earth and Environment, The University of Leeds, Leeds LS2 9JT, UK (I.A.M.Ahmed@Leeds.ac.uk) or go to [www.minersoc.org/pages/groups/emg/emg.html/](http://www.minersoc.org/pages/groups/emg/emg.html/).

#### *Evolution of the Continental Crust: The Janet Watson Meeting and Field Trip*



NW Scottish Highlands. PHOTO COURTESY OF NERC, UK

**Field Trip: Lewisian Gneiss  
Complex, NW Scotland,  
22–27 May 2009**

**Conference: Burlington House,  
London, 28–29 May 2009**

The continental crust has evolved through Earth's history, creating the structures, the igneous and metamorphic patterns and the geochemistry that we see today. Studies from different scientific viewpoints have given rise to diverse visions of how the crust has evolved. The two-day Janet Watson Meeting aims to bring together investigators pursuing these different scientific strands, to stimulate a broad discussion of continental crustal evolution. Kathryn Goodenough of the Volcanic and Magmatic Studies Group is co-organizer of a pre-meeting field trip to the Lewisian Gneiss Complex, NW Scotland.

For more information and to register for the meeting or field trip, please go to [www.geolsoc.org.uk/gsl/events/listings/page4658.html](http://www.geolsoc.org.uk/gsl/events/listings/page4658.html).

## MINERALOGICAL SOCIETY DISTINGUISHED LECTURES FOR 2008–2009

In the current academic year, the Society's Distinguished Lectures will be delivered by **Dr Marian Holness** of Cambridge University and **Prof. Liane Benning** of the University of Leeds. Please visit the Society website for details of the venues ([www.minersoc.org/pages/lecturer/lecturer.html](http://www.minersoc.org/pages/lecturer/lecturer.html)).

## MARIAN HOLNESS

## Talk 1

**Towards an understanding of microstructural development in partially melted crustal rocks**

Metamorphism commonly culminates in partial melting of the crust, with associated effects on rock rheology and mass transport. Teasing apart regional and contact metamorphic events may therefore be dependent on interpreting microstructures in partially melted quartzo-feldspathic rocks. These encompass a wide and potentially bewildering variation, and in this lecture I will show how they are affected by timescales and pore size.

## Talk 2

**A textural record of cooling in layered mafic intrusions**

Textures in mafic rocks are traditionally used to distinguish between the early-formed liquid phases (cumulus) and later phases which grew in the interstices of a crystal mush (intercumulus). In this lecture I will demonstrate how the details of grain-boundary orientations within cumulate rocks record otherwise inaccessible information about the cooling history and throw new light on our understanding of the balance between latent and sensible heat loss during cooling.

## LIANE BENNING

## Talk 1

**How to track the birth of a nanoparticle: The fight between kinetics and thermodynamics**

Nanoparticles play an important role in many terrestrial environments in the sequestration as well as cycling of elements, including toxic metals and organics. Their nucleation, growth and stability in near-Earth-surface settings can now be quantified using in situ and time-resolved synchrotron-based approaches combined with high-resolution imaging techniques. Furthermore, the formation and transformation kinetics of nanoparticles and the mechanisms and effects that various metals or organics have on these processes will be discussed.

## Talk 2

**How 'Earthlings' have fun looking for life in a Mars analogue site: an AMASE'ing experience**

The NASA and ESA 'Search for Life' Mars missions scheduled for the next decade require the development and thorough testing of stringent analytical protocols and low-detection-limit technologies to enable the quantification of possible extant or extinct biosignatures on Mars. In this lecture I will discuss how such testing is carried out in extreme terrestrial environments of the Arctic. I will also show how we have developed and applied field-based null-level contamination-free sampling and sample handling, and how we have used spectral and microbiological approaches for high-resolution quantification of mineralogy and determination of low-level biosignatures.

**MAPT: MicroAnalysis, Processes, Time – Annual Conference for 2009****1–3 September 2009**

The Society's Annual Meeting for 2009 will take place in Edinburgh. A full list of convenors and session outlines is now available on the meeting website ([www.minersoc.org/pages/meetings/MAPT/MAPT.html](http://www.minersoc.org/pages/meetings/MAPT/MAPT.html)). The list of presentations and speakers for the plenary sessions has recently been added.

**Mineralogical Society Hallimond Lecture**

BEN HARTE – Diamonds and Metamorphism in the Deep Mantle: Protoliths, Processes and Time

**Mineralogical Society Schlumberger Award lecture**

JOHN BRODHOLT – Ultra-Low-Velocity-Zones: What in Earth Could They Be Made Of?

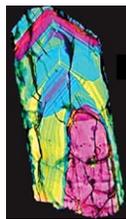
**Société Française de Mineralogie et de Cristallographie lecture**

ALAIN BARONNET – Reading Nanostructures by TEM in Geo- and Biominerals

**Deutsche Mineralogische Gesellschaft lecture**

Andreas Audetat – Laser-Ablation ICP-MS Analysis of Solid, Melt and Fluid Inclusions: Techniques and Applications

Online registration is now available. This promises to be a very exciting meeting, with many talks on the latest techniques and analytical equipment used in our sciences.

**Environment, Pollution & Human Health – Geological Society William Smith Meeting****21–23 September 2009**

The next Geological Society William Smith Meeting (which involves the Environmental Mineralogy Group) takes place on 21–23 September 2009 at Burlington House, London. Go to [www.minersoc.org/pages/groups/emg/emg.html](http://www.minersoc.org/pages/groups/emg/emg.html) for more information.

**Mineralogical Society 2010 Annual Meeting**

A new date has been set for the Society's 2010 Annual Meeting. This will be the "Frontiers in Environmental Geoscience" meeting, previously billed for 2010, which will take place during the week commencing 20 June 2011 and will be held at Aberystwyth University, Wales. Go to [www.minersoc.org/pages/meetings/frontiers-2011/frontiers-2011.html](http://www.minersoc.org/pages/meetings/frontiers-2011/frontiers-2011.html) for information.

## MEMBERSHIP DUES

Many of you have by now paid your membership dues – thank you. Our newly installed online payment mechanism has definitely helped. Please keep a note of your membership number; you will need it when you log into the Society's web pages. This will enable you not only to pay dues online, but also to update your membership record, look up a fellow-member's details, buy a Society publication and use the Society's journals online. As we develop the members-only area, more facilities will be added. Let us know if there are other features you would find helpful.

## MINERALOGICAL SOCIETY AWARDS

Nominations are now sought for the Society's annual awards. These are the **Mineralogical Society-Schlumberger Medal**, the **Max Hey Medal**, and the new **Collins Medal**. The closing date for nominations is **30 April 2009**. Information is available at [www.minersoc.org/pages/awards/awards.html](http://www.minersoc.org/pages/awards/awards.html).

## THE MINERALOGICAL SOCIETY SAYS THANK YOU!

Each year, the Society holds three Council meetings, three meetings of its Executive, and three meetings of its Publications Committee. Volunteers who attend and help to run the Society provide the Society and the mineralogical community with a very valuable service. We express our gratitude to Neil Fortey (Custodian Trustee), Terry Williams (Member of Council), Peter W. Scott, Marian Holness, and Adrian Brearley (Associate Editors, *Mineralogical Magazine*), who have completed their terms of office or have decided to stand down from their positions.