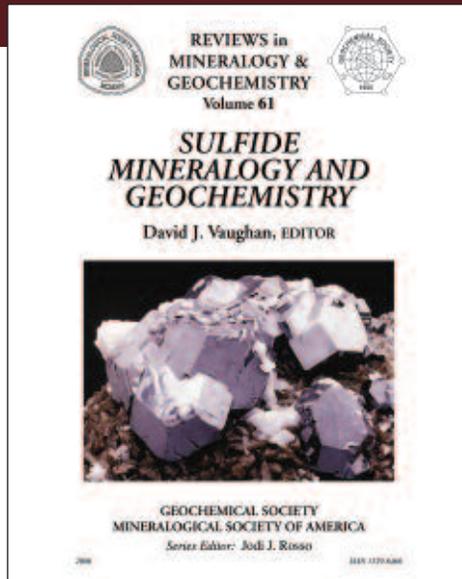


BOOK REVIEWS (cont'd from page 361)

Vaughan discuss spectroscopic studies in terms of X-ray emission, absorption, and Mössbauer spectroscopy, and they review methods for studying metal sulfide surfaces, including the use of high-intensity photon sources associated with synchrotron radiation such as EXAFS and XANES. They also provide examples of the application of these techniques to the determination of the electronic structure of sulfide compounds. Coauthored by Vaughan and Rosso, chapter 5 treats chemical bonding in metal sulfide minerals and how it relates to crystal structures, stabilities, and physical properties.

One of the more applied chapters in the volume is chapter 6, in which Sack and Ebel review the thermochemistry of sulfides in solution. The application of metal sulfide phase relations to ore deposits is demonstrated through a review of the literature and is illustrated with case studies. In chapter 7, Fleet presents the phase equilibria of metal sulfides at high temperatures. A feature common to this chapter and several others is the demonstration of the interrelationship of the themes treated in different chapters. In this case the importance of understanding phase equilibria in the context of electronic and magnetic properties is emphasized. Rickard and Luther review the nature of metal sulfide complexes and clusters in chapter 8. They show the importance of clusters for understanding natural aqueous systems



and the interaction of sulfide chemistry with biological agents. Chapter 9 is a comprehensive summary by Rosso and Vaughan of the nature of sulfide mineral surfaces determined with experimental and theoretical tools developed during the last 20 years. The atomic and electronic structure of sulfides is described, with examples of several common sulfide minerals. The same authors carry on the same theme in chapter 10, where they consider the nature of

chemical reactions at sulfide mineral surfaces. A minor criticism of the volume is that these two chapters should have followed chapter 5.

Chapter 11, by Reed and Palandri, returns to an applied theme by examining the nature of sulfide mineral precipitates from hydrothermal fluids. The chapter presents a description of the chemical and physical processes that drive sulfide mineral dissolution and precipitation. In chapter 12, Seal reviews the application of sulfur isotopes to the study of sulfide minerals. Volume 61 is worth purchasing for this review alone, written by one of the foremost researchers in this field. The review is comprehensive and uses case studies to illustrate the application of sulfur isotopes in various geochemical environments. The final chapter of the book, by Pósfai and Dunin-Borkowski, narrates the role of sulfides in biosystems. This comprehensive review demonstrates the importance of organisms in the dissolution and precipitation of sulfide minerals, particularly iron sulfides.

In summary, the volume is an excellent addition to this series and, like previous volumes, is set to become a benchmark in its field. It will appeal to those who conduct research on sulfide minerals and those studying natural and synthetic systems involving sulfides.

Robert Bowell

SRK Consulting, Cardiff, Wales

CONFERENCE REPORT

FRONTIERS IN MINERAL SCIENCES CAMBRIDGE, 26–28 JUNE 2007

Meetings such as the one described here are often conceived many years before they actually happen. When "Frontiers" was first discussed, Michael Carpenter was president of the Mineralogical Society of America (MSA) and David Price was president of the Mineralogical Society of Great Britain and Ireland (MSGBI) and the summer weather was fine in Cambridge. The Mineralogical Association of Canada (MAC) and the Société Française de Minéralogie et de Cristallographie (SFMC) agreed to join our merry band and we had a meeting to organize. This was to be a unique coming together of the societies mentioned. When Michael offered to chair the organizing committee, we had visions of a select gathering of about 150 delegates. So we were hugely surprised and delighted when the meeting proved so popular. We had to squeeze the door shut at 402 delegates from 26 countries. As mineralogy meetings go, nothing other than IMA meetings can rival it in terms of numerical success.

All learned societies talk about what it is that makes a good meeting. The venue? The convenor? The wine? The time of year/ weather? The programme? Cambridge in June, with Michael Carpenter in the hot seat, a superb line-up of plenary lecturers, and the bonus of some outstanding sessions with excellent talks thrown in for good measure was the heady

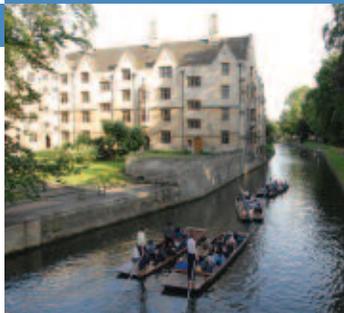
mix which moistened our tastebuds as the mid-summer gathering drew near. The event did not disappoint, even if the weather did! In the wonderful surroundings of Fitzwilliam College, 18 symposia in up to six parallel sessions played out over three days. Interspersed were an ice-breaker reception, a welcome from the Department of Earth Sciences at



Frank Spear, MSA's Dana Medalist, receiving his award from Barb Dutrow, MSA president, at the conference dinner, and Matt Kohn, citationist.

Sedgwick Museum, the conference dinner, some wonderful musical entertainment (by the talented cellist Kim Cook, amongst others) and punting on the river Cam, all well oiled with delightful college wines and sustained by food provided by the college and local hostellers.

Key, of course, was the science. Below is a list of the scientific sessions. All were well attended, and because of the pressure of time, one had to be sharp to keep on top of the wide choice of pickings that were available.



Punting on the picturesque Cam



Scottish entertainment at the conference dinner



Enjoying the fare at the welcoming reception in the Sedgwick Museum garden



Bob Martin and his analysis of the fruit punch



Michael Carpenter, Desmond McConnell and David Price.

- Interactions between minerals and organic molecules
- Minerals in biological systems
- Internal textures, and trace element and isotope geochemistry in accessory minerals: advances in imaging and in situ microanalysis
- Feldspars 2007: In memory of J.V. Smith
- Minerals in contaminated environments: Characterization, stability, impact
- Applications of synchrotron and neutron radiation in mineralogy
- Simulations of Earth and planetary materials: Advances and limitations
- Mineral magnetism from the nanometre to the planetary scale
- Mineralogy, structure and dynamics of the Earth's mantle
- Mineralogical models for nuclear waste disposal
- Amorphous materials: Properties, structure and durability
- Developments in textural analysis of rocks
- The development of the North Atlantic Igneous Province with special reference to platinum-group element concentrations in the magmas
- Magma chamber processes and models of magma extraction
- Magmatic fluids and volcanic degassing: From ores to aerosols
- Metamorphic phase equilibria, chronology and tectonics: A tribute to Frank S. Spear
- Volatiles in minerals and their petrologic implications
- Minerals and fluid-rock interaction
- Respirable natural dusts: Sources, characterization and health effects

Plenary talks were by Frank Spear, Peter Kelemen, Peter Burns, Pascal Richet and Anthony E. (Willy) Williams-Jones. Spear (MSA Dana Medallist) delivered a tour-de-force "How and Where Are Elements Distributed in a Rock? Reflections on Chemical Zoning in Minerals" forcing many to rethink long-held ideas about how minerals form in rocks. Kelemen's Hallimond Lecture (Mineralogical Society of Great

Britain & Ireland), "Feedback Mechanisms in Reactive Fluid Transport: Field Examples and Simple Models" provided a wonderful contrast in scale to the Spear talk. Williams-Jones, invited by the Mineralogical Association of Canada, spoke on the fascinating subject "Black Gold – A Metaphor with Unintended Meaning: Insights from Experiments with Crude Oil" (now we need to revisit all those oil fields and find some gold...!). Peter Burns, another MAC invitee, spoke on the theme "Uranium Nanospheres and Plutonium Colloid and their Structural Relations to Minerals" and showed all manner of possibilities when it



Gordon Brown Jr., receiving MAC's Hawley Medal on behalf of François Farges, Ralf Siewert, Carl W. Ponader, Gordon E. Brown, Jr., Michel Pichavant and Harald Behrens



The effervescent Anthony Williams-Jones, MAC plenary speaker



Peter Burns, MAC plenary speaker



Peter Kelemen relaxing after his Hallimond (MSGBI) Lecture

comes to constructing (putative) spherical crystals containing plutonium. The Société Française de Minéralogie et de Cristallographie plenary lecture by Richet was entitled "Redox Reactions, Phase Equilibria and Mobility of Network-forming and Network-modifying Cations in Silicate Melts".

As a follow-up on several sessions, special issues of *Mineralogical Magazine* and *The Canadian Mineralogist* are planned. Papers will also be published in *American Mineralogist* and in the *European Journal of Mineralogy*. The complete abstract volume is also available to all on the Mineralogical Society's website (www.minersoc.org).

While at Cambridge, many groups took the opportunity to attend to some administrative business. The MSGBI and the MAC held their annual general meetings, and the editors and the Executive Committee of *Elements* also held meetings.

Many people contributed to the success of the meeting: the Mineralogical Society staff, the staff at the Department of Earth Sciences, Cambridge – including the indefatigable Margaret Johnson and the redoubtable Nigel Johnson, who were unfailingly helpful and courteous – the staff at Fitzwilliam College, and especially those people who helped to organize the scientific sessions, which were of top quality in all respects. Ben Harte, MSGBI president, thanked all of these in his speech at the start of the plenary session.

So, what's next? There are many meetings ... some would say too many. But I don't suppose we will ever tire of good meetings. Frontiers II anyone?

Kevin Murphy

All photos courtesy of Dudley Simons of the Department of Earth Sciences, Cambridge