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PAPER, ELECTRONS, AND GEOCHEMICAL DATA



Rick Carlson

Much like in the era of Gutenberg, science is seeing a transformation in how the written word is transmitted. The tradition of a monthly paper journal arriving in the mail has been displaced by more or less continuous publication of individual papers now accessed electronically through remote library accounts. In the first phase of the transition from paper to electronic publishing, e-papers were created that looked identical to their paper predecessors, as editors stuck to traditional formats dictated by the constraints of printing on

paper. Slowly, the ability to publish color figures at no cost, to link directly to citations, to append large electronic data files in digital formats, and to provide interactive figures including maps and animations has changed the e-paper.

Arguably, the most significant advance allowed by e-publishing is the way that it can make data available. Before the onset of automated geochemical instrumentation, papers were few enough and long enough that complete data tables were included in the paper. As geochemical data became more plentiful, pressure to publish more, and shorter, papers forced much data to be shown only in figures, to be displaced to archival repositories, often transitory, or to be relegated to the dreaded "data available from the author" category. As a result, a tremendous amount of data, sometimes on rare materials or unique experiments, effectively was lost. The difficulty of finding and extracting available data kept the important contribution of geochemical investigations from being accessed and incorporated into broader Earth science studies.

In 2007, the Geochemical Society established a data policy (www.geochemsoc.org/society/positionstatements/datapolicy.htm) that spelled out a number of avenues through which geochemical data could, and should, be presented in the era of e-publishing and online databases. Many of these suggestions were added to the author guidelines for the journal of the Geochemical Society, *Geochimica et Cosmochimica Acta* (GCA). Recognition and adoption of these new data-reporting standards by the geochemical community has been slow, I assert, because many do not recognize the opportunities allowed by advanced database management, both in and outside the traditional journal. The first advantage is obvious. There are no longer any restrictions on the amount of data that can be submitted, at least to supplemental online repositories. Data can, and should, be submitted in digital formats, so it is no longer necessary for an author to struggle to align decimal points or force-fit too many columns into a single-page table, or for a reader to hand-transcribe data from a paper table into their own digital table. Perhaps the greatest advantage, however, is just beginning to be realized. If submitted with proper metadata, data can be incorporated into freely accessible online databases that allow modern search criteria, instant downloads, and manipulation of all the available data relevant to a given problem. As testimony to the importance the Geochemical Society places on advanced data management, the leaders of the EarthChem, GeoReM, GEOROC, and NAVDAT databases were recently selected to receive the Society's Distinguished Service Award. Recently, GCA followed the route of several other Elsevier journals into the "Article of the Future," where these, and other, online community databases are linked to individual papers so that the reader can rapidly find, map, and/or query data published elsewhere for related samples or areas. Such changes in presentation, storage, and retrieval of geochemical data represent perhaps one of the greatest advances resulting from the switch from paper to electronic publishing.

Rick Carlson, GS President

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2014 BOARD ELECTIONS

Five Board positions will be voted on this fall: vice president, treasurer, secretary, and two director positions. During the coming months, the Nominations Committee will be seeking and vetting potential candidates. If you are interested in serving the Society in one of these roles, please indicate your interest to the Nominations Committee chair, Karen Hudson-Edwards (k.hudson-edwards@bbk.ac.uk) by April 30.

The 2013 Nominations Committee is composed of **Karen Hudson-Edwards**, Chair (University of London, UK), **Takeshi Kakegawa** (Tohoku University, Japan), **Simon Wilde** (Curtin University, Australia), **Bernhard Peucker-Ehrenbrink** (Woods Hole Oceanographic Institution, USA), **Adina Paytan** (University of California–Santa Cruz, USA), and **Tracy Rushmer** (Macquarie University, Australia).

EMI2013 AND GRC-INTERIOR OF THE EARTH RECEIVE MAP SUPPORT

The Program Committee has recently approved grants of US\$2000 each to Environmental Isotopes 2013 (www.emi2013.ethz.ch/) which will be held in Ascona, Switzerland, on August 18–23, 2013; and to the Interior of the Earth Gordon Research Conference (www.grc.org/programs.aspx?year=2013&program=interior) which will be held in South Hadley, MA, USA, on June 2–7, 2013.

The Meeting Assistance Program was established in 2002 to allocate up to five (5) sponsorships of up to \$2,000 (US\$) each (\$10,000 annually) for support of geochemistry sessions/symposia at any scientific conference of geochemical relevance. Conference representatives may apply by sending an email with “MAP Application” in the subject line to Seth Davis at seth.davis@geochemsoc.org. The email should include at a minimum:

- The name, institution and contact information of the symposium organizer(s)
- Symposium description
- Symposium budget
- Description of how the MAP funds will be used
- Description of how the symposium will acknowledge the MAP sponsorship

Applications are reviewed and approved by the Program Committee. Awards are distributed in United States dollars and must be distributed to an organization (not an individual). The applicant of a funded program should also expect to submit a postsymposium report for publication in *Elements* and/or *Geochemical News*.



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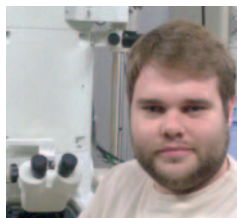


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HAÛY-LACROIX PRIZE FOR 2012

The 2012 Haüy-Lacroix prize, for the best French PhD thesis in mineralogy defended during the 2011 calendar year, was awarded to **Frank Bourdelle** for his work entitled “Phyllosilicates as markers of the thermal history of diagenetic and low-grade metamorphic rocks.” The thesis was done at the Institut Français du Pétrole – Énergies Nouvelles and the École Normale Supérieure de Paris and was supervised by Teddy Parra and Christian Chopin; it can be downloaded at <http://tel.archives-ouvertes.fr/>. The abstract of the thesis follows.



Frank Bourdelle

The chemical composition of illites and chlorites, which are ubiquitous minerals in most diagenetic rocks, is sensitive to P – T conditions and to bulk-rock composition. Therefore, these minerals can serve as indicators of the burial history of sediments, in particular in terms of their thermal history. The guiding principle of this thesis was to consider diagenetic clays as classic metamorphic minerals, i.e. to consider that

low- T clay minerals acquire new compositions in equilibrium with temperature variations during their burial history. Based on an analytical protocol combining FIB and TEM-EDX for the fine-scale measurement of chemical compositions and grain textures, this study shows that these low- T minerals possess an elevated intracrystalline variability in their chemical composition at the nanometer scale. Moreover, this work shows the suitability of TEM-EDX chemical analyses for estimating temperature variations at a very small and local scale, and the consequences of this with respect to conventional thermo-barometers and chemical zoning in low- T crystals. Using the methodology developed, previously published illite thermo-barometers were tested, and a new ordered model of solid solution for chlorites was developed for Si-rich, low- T compositions. The calibration of this new thermometer for use with various low-temperature and low-pressure geologic environments was tested on natural chlorites from the Texas Gulf Coast at peak metamorphic conditions (T , P measured in situ) and was shown to give accurate results, even without Fe^{3+} -content estimates. This new approach was also used to identify different thermal events and phases of chlorite crystallization in geologic units in the Swiss Alps (near Glarus). These results, compared with those using conventional thermo-barometers, give a good representation of the burial and exhumation process for low- T rocks. To conclude, for low- T environments, the composition of clay minerals records the thermal conditions of crystallization and each distinct chemical zone in a crystal records a single episode in a rock's P – T history.

MINTEM 2012: TEM IN MINERALOGY

A Graduate and PhD Course of the SFMC

The second edition of the MINTEM school, on the subject of transmission electron microscopy in mineralogy, was organized by the SFMC and the UMET laboratory and was held at the University of Lille on 19–23 November 2012. Six participants from Germany, Italy and France attended the school. Practical sessions on the TECNAI microscope of the Centre Commun de Microscopie de Lille (<http://umet.univ-lille1.fr/CCM/index.php?lang=fr>) were held during the morning. Lectures were given during the afternoon sessions. The next edition of the school is planned for 2014. More information is given on the school website: <http://umet.univ-lille1.fr/Animation/MinTem2012/>.