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PRESIDENT'S LETTER



Rebecca Lange

The Role of Mineralogy in the Earth, Environmental, and Planetary Sciences: Spread the Word!

The primary activity that I would like to focus on in the coming year is an effort to increase Mineralogical Society of America (MSA) membership, and I need your help. For those of us who are already members of MSA, we fully appreciate the myriad ways that the study of minerals underpins so much of the Earth, environmental,

and planetary sciences. However, in recent conversations that I've had with both geologists and nongeologists alike, it has become clear to me that there remain misconceptions about the breadth of mineral science and, thus, the breadth of science that MSA promotes.

Many rightly consider the Mineralogical Society of America as the natural home for those who perform structure refinements on new minerals or known minerals under new conditions, such as extremes of pressure and temperature. Yes, this is perfectly true. And although this type of research produces exciting discoveries and applications, it only scratches the surface of the scientific scope that is supported and promoted by the MSA. Mineralogy, as a subject, is the foundation that allows man to understand the evolution of Earth as a planet, to extract natural resources, to preserve a habitable environment, and even to understand the evolution of life itself. Mineralogy should be a subject of broad societal interest. But is this how society actually views mineralogy?

The unappreciated breadth of mineralogy was brought home to me on a recent transcontinental flight when I found myself seated next to a retired civil engineer who asked me the classic question, "What do you do?" This question morphed into a lively discussion on the importance of professional societies in general and the Mineralogical Society of America in particular. As we talked, my flight companion seemed genuinely surprised and intrigued at mineralogy's huge societal relevance and breadth of application. He and I began with a discussion on economic ore deposits, which gradually shifted to remediation efforts directed at acid mining pollution and the role of mineral surfaces in water-rock interactions. This then led to a chat about the break-through discoveries of the last 10 years on the role that microbes play in mediating fluid-mineral surface reactions.

From there we meandered into a topic closer to my own research/teaching interests, namely a discussion of how minerals in volcanic rocks (e.g. from supervolcano eruptions and their products, such as Yellowstone and the Bishop Tuff) can be used as thermometers, barometers, and hygrometers, and also how the kinetics of element diffusion through minerals provide us with detailed information on the timescales of magma formation, storage, and eruption. This in turn led to a discussion of radiometric age dating of minerals and how recent improvements in the precision and accuracy of geochronometers are changing the very questions that can be posed and answered.

Our discussion of the age of the Earth segued into what we know about the deep Earth, and how we use the discipline of mineral physics (combined with seismology)—plus advances in various types of spectroscopy, X-ray and neutron diffraction, and new generations of beam lines—to infer the composition and liquid/solid state of the outer/inner core. We ended with a discussion of Earth as a habitable planet, the role of Earth's magnetic field in retaining a H₂O-rich atmosphere and the oceans, and whether there is life on other planets.

After a pause, my seatmate asked if minerals had anything to "say" about climate change. Yes they do, and this launched me into how crystalline carbonate shells tell us about past CO₂ levels and past global temperatures, and then I explained about the possibility of using other minerals to sequester carbon out of the atmosphere.

I feared that by now I had exhausted my flight companion, although I knew I had barely scratched the surface of all the numerous applications of mineralogy in our society. But instead he seemed full of surprise and interest that "minerals" could tell us so much. To paraphrase MSA Past President Steve Shirey, I told him, "Yep, minerals really do matter!"

I then turned the tables and asked my seatmate about his career (in airport design), and he spoke at length about his concern with our nation's ageing infrastructure. This led us back to the importance of professional societies. He reminded me that professional societies not only facilitate lively discussions and debates among members but that they are also the most effective conduits we have for sharing our expertise with the general public.

As I write this letter, it has been more than a month since I shared that flight, but the conversation with my seatmate continues to reverberate with me. Two themes remain on my mind, and both are related to membership in MSA. First is the tendency for many—not just those outside of Earth science but also those within it—to not fully realize how incredibly broad are the applications of mineralogy, something that perhaps impacts some of our colleagues' decisions not to become a member of MSA. Second is the role that MSA specifically plays in serving both our members and the broader public. In the next issue of *Elements*, I will provide an update on all the ways the MSA serves our community, including new initiatives in the publishing arena.

In the meantime, please encourage all those you know who are engaged in research and/or teaching that involves any part of the full spectrum of mineralogical applications to become a member of the MSA!

Rebecca Lange, 2016 MSA President
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NOTES FROM CHANTILLY

- MSA will have electronic balloting for its 2016 election of 2017 MSA officers and councilors. The slate of candidates are as follows: President: George E. Harlow (American Museum of Natural History); Vice President: Michael Brown (University of Maryland); Treasurer: Thomas S. Duffy (Princeton University); Councilors (two to be selected): Sarah K. Carmichael (Appalachian State University), Patrick Cordier (University of Lille, France), Jade Star Lackey (Pomona College) and Sarah C. Penniston-Dorland (University of Maryland). Continuing as MSA Secretary is Bryan C. Chakoumakos (Oak Ridge National Laboratory). Continuing councilors will be Abby Kavner (University of California–Los Angeles), Matthew J. Kohn (Boise State University), Rajdeep Dasgupta (Rice University), and Peter I. Nabelek (University of Missouri-Columbia).
- All 2014 and 2015 MSA members have been contacted by mail, electronically, or both about renewing their membership for 2016. If you have not renewed your MSA membership, *please do so*. If you have not received a notice by the time you read this, please contact the MSA Business Office. You can also renew online at anytime.

J. Alex Speer, MSA Executive Director
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AWARD NOMINATIONS

Nominations Sought for 2017/2018 Awards

NOMINATIONS MUST BE RECEIVED BY 1 JUNE 2016

The **Roebbling Medal** (2017) is MSA's highest award and is given for eminence as represented by outstanding published original research in mineralogy.

The **Dana Medal** (2018) is intended to recognize continued outstanding scientific contributions through original research in the mineralogical sciences by an individual in the middle of their career.

Mineralogical Society of America Award (2017) is given for outstanding published contribution(s) prior to 35th birthday or within 7 years of the PhD.

The **Distinguished Public Service Medal** (2017) is presented to an individual who has provided outstanding contributions to public policy and awareness about mineralogical topics through science.

Society **Fellowship** is the recognition of a member's significant scientific contributions. Nomination is undertaken by one member with two members acting as cosponsors. Form required, please contact committee chair or MSA home page.

Mineralogical Society of America

Submission requirements and procedures are on MSA's home page:
<http://www.minsocam.org/>

RESEARCH GRANTS

The Mineralogical Society of America

2017 GRANTS FOR

Research in Crystallography

from the Edward H. Kraus Crystallographic Research Fund
with contributions from MSA membership and friends

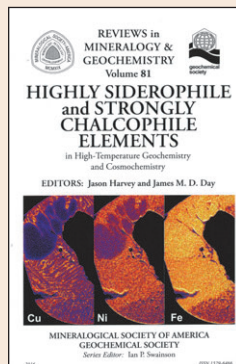
Student Research in Mineralogy and Petrology

from an endowment created by MSA members



Selection is based on the qualifications of the applicant, the quality, innovativeness, and scientific significance of the research of a written proposal, and the likelihood of success of the project. There are will be up to three US\$5,000 grants with the restriction that the money be used in support of research. Application instructions and online submission are available on the MSA website, <http://www.minsocam.org>. Completed applications must be submitted by 1 June 2016.

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NEW TITLE

Reviews in Mineralogy and Geochemistry

Volume 81: **Highly Siderophile and Strongly Chalcophile Elements in High-Temperature Geochemistry and Cosmochemistry**, Jason Harvey and James M.D. Day, editors. i-xxiii + 774 pages. ISBN 978-0-939950-97-3

In this volume, a number of key areas are reviewed in the use of the highly siderophile elements and the strongly chalcophile elements to investigate fundamental processes in high-temperature geochemistry and cosmochemistry. The book is divided into five parts. The first part concerns measurements and experiments. The second part concerns the cosmochemical importance of the highly siderophile elements and the strongly chalcophile elements. The third part concerns our understanding of the Earth's mantle from direct study of mantle materials. The fourth part focuses on important minerals that are present in the mantle and the crust. The fifth part considers the importance of the highly siderophile elements for studying volcanic and magmatic processes.

Description and ordering online at www.minsocam.org or contact Mineralogical Society of America, 3635 Concorde Pkwy Ste 500, Chantilly, VA 20151-1110 USA phone: +1 (703) 9950 fax: +1 (703) 652-9951 e-mail: business@minsocam.org Cost is \$45 (\$33.75 members MSA, GS, CMS).



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Mineralogy and Optical Mineralogy by Melinda Darby Dyar and Mickey E. Gunter is specifically designed to take full advantage of digital media technology to empower students and teachers of mineralogy. Using color photographs, illustrations, movies, 3D models that can be rotated, interactive diagrams, and review questions, this series makes a challenging subject approachable. Each chapter in the digital series is available separately, allowing instructors to pick and choose only those chapters needed for their specific course.

Go to the **Mineralogical Society of America** website at www.minsocam.org for more information about the textbook, or to purchase the **printed version**, as well as find a link to purchase the individual chapters in the **digital version**.

The "Mineral Database" app is also available on the App Store.