Mineralogical Society of America

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PRESIDENT'S LETTER

Mineralogy to the Fore

Michael F. Hochella Jr.

In this President's Letter, I want to talk about global climate change science and opinion, which I believe can help inform us about a transformation that is happening today in the science of mineralogy and all the other sciences that mineralogy touches.

Recently, I saw reported in the *New York Times* the results of an opinion poll that had been very carefully designed and commissioned by academics at Yale and George Mason University. By roughly a 2-to-1 margin, the poll reports that Americans perceive that weather extremes have increased in recent years and that "global warming is affecting weather in the United States." Contrast this apparent sea-change with the deep aggravation that most scientists have experienced (at least in the United States) over the last several years, where a vanishingly small number of vocal scientists with alternative opinions to standard scientific views on global climate change have had the bulk of public opinion on *their* side. I was also impressed by an article published in *Physics Today* (March 2012) by Jane Lubchenco and Thomas Karl, administrator and director, respectively, of the U.S. National Oceanic and Atmospheric Administration. In that article, they lay out the quantifiable evidence for the increase in extreme weather events over the last few decades, and they remind us that this is a prediction of mainstream global climate change science, which climatologists are continuing to refine. I believe that we are far from a general public understanding of the views that we are conducting a very dangerous experiment by burning fossil fuels as fast as they can be pulled from the ground, that the cost of energy in the near term is not nearly as important as the cost to the planet in the long term, and that debating these issues in the political arena can only break down into dramatic counterproductivity. But I am delighted that at least there is a move to wake up the general public about topics that people must (eventually) understand, for this really is one of the very most important issues of our time.

How could this possibly have anything to do with the way we, as mineralogists, currently perceive our science, and where it is going in the future? There are many ways to answer this question, and I have already written, albeit indirectly, about this kind of thing in my previous presidential letters, *Elements* editorials, and certain published articles. However, here, we will take a slightly different tack to see the connection. Richard Harrison at Cambridge is currently leading a remarkable initiative, sponsored by the Mineralogical Society of Great Britain and Ireland, known as the "100 Most Important Questions in Mineralogy." The stated purpose? "We aim to identify 100 mineralogical questions that, if answered, would have the greatest impact on resolving current and future challenges in the Earth, planetary, and environmental sciences." With input from mineralogists the world over (including, undoubtedly, many of you, and, for better or worse, myself), they are well on their way to doing this. Well over 200 questions have been proposed to date, and we have been challenged to assess these entries according to several criteria, including by considering the following question: "What does the list convey to funding agencies and the wider public about the research we are doing as a community?" This is where global climate change comes back into the picture. Several submitted mineralogy-based questions speak to the heart of the global climate change research picture. Here are just two, whose answers are largely missing in climate change science, but sorely needed:

What gas phase reactions are catalyzed on mineral–dust surfaces in the atmosphere, and what is their impact on atmospheric chemistry?

Which abundant airborne minerals, if any, have important radiative properties and thus affect climate change?

These and related questions put mineralogy squarely in the core of future, critical climate change science, and as a result, into the public (and political) eye. But clearly, that is exactly where we want mineralogy to be, helping to understand these critical issues relevant to Earth sustainability. Answering questions like the two above take large numbers of interdisciplinary scientists, who are at least in part serious mineralogists, working for many years to sort through these challenges. In the process, if done well with skill and patience, the great questions of our time are answered, along with attracting the public and political support that is ultimately so important.

This example is just one of many. Within the "100 Most Important Questions in Mineralogy" exercise to date, many deeply insightful questions have been submitted. In several cases, revealing mineralogical questions addressing *key* issues have been put forward, spanning the fundamental and applied sciences, in fields from the origin of life to aspects of geophysics, from plate tectonics to heat transfer. For example: **What does the temporal distribution of minerals through >4 billion years of Earth history reveal about global tectonics and the supercontinent cycle?**

Other areas addressed by these questions have to do with everything from ocean science to nanogeoscience. For instance: **What is the inventory of mineral nanoparticles in the world's oceans, and what biogeochemical role do they play, including the role they play in supplying limiting nutrients to the vital photosynthetic microorganisms of the oceans?**

The science of mineralogy has moved to the fore. It is a science that is now sophisticated enough to integrate with other advanced disciplines to gain valuable insight into the most pressing fundamental, as well as practical, questions of this age. For a mineralogist, what could be more valuable and rewarding than that? Let's do our job effectively, and contribute.

Michael F. Hochella Jr. (Hochella@vt.edu), Virginia Tech,
President, Mineralogical Society of America

The MSA, CMS, and Meteoritical Society offices are at the southern end of the north-south runways of Dulles Airport and adjacent to the Smithsonian National Air and Space Museum's Steven F. Udvar-Hazy Center. On April 17, 2012, the staff was treated to the sight of the space shuttle Discovery being brought to the museum's annex on the back of a Boeing 747 jet after a flying tour around the Washington, DC, area.

NOTES FROM CHANTILLY

- Balloting for the 2012 election of MSA officers and councilors is underway. Here is the slate of candidates for the 2012 MSA Council election – president: John M. Hughes; vice president: David J. Vaughan and Harry Y. McSween Jr.; treasurer: Edward S. Grew and Howard W. Day; councilors (two to be selected): Joshua M. Feinberg, Horst R. Marschall, Isabelle Daniel, and Kirsten P. Nicolaysen. Andrea Koziol continues in office as secretary. Continuing councilors are Pamela C. Burnley, Guy L. Hovis, Christine M. Clark, and Kimberly T. Tait.

MSA members should have received voting instructions at their current e-mail addresses. Those who do not wish to vote online can request a paper ballot from the MSA business office. As always, the voting deadline is August 1.

- The MSA had a booth at the Tucson Gem and Mineral Show, Tucson, Arizona, on 9–12 February 2012, a show celebrating Arizona's "Centennial" with the theme of "Minerals of Arizona."
- The Dana Medal will be presented to Roberta L. Rudnick at the 2012 Goldschmidt Conference in Montreal, Québec, Canada, to be held on 25 June–1 July 2012. There will be a special session in her honor, "Formation, Evolution, and Destruction of Cratons and Their Lithospheric Roots," during which she will give her Dana Lecture.
- MSA will have a booth at the GSA Annual Meeting in Charlotte, North Carolina, USA, on 4–7 November 2012. During that week, MSA will hold its Awards Lunch, MSA Presidential Address, Joint Reception among MSA, GS, and GSA's Mineralogy, Geochemistry, Petrology, and Volcanology Division, annual business meeting, Council meeting, and breakfasts for the past presidents and associate editors. Do not forget the lectures by Roebling Medalist Harry W. Green II and MSA Awardee recipient Karim Benzerara. More information will be available through the MSA website.
- MSA has in stock the newly published Landmark Paper Number 4 (2012): *Classic Papers in Granite Petrogenesis*. The volume includes the selected papers and a commentary by John Clemens and Fernando Bea. MSA also has the previous 3 volumes of the series. Descriptions, tables of contents, and ordering of these and other volumes can be accessed on the MSA home page, www.minsocam.org/MSA/Mineralogical_Society.html#landmark.

J. Alex Speer, MSA Executive Director
jaspeer@minsocam.org

50- AND 25-YEAR MSA MEMBERS

The following individuals will reach 50 or 25 years of continuous membership in the Mineralogical Society of America during 2012. Their long support of the Society is appreciated and is recognized by this list and by 25- or 50-year pins, mailed in early January. If you should be on this list and are not, or have not received your pin, please contact the MSA business office.

50-Year Members

Robert L. Christiansen
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MINERALOGICAL SOCIETY OF AMERICA UNDERGRADUATE PRIZES FOR OUTSTANDING STUDENTS

The Society welcomes the following exceptional students to the program's honor roll and wishes to thank the sponsors for enabling the Mineralogical Society of America to join in recognizing them. MSA's Undergraduate Prizes are for students who have shown an outstanding interest and ability in mineralogy, petrology, crystallography, and geochemistry. Each student is presented a certificate at an awards ceremony at his or her university or college and receives an MSA student membership, which includes a subscription to *Elements* and a *Reviews in Mineralogy* or *Monograph* volume chosen by the sponsor, student, or both.

Past Undergraduate Prize awardees are listed on the MSA website, as well as instructions on how MSA members can nominate their students for the award.

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IN MEMORIAM

Friedrich Liebau – Senior Fellow – 1962