

THIS ISSUE – BENTONITES

Andrew Thomas, in his word as the president of The Clay Minerals Society (page 117), reminds us that bentonites are rocks that originate from some of Earth's most dynamic processes. They have numerous industrial, environmental, and material applications. Sodium bentonite is an interesting example of a material that is used daily by a large number of people worldwide... as cat litter. We wonder if many of these consumers realize to what extent clay mineralogy is important to them.

THANKING BRUCE WATSON



We say a reluctant farewell to Bruce Watson as Principal Editor. He joined the team in 2006 as the fourth in the *Elements* editorial family, and he was the first replacement of the original team that got the journal started. Bruce has been instrumental in establishing the way of doing things that is becoming tradition, as *Elements* moved from hatchling to full-fledged flight. He made time out of an overfull schedule to accomplish his *Elements* tasks, and he was noted for his genuine interest in people. He contributed wise insight, good ideas, and thoughtful solutions, as well as hard work and diplomacy. Many of his editorials also struck a chord among our community. The journal benefited from his wide range of contacts. Bruce was in charge of the following issues: Moon (v5n1), Platinum-Group Elements (v4n4), Deep Earth (v4n3), Medical Mineralogy (v3n6), The Nuclear Fuel Cycle (v2n6), and Glasses and Melts (v2n5). He also nurtured several issues that will appear in the coming years. The editorial team will sincerely miss him. Thanks Bruce!

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INTRODUCING NEW MEMBERS OF THE ADVISORY BOARD

We welcome several new members to the Advisory Board for the 2009–2011 term. The credentials of these talented people are briefly outlined below.



JOHN BRODHOLT is Professor of Mineral Physics at University College London. He obtained his PhD from the University of Bristol in 1992 and has since used computational and experimental mineral physics to study the physical properties of minerals, melts and fluids under conditions that range from the Earth's inner core to the crust. In 2002 he was awarded the European Mineralogical Union Medal for Research Excellence, in 2005 he became a Fellow of the Mineralogical Society of America, and in 2009 he was awarded the Schlumberger Medal of the Mineralogical Society of Great Britain and Ireland.

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NORBERT CLAUER is currently Emeritus Research Director of the French National Research Council (CNRS). He holds a PhD (1970) and a National Degree in Sciences (1976) from the University of Strasbourg, France. His research interests are low-temperature isotopic tracing and dating of clays and other surface minerals. He was awarded the bronze (1978) and silver (1991) research medals of the French CNRS, the Georges-Millot Prize of the French Academy of Sciences (1992) and the Bailey Distinguished Member Award of The Clay Minerals Society (2008), and he was honored with the French National Order of Merit (2008) for his accomplishments.



WILL P. GATES received a PhD (1994) from the University of Illinois-Urbana. He held a Bourse Chateaubriand fellowship at the University of Grenoble, France, and a postdoctoral position at the University of Georgia before joining the CSIRO (1997) to conduct research in the modification of bentonites and industrial minerals. He was a member of the team receiving the Royal Chemical Society's 2004 "Green Chemistry" Challenge Award for the development of water-based drilling muds. He has been an associate editor of *Clays and Clay Minerals* since 2005 and of *Applied Clay Science* since 2008. His current duties include assisting engineers in accessing the Australian Synchrotron.



GEORGE E. HARLOW is Curator of Minerals and Gems in the Department of Earth and Planetary Sciences at the American Museum of Natural History. As a curator he has embraced the outreach role of the Museum to educate and inform visitors and the public about minerals and geoscience with lectures, exhibitions, and books. His exhibition "The Nature of Diamonds" and companion book led to his receiving MSA's Distinguished Public Service Medal in 2003. His research on the chemistry and structure of minerals attempts to reveal the geological processes they record and currently focuses on jadeite, a jade, and associated rocks and minerals.



ANHUAI LU received his BSc from Peking University in 1984 and obtained his MSc and PhD from China University of Geosciences in 1987 and 1993. He was appointed Associate Professor in 1992 and Professor in 1997 at China University of Geosciences. He is currently a professor in the Department of Geology and serves as the director of the Research Center for Geomaterials and Environment at Peking University. He is an ordinary councillor of IMA, the chairman

of the Commission on Environmental Mineralogy, and the vice-chairman of the Commission on Mineralogy of China. His research area is environmental mineralogy and the interaction between mineralogy and biology.



ROBERT W. LUTH completed his PhD with Art Boettcher at UCLA, then did a postdoc at the Geophysical Laboratory working with Bjorn Mysen, Dave Virgo, and Joe Boyd. He spent a year at the Bayerisches Geoinstitut in Bayreuth, Germany, before moving to the University of Alberta in 1989. At the undergraduate level, he teaches primarily igneous petrology and is very interested in recent developments that can improve students' learning. His research interests are in mantle and igneous petrology. His approach is primarily experimental, but his students and colleagues force him to look at natural samples occasionally to keep him honest.



DAVID W. MOGK is a professor of geology at Montana State University. He received a BS degree from the University of Michigan and MS and PhD degrees from the University of Washington. Over the past 15 years, he has worked on many aspects of geoscience education, including advocacy for an Earth system science approach, development of instructional digital libraries, integration of research and education, and faculty professional development programs, and was a program director in the NSF Division of Undergraduate Education. His research interests include the evolution of Archean continental crust, petrologic processes at mid-crustal levels, spectroscopy of mineral surfaces, and the search for life in extreme environments.



ROBERTA OBERTI is Research Director at the CNR Istituto di Geoscienze e Georisorse in Pavia. Her main research interests concern the crystal chemistry and systematics of various complex mineral groups, with special focus on the influence of bulk composition and P - T conditions on partitioning, ordering patterns, structure geometry and symmetry. She uses structure refinement as an analytical tool and combines it with analytical and spectroscopic techniques to obtain reliable long-range and short-range characterization, and thus improve crystal-chemical models. Her major results concern amphibole crystal chemistry and systematics, and the detection, quantification and crystal chemistry of light, volatile, and trace elements in minerals. She is the president of the European Mineralogical Union.

raisers" or hedges, faint praise, and irrelevancies. Could it be that letters of similar construction follow a woman's career in our field such that her contributions are undervalued and, in the eyes of many, relegated to the pile of those who do not deserve to be nominated for awards?

Our currency as academic researchers—the presumptive criteria used in evaluations for awards—is productivity and impact combined. Hirsch (2005) parameterized the two variables into the Hirsch index or Hirsch number (h-factor), yielding a formulation that takes into account the number of publications and the number of citations per publication. FIGURE 2 illustrates the distribution in h-index for Goldschmidt Medal awardees over the past 20 years for which the mean is ~45. When earlier awardees are considered, the mean drops slightly to ~42, which may be a reflection of difficulties with retrieving old publications by the leading Internet citation databases, as well as a smaller scholarship base. A casual scan of the membership for senior women scholars has yielded a few with h-index values around or above the mean of ~45. A larger group of women falls in the range immediately below the mean for the awardees over the past 20 years. It is important not to lose sight of the fact that men with such records have won the award. Moreover, studies of gender schemas suggest that evaluation biases will infiltrate every evaluative step taken during a woman's career, including funding, publication, and even the rate of citation of her work upon which the h-index depends. Therefore, to use the identical criterion for women and minorities will require them to achieve the same outcomes as white men, despite repeated biased judgments along the way. If the Goldschmidt Medal and other awards from geoscience societies are to be based on a meritocracy, then I submit to you that we have quantitative evidence for several women deserving at least to be nominated. Therefore, the lack of nominations of women cannot be blamed on the absence of qualified, deserving individuals.

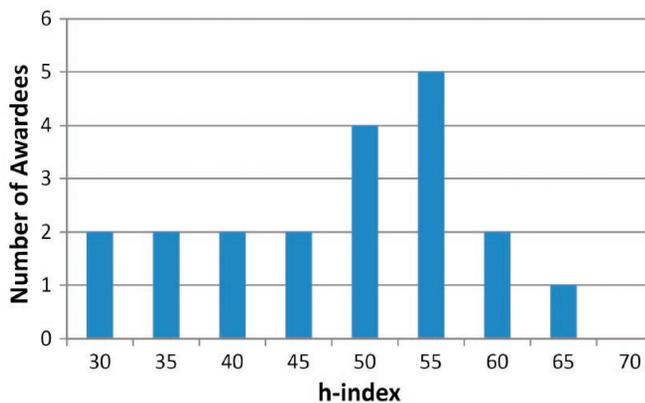


FIGURE 2 – h-index values for Goldschmidt Medal awardees over the past 20 years

Suggested Way Forward

Subtle changes in our approach could help us overcome tendencies to employ gender biases—exercised by both men and women—in award nominations. Academic recognition for a job well done has three components to it: nomination, evaluation, and selection. While the evaluation and selection processes may continue to harbor gender biases, my observation serving on the Goldschmidt Award Committee for three years was that the nomination step is a far greater barrier. An immediate step we need to take is to internationalize and gender-balance the award committees. These committees should then be urged to actively solicit nominations for both qualified men and women, instead of passively waiting for the nominations to trickle in. Committee members will have to be mindful of the need to identify nominators who are concerned with the issue of broad representation of women and minorities in the pool. To those who immediately cry foul and assert that this is calling for the lowering of standards, I say that you need to review the data presented above, which indicate that a number of women scholars in geochemistry have built research records comparable, or in some cases even superior, to those of men who have already won the Goldschmidt Medal. It is heartening to see these issues becoming urgent items of discussion in a number of scientific communities, including our own. I challenge the members of all geoscience societies to put this increased awareness into action.

Sam Mukasa, University of Michigan
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FROM THE EDITORS (Cont'd from page 76)



TERRY PLANK is a professor of Earth and environmental science at Columbia University and Lamont-Doherty Earth Observatory. Her research interests include magma generation during subduction and rifting; geochemical cycles at subduction zones; the origin and evolution of the continental crust; and the water content of magmas. She received her AB from Dartmouth College and her PhD from Columbia University. After postdoctoral work at Cornell University, she held faculty positions at the University of Kansas and Boston University before moving to Columbia University in 2008. She is a Fellow of the American Geophysical Union and the Geological Society of America.

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XAVIER QUEROL is a research professor at the Institute of Environmental Assessment and Water Research of the Spanish Research Council (CSIC). Recipient of a doctorate in geology from the University of Barcelona, he carries out research

in two main fields: (1) the geochemistry of atmospheric aerosols, particularly atmospheric reactions, source identification, and origins; and (2) the geochemistry and mineralogy of combustion by-products, especially environmental characterization and utilization. He is a member of the Spanish National Commission on Geology and a member of the Expert Working Group on Particulate Matter of UN-ECE, and he advises the Ministry of the Environment of Spain on topics of atmospheric pollution.



MEENAKSHI WADHWA is a professor in the School of Earth and Space Exploration and the director of the Center for Meteorite Studies at Arizona State University. She is a cosmochemist interested in deciphering the origin and evolution

of the solar system and planetary bodies through geochemical and isotopic means. She uses high-precision mass spectrometric techniques to investigate a wide range of solar system materials, including meteorites of asteroidal and Martian origin, lunar samples, and other samples returned by spacecraft missions. Her research focuses on understanding the processes and timescales of the formation of these materials.