Meet the Authors

James Badro received his PhD from the École normale supérieure de Lyon in 1997. He then worked as a postdoctoral fellow at the Carnegie Institution of Washington's Geophysical Laboratory under the supervision of Dave Mao and Russel Hemley. Since 1999, he has been a CNRS researcher in geophysics at the Institut de Minéralogie et de Physique des Milieux Condensés and is affiliated with the Institut de Physique du Globe de Paris. He works on new synchrotron-based techniques under extreme conditions of pressure and temperature. He was the recipient of the Houtermans Medal of the European Association for Geochemistry in 2006, the Bronze Medal of the CNRS in 2007, and the Mineralogical Society of America Award in 2008.

Jay D. Bass is a professor of geology at the University of Illinois at Urbana-Champaign (UIUC). His research interests are in mineral physics and its interface with seismology, the composition of the mantle and core, the elastic properties and equations of state of Earth and planetary materials, spectroscopy, the structure and properties of fluids and glasses, and the phase relations of deep-Earth assemblages. He obtained his bachelor's degree from Brooklyn College, an MS from Lehigh University, and a PhD in geophysics from Stony Brook University in 1982. After a postdoc at Caltech, he joined the UIUC faculty in 1984.

Guillaume Fiquet obtained his PhD in 1990 at the Université de Rennes (France). In 1999, he joined the Institut de Minéralogie et de Physique des Milieux Condensés (CNRS, Université Pierre et Marie Curie, Université Denis Diderot, Institut de Physique du Globe de Paris) as CNRS research director. With a research focus on the physical properties of terrestrial materials at extreme conditions of pressure and temperature, he aims to provide a mineral physics–based interpretation of seismic images and a better knowledge of deep-Earth structure and dynamics. As the recipient of the 2003 MSA Award, he is a Life Fellow of the Mineralogical Society of America.

Daniel J. Frost studied chemistry and geology at Royal Holloway College, University of London before obtaining a PhD from the University of Bristol in 1995. After a two-year postdoc at the Geophysical Laboratory in Washington, he became a research scientist at the Bayerisches Geoinstitut in Bayreuth. In recent years his work has focused on using the results of high-pressure and high-temperature experiments to interpret the physical and chemical properties of the Earth's interior from seismic observations. He is also interested in the processes of terrestrial core formation and the evolution of the redox state of the Earth's mantle.

François Guyot is a professor of mineralogy at the Université de Paris (7). He obtained a PhD from the Université Pierre et Marie Curie in 1988. He conducts research both at the Institut de Physique du Globe and the Institut de Minéralogie et de Physique des Milieux Condensés in Paris. He has worked on the behavior of minerals at high pressure and high temperature with special emphasis on studies of high-pressure phases using transmission electron microscopy and synchrotron radiation X-ray scattering/diffraction. He is currently researching interactions between minerals and biological materials in natural systems and laboratory models.

Kei Hirose is a professor of high-pressure mineral physics and petrology at the Tokyo Institute of Technology. He was originally interested in the generation of basaltic magmas and conducted experiments on the partial melting of peridotite in the uppermost mantle. After a period at the Geophysical Laboratory, Carnegie Institution of Washington, he became interested in phase transitions and physical properties of minerals under lower-mantle conditions. He was involved in the discovery of $MgSiO_3$ post-perovskite, which is now thought to be a main constituent of the Earth's lowermost mantle.

Shun-ichiro Karato's research goal is to understand the dynamics of the Earth using a combination of geological, geophysical, and geochemical observations based on mineral physics. He was born in Japan and finished a PhD at the University of Tokyo. From 1981 to 1984, he was a research fellow in Mervyn Paterson's lab at ANU (Australia), where he learned rock-deformation experimentation. He moved to the United States in 1989 (Minnesota), and in 2001 he moved to Yale. Since the mid-1990s, he has been engaged in the development of experimental techniques for quantifying deformation under whole-mantle conditions.

Thorne Lay, professor of Earth and planetary sciences at the University of California Santa Cruz, is a seismologist with interests in the rupture process of earthquakes, the excitation and propagation of seismic waves in three-dimensional media, nuclear explosion discrimination, and deep-Earth structure and dynamics. He was involved in the formulation of the classical Asperity Model for earthquake faulting. He discovered and mapped a significant velocity discontinuity in the lower mantle, a few hundred kilometers above the core–mantle boundary. Professor Lay has worked extensively on the seismic velocity structure of subducting slabs, on upper-mantle discontinuities, and on global seismic structure.

Baosheng Li is a faculty member in the Mineral Physics Institute of Stony Brook University, where he conducts research in material behavior and elasticity under extreme conditions. He has developed and utilized a variety of techniques for studying rocks and minerals, ceramics, and metals in solid and liquid states, including ultrasonic interferometry in multi-anvil apparatuses, synchrotron X-ray diffraction, and X-ray imaging. Recently, he has applied these techniques to the measurement of acoustic velocities for major mantle minerals at simultaneous high pressure and high temperature, thus providing critical data for constraining the composition of the Earth's deep interior.

John B. Parise is a professor in the Department of Geosciences, with a joint appointment in the Chemistry Department, at Stony Brook University, New York. His research interests include mineralogy and the fundamental processes that operate at high pressures, including phase transformations in crystalline, nanocrystalline, and glassy materials. Since these processes depend fundamentally on atomic arrangement, Parise's group makes extensive use of scattering techniques at intense spallation neutron and X-ray sources. He serves on the scientific advisory committees for the Advanced Light Source, Berkeley, and the Spallation Neutron Source, Oak Ridge, Tennessee.

Stanislav V. Sinogeikin is a beamline scientist at HPCAT, Geophysical Laboratory, Carnegie institution of Washington. He received his PhD in geophysics from the University of Illinois at Urbana-Champaign and remained in that department as a research assistant professor, developing high-pressure, high-temperature Brillouin techniques and combining Brillouin spectroscopy with synchrotron radiation at the Advanced Photon Source. His research interests include the mineralogy of the upper mantle and transition zone of the Earth, the elastic properties of mantle minerals at high-pressures and high-temperatures using Brillouin spectroscopy and synchrotron radiation, and the development of X-ray microdiffraction and spectroscopic techniques at high pressure and temperature.

Donald J. Weidner, a SUNY Distinguished Professor, conducts mineral physics studies and applies them to understanding the deep Earth. His current work focuses on using the intense X-rays generated by synchrotrons to measure mineral properties at high pressure. He is the spokesperson for the multi-anvil high-pressure beamline at the National Synchrotron Light Source (X17B2) and has been an active synchrotron user since the early 1990s. He is the director of the Mineral Physics Institute at Stony Brook and is a professor in the Geosciences Department. He is currently a member of the COMPRES executive committee.

TRIPLE POINT *(cont'd from page 151)*

values are broadly shared and scientific uncertainty is manageable (if not reducible). An expert would act as a Science Arbiter when seeking to provide guidance to a specific decision and as a Pure Scientist if no such guidance is given. In situations of values conflict or when scientific certainty is contested (that is to say, most political issues), the roles of Issue Advocate and Honest Broker of Policy Options are most appropriate. The choice between the two would depend on whether the expert wants to reduce or expand the available scope of choice.

For the U.S. scientific community, the election of a new president provides an opportunity for rethinking and reinvigorating how experts relate to decision makers. It won't be enough for the scientific community to focus only on what person or party inhabits the White House. Far more attention will have to be paid by the scientific community to the nuances of policy making and the various roles of expertise in healthy processes of democratic governance. Such discussions should start now so that by inauguration day, the community is ready to begin fresh with the new president.

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