

Meet the Authors

focused on geoscience applications of accelerator mass spectrometry (AMS). In 2001 he accepted a position at Purdue University and is the director of the NSF-funded PRIME Lab, an interdisciplinary AMS laboratory.



Gordon E. Brown Jr. is Kirby Professor in the School of Earth Sciences at Stanford University and is also professor and chair of the Stanford Synchrotron Radiation Laboratory Faculty at the Stanford

Linear Accelerator Center. In addition, Brown serves as director of the Stanford Environmental Molecular Science Institute. Current research by Brown and his students involves molecular-scale studies of environmental contaminants in both natural and synthetic systems, including those containing microorganisms. Brown and his students use a variety of synchrotron radiation techniques, coupled with other experimental and theoretical methods, to study the chemical and biological processes that sequester and/or transform contaminant species, particularly at mineral–aqueous solution interfaces. Brown has been a user of synchrotron radiation facilities since 1977 and has served on the science advisory committees of a number of synchrotron radiation sources.



Georges Calas is professor of mineralogy at the Université Paris VI and deputy director of the Institute of Mineralogy, Universités Paris VI & VII, CNRS, and Institut de Physique du Globe de Paris.

His research interests concern the control of the physical and chemical properties of minerals, glasses, and melts by molecular-scale processes and how this relates to problems in Earth and environmental sciences and materials science. He has been using synchrotron radiation since the early 1980s, and his group is also involved in neutron scattering in glasses and melts. A former member of the Scientific Advisory Committee of ESRF and of the Scientific Council of LURE, he has also participated in a scientific review panel at APS.



Marc Caffee is a professor of physics at Purdue University. He received his PhD in 1986 from Washington University. His studies were on the use of neon isotopic and nuclear track records

found in gas-rich meteorites as gauges of early solar activity. During a postdoctoral fellowship at Lawrence Livermore National Laboratory, he investigated the noble gas inventory and degassing history of Earth's mantle using Xe in mantle emanations. Later, at LLNL he



Martin Dove is professor of computational mineral physics in the Department of Earth Sciences, University of Cambridge, and director of the National Institute for Environmental Science based in Cambridge.

His research work is primarily concerned with understanding the behavior of minerals at the molecular scale, and involves the use of neutron scattering coupled with computer simulations. Martin initially studied physics at Birmingham University (BSc and PhD). He held postdoctoral positions in physics (Edinburgh) and theoretical chemistry (Cambridge) before joining the Department of Earth Sciences in Cambridge.



Russell J. Hemley is a staff scientist at the Geophysical Laboratory, Carnegie Institution of Washington. His research explores the behavior of materials over a broad range of thermodynamic conditions, from low to very high pressures, and how this relates to problems in Earth and planetary science, physics, chemistry, materials science, and biology. He obtained degrees in chemistry (Wesleyan University, BA 1977; Harvard University, MA 1980, PhD 1983) before joining the Carnegie Institution in 1984. He is a fellow of the American Physical Society, the American Geophysical Union, and the American Academy of Arts and Sciences, and a member of the National Academy of Sciences.



Antonio (Tony) Lanzirotti received his PhD in geochemistry from Stony Brook University in 1995 and is currently with the Consortium for Advanced Radiation Sources (CARS) at the

University of Chicago. He is the beamline scientist for the X26A hard X-ray microprobe at the National Synchrotron Light Source (NSLS) at Brookhaven National Laboratory. He recently served as chair of the NSLS Users' Executive Committee, an organization broadly concerned with representing the interests of the NSLS users and with helping to promote and encourage research at the NSLS. His research interests include development of state-of-the-art X-ray microbeam techniques for the in situ trace element analysis of Earth and environmental samples.

These include studies in microbeam X-ray absorption spectroscopy, fluorescence analysis, computed microtomography, and diffraction microcrystallography.



John B. Parise holds joint appointments in geosciences and chemistry at Stony Brook University. He received his PhD from the James Cook University, Australia, in 1980. His

research interests include mineralogy and synthetic solid-state chemistry, with emphasis on the characterization of atomic structure as a function of pressure, temperature, and composition using scattering techniques. Parise's group makes extensive use of intense neutron and X-ray sources at national and international facilities. Along with colleagues at the Geophysical Laboratory and the Oak Ridge National Laboratory (ORNL), he is involved with the construction of the next generation of high-pressure beamlines at the Spallation Neutron Source at ORNL.



Richard J. Reeder is professor of geochemistry at Stony Brook University. He received his PhD from the University of California at Berkeley in 1980. His research interests include

fundamental processes that operate at mineral–water interfaces, the chemical behavior of contaminants in environmental systems, and phase transitions in minerals. Reeder's research group has made extensive use of synchrotron-based techniques for studies of metal partitioning into carbonate and phosphate minerals. He is a former editor of *American Mineralogist* and is currently director of the Center for Environmental Molecular Science located jointly at Stony Brook University and Brookhaven National Laboratory on Long Island.



Stephen R. Sutton, senior scientist at the University of Chicago, received BS (physics) and PhD (Earth and planetary sciences) degrees from Washington University (St. Louis, USA). He has

been involved in synchrotron radiation research for 20 years, currently as co-project leader for the GeoSoilEnviroCARS beamlines (Sector 13) at the Advanced Photon Source (Argonne National Laboratory, USA) and spokesperson for beamline X26A at the National Synchrotron Light Source (Brookhaven National Laboratory, USA). His research is focused on X-ray fluorescence microprobe development and applications in the Earth, planetary, and environmental sciences, including studies of extraterrestrial materials.