Meet the Authors

Laurie L. Brown received her PhD in geophysics from the School of Oceanography at Oregon State University after obtaining an undergraduate degree in mathematics from Middlebury College and a master's in geology from the University of Wyoming. She joined the faculty in the Department of Geosciences at the University of Massachusetts in 1974, where she is now Professor of Geophysics and Associate Department Head. She enjoys working across a wide spectrum of geologic problems, rock types, and geologic time. Her interests include paleomagnetism, paleosecular variation, rock magnetism, and the relationship between magnetic anomalies and source rocks on Earth and other planets.

Rafal E. Dunin-Borkowski is Director of the Center for Electron Nanoscopy in the Technical University of Denmark. He has conducted research on advanced transmission electron microscopy of nanoscale materials, devices, and thin films for eighteen years. His main interests are electron holography of magnetic and electric fields in nanostructured materials, electron tomography, aberration-corrected electron microscopy, quantitative high-resolution electron microscopy, in situ gas reaction experiments, in situ electron microscopy of working devices, and instrumentation development for electron microscopy. He has published 110 peer-reviewed papers, 16 book chapters, and 140 conference papers in proceedings, and has given 80 invited talks and seminars.

Joshua M. Feinberg is Associate Director of the Institute for Rock Magnetism and Assistant Professor of Geology and Geophysics at the University of Minnesota. He received his BA from Carleton College, worked at the U.S. Geological Survey, and earned his PhD from the University of California, Berkeley (2005). His research uses the magnetic behavior and crystal orientation of minerals to answer questions about Earth processes operating at global, tectonic, outcrop, and nanometer scales. To connect small-scale observations to large-scale processes, he incorporates a multidisciplinary approach, including field work, rock magnetism, paleomagnetism, mineral texture studies, electron microscopy, and numerical modeling.

Carmen Gaina is a Senior Scientist with the Geological Survey of Norway (NGU). She received an MSc from the University of Bucharest, Romania, and a PhD from the University of Sydney, Australia. She has worked with the EarthByte group at the University of Sydney, and now works with the Geodynamics group at NGU to construct a set of digital, global paleo-oceanic age grids to tackle problems like past changes in sea level and the geochemistry of the oceans. She uses geophysical data to study processes that lead to continental breakup, oceanic-crust formation, and redistribution in time of oceanic and continental crust.

Jérôme Gattacceca graduated in 1995 in science and executive engineering from the École des Mines de Paris (France), where he also obtained his PhD in geology in 2000. After holding a postdoctoral position at the Istituto Nazionale di Vulcanologia e Geofisica (Rome, Italy), where he worked on the tectonics of the Apenninic belt, he joined CEREGE in 2002 and has been a research scientist in Pierre Rochette's Geophysics and Planetology group since 2005. His research interests are primarily paleomagnetism and rock magnetism. In recent years, he has focused his research activities on extraterrestrial rocks and planetology.

Richard J. Harrison is a Lecturer in the Department of Earth Sciences, University of Cambridge. His research focuses on the study of phase transformations and magnetic properties of Fe-bearing oxides, with particular emphasis on the effect of transformation-induced microstructures on the magnetic behavior of minerals. He employs both experimental and computational techniques to study cation and magnetic ordering in minerals, including neutron diffraction, electron holography, and Monte Carlo simulations. He was recently awarded the William Gilbert Award of the Geomagnetism and Paleomagnetism section of the American Geophysical Union (AGU) and the MSA Award of the Mineralogical Society of America for his contributions to the field of mineral magnetism.

Barbara A. Maher, of Lancaster University's Environment Centre, currently holds a Royal Society-Wolfson Research Merit Award. She was also awarded the Chree Medal by the Institute of Physics in 2005 for her "pioneering contributions to the study of magnetic signals from the geological record as a means of determining climatic changes." She uses environmental magnetism and palaeomagnetism to retrieve palaeoclimatic and dating information from sediments, but also to address current environmental processes and problems, including biomagnetic measurements of vehicle-derived particulate pollutants, the tracing of modern river-sediment sources, and the magnetic "clean-up" of contaminated waters. Her Centre for Environmental Magnetism and Palaeomagnetism is internationally acknowledged for its innovative and agenda-setting research.

Suzanne A. McEnroe is Senior Geophysicist at the Geological Survey of Norway, Trondheim. She also holds appointments as Professor II, Center for Nanotechnology and Materials Science, Department of Chemistry, University of Oslo; and Adjunct Professor, University of Massachusetts, USA. Her primary interest is in the magnetic properties, chemistry, and microstructures of Fe and Fe–Ti oxides. Her recent work has focused on the new interface-based magnetism (lamellar magnetism) related to nanoscale exsolution lamellae and on how lamellar magnetism controls magnetic properties from the atomic level to their expression in large-scale magnetic anomalies.

Mihály Pósfai is a professor at the University of Pannonia in the city of Veszprém, Hungary. After obtaining a PhD in mineralogy at Eötvös University in Budapest, he spent several years as a postdoctoral researcher at Arizona State University. His research interests include the special properties and formation of biominerals and the characterization of atmospheric aerosol particles. The common thread in these distant fields of research is the study of nanoscale processes, using mainly transmission electron microscopy.

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Peter Robinson did magnetic exploration for iron deposits in western United States during the period 1956–1958. He is Professor Emeritus of Petrology and Structural Geology at the University of Massachusetts, after working there from 1962 to 1999, and is now a consultant for the Geological Survey of Norway. His prime interests have been the evolution of the Appalachian–Caledonian mountain chain in northeastern USA and Scandinavia, and the crystal chemistry and phase petrology of chain silicates and recently the rhombohedral oxides. He participated in discoveries relating optimal-phase-boundary theory to exsolution patterns in chain silicates, and in the lamellar magnetism theory in oxides. He was the president of the Mineralogical Society of America in 1989–1990.

Pierre Rochette became Professor of Geophysics at the Aix-Marseille University, France, in 1991, after being a CNRS researcher in Grenoble (where he defended his thesis in 1983) and studying at the École Normale Supérieure in Paris. He received the CNRS Silver Medal for Earth Sciences in 2006 and is a senior member of the Institut Universitaire de France. He is a specialist in the magnetic properties of natural materials, including extraterrestrial matter, on which he started working in 2000.

John A. Tarduno, Professor of Geophysics at the University of Rochester, received his BS from Lehigh University and his PhD from Stanford University (1987). He is an AGU Fellow, an AAAS Fellow, an AGU Bullard Lecturer, and a recipient of a Guggenheim Fellowship. He has also received awards for university teaching. He is currently senior editor of *Geochemistry, Geophysics, Geosystems* and chair of the Review and Advisory Committee for the Institute of Rock Magnetism. He and his research group are pursuing the origin and long-term behavior of the geodynamo through the development of single-silicate-crystal measurement techniques and global field studies.

Benjamin P. Weiss is Associate Professor of Planetary Sciences at the Massachusetts Institute of Technology in Cambridge, USA. He is interested in the history of magnetic fields on the terrestrial planets and their implications for large-scale differentiation, core formation, and planetary thermal history. His PhD thesis at Caltech focused on the implications of the magnetization, magnetic properties, and thermal history of the meteorite ALH 84001 for the evolution of the dynamo and past habitability of Mars. He has recently been studying meteorites and Apollo samples in order to understand whether early planetesimals and the Moon formed metallic cores and core dynamos.