

## **International Mineralogical Association**

## www.ima-mineralogy.org



Gordon Brown

The IMA is honored to present its 2018 Medal of Excellence in Mineralogical Sciences to Gordon E. Brown. Gordon is the Dorrell William Kirby Professor Emeritus of Geology (Stanford University, California, USA) and Professor Emeritus of Photon Science at the Stanford Linear Accelerator Center (SLAC) (California, USA). His contributions to environmental geochemistry, mineralogy and surface science have received international recognition. He has authored or

co-authored over 400 refereed publications, achieving a remarkable h-index of 103.

Following his undergraduate years at Millsaps College (Mississippi, USA), Gordon received an MSc (1968) and a PhD (1970) degrees from Virginia Tech (USA). As a postdoctoral fellow (1970–1971) in the State University of New York at Stony Brook (USA) he carried out X-ray studies of lunar samples from NASA's Apollo missions and perfected high-*T* single-crystal X-ray diffraction techniques. In 1973, after two years as a faculty member at Princeton University (New Jersey, USA), Gordon moved to Stanford, where he developed an internationally acclaimed program in environmental, surface and aqueous geochemistry. Gordon, his students and collaborators developed synchrotron radiation–based spectroscopic and imaging methods and applied them to a range of geochemical and mineralogical problems. They pioneered X-ray absorption spectroscopy studies of the local structural environments of atoms in minerals, glasses, melts, and at mineral–solution interfaces, as well as in situ X-ray photoelectron spectroscopy studies of mineral reactions

with water. The use of synchrotron radiation enabled Gordon's group to conduct ground-breaking research on molecular-level speciation of As, Se, Hg, U and other contaminants at mine and nuclear waste disposal sites, and on the structure and properties of natural and engineered nanoparticles. Most recently, he and his collaborators have examined  $CO_2$  sequestration via mineral carbonation and chemical reactions of fracking fluids with minerals and natural organic matter in oil and gas reservoirs. It is impossible to overestimate the importance of this work to environmental stewardship and to the responsible recovery of hydrocarbons.

Gordon's research has been recognized through many prestigious awards, including the Hallimond Lecture (Mineralogical Society of Great Britain and Ireland, 1993/4), the Hawley Medal (Mineralogical Association of Canada, 2007), the Clair C. Patterson Award (Geochemical Society, 2007), the Roebling Medal (Mineralogical Society of America, 2007), the Ian Campbell Medal (American Geosciences Institute, 2012), and foreign membership of Academia Europaea (2013).

Gordon has also made an outstanding contribution to the support and advancement of science in his roles as co-director of the US National Science Foundation's (NSF) Center for Materials Research (1987–1989), Chair of the Department of Geological and Environmental Sciences at Stanford (1986–1992, 2012–2015) and of the Department of Photon Science at the Stanford Linear Accelerator (SLAC) (1998–2007), Director of the Stanford-based NSF Environmental Molecular Science Institute (2004–2011), and as a member of many evaluation and steering panels – including as Principal Editor of *Elements* (2014–2017).

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