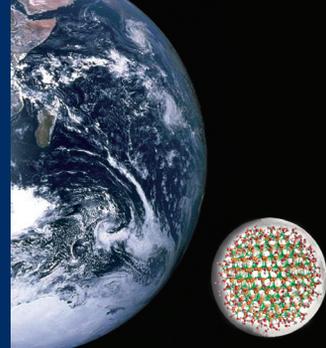


# Elements

An International Magazine of Mineralogy, Geochemistry, and Petrology



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## Nanogeoscience

Michael F. Hochella Jr., Guest Editor



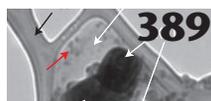
### Nanogeoscience: From Origins to Cutting-Edge Applications

Michael F. Hochella Jr.



### Structure, Chemistry, and Properties of Mineral Nanoparticles

Glenn A. Waychunas and Hengzhong Zhang



### Nanoparticles in the Atmosphere

Peter R. Buseck and Kouji Adachi



### Nanoparticles in the Soil Environment

Benny K. G. Theng and Guodong Yuan



### Iron Oxides as Geochemical Nanovectors for Metal Transport in Soil–River Systems

Martin Hasselöv and Frank von der Kammer



### Biogenic Uraninite Nanoparticles and Their Importance for Uranium Remediation

John R. Bargar, Rizlan Bernier-Latmani, Daniel E. Giammar, and Bradley M. Tebo

ABOUT THE COVER: Calculated atomic structure of a water-covered, 3 nm diameter ZnS nanoparticle shown adjacent to the edge of the Earth,  $1.27 \times 10^{16}$  nm in diameter. This highly contrasting juxtaposition is meant to suggest that despite the enormous difference in size, naturally occurring nanomaterials have recently been recognized as important factors in how the Earth works. This issue of *Elements* shows how many aspects of our environment, from the air we breathe to the water we drink, from bacteria to earthquakes and the distribution of Earth elements, depend in fascinating ways on the smallest minerals that make up our world. IMAGES COURTESY OF NASA (EARTH) AND GLENN WAYCHUNAS (STRUCTURE)

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