Yangjian Cheng is an assistant professor of biochemistry and microbial geochemistry in the State Key Laboratory of Structural Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences. His current research involves the transformation and immobilization of Cr(VI) and U(VI) via microbes in the environment and microbial diversity at sites polluted with heavy metals. He is also interested in field bioremediation technologies in soil, sediments, and wastes.

Hailiang Dong is a professor of geomicrobiology, mineralogy, and geochemistry in the Department of Geology and Environmental Earth Science at Miami University, Ohio, USA. His research is on mineral–microbe interactions; microbial life in extreme environments, including the deep subsurface, saline lakes on the Tibetan plateau, and hot springs; and the bioremediation of heavy metals such as Tc and Cr. He applies high-resolution imaging techniques, spectroscopy, and molecular and cultivation methods to answer the question of "who is doing what."

Hoi-Ying Holman is the director of the Berkeley Synchrotron Infrared Structural Biology Program at the Lawrence Berkeley National Laboratory, the head of chemical ecology in the Earth Sciences Division, and a principal investigator at the Virtual Institute for Microbial Stress and Survival. She is currently developing multimodal chemical imaging and perturbation approaches to investigate metabolic and structural/functional changes in living cells during stress-adaptive responses, and applies these approaches to bioenergy, radiation biology, and bioremediation. She received her PhD in environmental chemistry and chemical engineering from the University of California at Berkeley.

Song Jin is the chief technology officer of Next Fuel Inc. and an adjunct professor in the Department of Civil and Architectural Engineering at the University of Wyoming. His research work includes bioelectrochemical systems in the enhanced biodegradation of contaminants in groundwater and sediments, microbial interactions with minerals and contaminants in subsurface environments, and in situ microbial conversion and transformation of carbonaceous compounds. Song Jin received his PhD in zoology and physiology (with a focus on environmental microbiology and biogeochemistry) from the University of Wyoming.

Yan Li is a lecturer in the School of Earth and Space Sciences in Peking University. Her PhD and postdoctoral research at Peking University dealt with the development of natural mineral-based photocatalysts to treat wastewater. She is currently working on the interactions between minerals and microbes, and on how these processes may be used for environmental remediation. Her other research interests include the photocatalysis of semiconducting minerals on the early Earth, the in situ disposal of tailings, and the characterization of minerals in human bodies.

Zhang Lin has been a professor of environmental science and physical chemistry at the Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences (CAS) since 2004. She received her PhD in physical chemistry from the Institute of Chemistry (CAS) in 1999 and occupied postdoctoral positions at the University of Wisconsin–Madison and the Lawrence Berkeley National Laboratory from 1999 to 2004. She investigates the microbial precipitation of minerals and the structure, properties, and transformation of biogenic nanoparticles. She also studies the growth kinetics of nanoparticles and the relevant environmental applications.

Anhuai Lu is a professor in the School of Earth and Space Sciences at Peking University and serves as director of the Research Center for Geomaterials and Environment. He is the chairman of the Commission on Environmental Mineralogy, and vice chairman of the Commission on Mineralogy in China. He is a member of the IMA Council. His research is on environmental mineralogy, the interactions between minerals and microbes, and the in situ remediation of wastewater and mine tailings. He has been a chief scientist for a multidisciplinary research group in China investigating the theme "Mechanisms of Environmental Response to Biomineralization" (973 program), funded by the Chinese government.

Xiancai Lu is a professor of mineralogy and computational geochemistry at Nanjing University (Nanjing, China), where he received his BSc (1993) and PhD in geology (1999). His research interests include the surface chemistry of minerals, adsorption processes on mineral surfaces and in micromesopores in geological materials, microbe–mineral interactions under redox-dynamic conditions, and geoscience education. His group has used computational chemistry to develop an atomic-level knowledge of the surface chemistry and interface structure of clay minerals. More recently, he has focused his research on the microbial oxidation/reduction of various minerals in mine waste and its environmental consequences.

Gordon Southam is a professor in the Departments of Earth Sciences and Biology and director of the Centre for Environment & Sustainability at the University of Western Ontario in London, Ontario, Canada. His research on bacteria–mineral interactions encompasses microbiology, geochemistry, and mineralogy, and includes the examination of life in extreme environments, the control of greenhouse gas emissions via bacterial carbonation reactions, the bioremediation of inorganic and organic pollutants, and the role of bacteria in the formation of ore deposits, in particular, the biogeochemistry of gold.

Hongmei Wang is a professor of geomicrobiology and vice dean of the School of Environmental Studies in the China University of Geosciences (Wuhan), where she received her PhD in 2001. She studies primarily the interaction between minerals and a variety of microbes from extreme environments, including acid mine drainage (AMD), peatlands, and subsurface caves. Her recent work on the reduction of crystalline iron in clay minerals by dissimilatory iron-reducing bacteria, sulfate-reducing bacteria, and methanogens enhances the understanding of iron cycling and has implications for bioremediation in AMD-impacted areas.

Advanced Phase ID...

Ilmenite
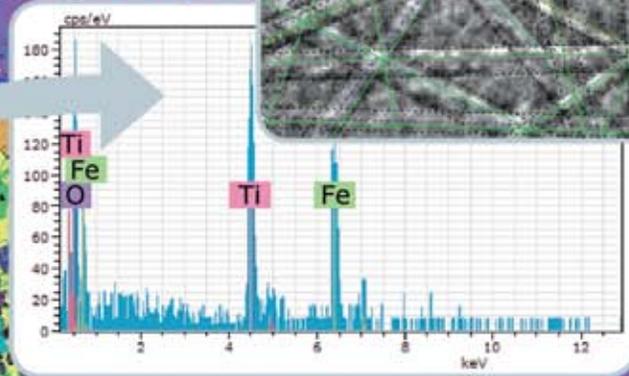
...with QUANTAX CrystAlign EBSD

- Automatically finds the best-fitting phase file for pattern indexing
- Better quality results
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- Easy to use

Mineral sample: Pattern Quality+Phase Map
Px: 1.66 µm Map Size: 1000 x 750

300 µm

The image above shows the phase distribution in a mineral sample. It contains ten different phases representing all crystal symmetries from triclinic to cubic. The Kikuchi pattern and the EDS spectrum corresponding to an ilmenite particle (green) are also presented.

The shown results are courtesy of Dr. Angela Halfpenny and Dr. Michael Verrall from CSIRO in Perth, Australia.

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