Sandia National Laboratories
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Yifeng Wang Selected Asian-American Engineer of the Year

Yifeng Wang (6222) has been selected by the Chinese Institute of Engineers–USA to receive the Asian American Engineer of the Year (AAEOY) award for 2014. The award annually recognizes "American individuals of Asian descent who have made exceptional contributions to the field of engineering, science, and/or as a corporate leader." Since 2002, some 180 corporate executives, managers, engineers, and researchers from leading U.S. technology corporations, research institutions, and the U.S. Armed Forces have received the AAEOY award, including seven Nobel laureates.

Yifeng Wang examines a clay sample from South Dakota as part of iodide experiments. A team of Sandia researchers is working to understand how rapidly iodine-129 released from spent nuclear fuel would move through a deep clay-based geological repository. (Photo by Randy Montoya)

Yifeng was nominated by Sandia executive VP Kim Sawyer for "pioneering contributions to nanogeochemistry, nonlinear geochemistry, and environmental material development and sustained contributions to backend nuclear fuel cycle research."

"This is a very real honor, and I am thrilled by the selection. I would like to thank my colleagues and managers for their support and encouragement over the years," Yifeng says.

Yifeng earned a PhD degree in geochemistry from Indiana University in 1993. After working a year and half at the Georgia Institute of Technology as a postdoctoral student, Yifeng joined Sandia in 1995. In the course of his 18-year career at Sandia, he became known for the broadness of his geological research interests, which span nanogeochemistry, biogeochemistry, early Earth evolution, environmental materials, and geologic repository science.

Yifeng Wang examines a sedimentary outcrop in New Mexico's Tijeras Canyon. Wang is the lead author of a paper in Nature Communications *that offered insights into pore size and distribution in horizontal slices of sedimentary rock.* (Photo by Randy Montoya)

A pioneer in nanogeochemistry, he was the first to demonstrate the effect of nanopore confinement on mineral–water interface chemistry and gave this new research field its name: *nanogeochemistry*. "Sandia is a good place for idea hybridization," he says. "Nanogeochemistry is a hybridization of geochemistry with nanoscience. Interestingly, the concepts we developed turned out to be quite useful for nuclear waste isolation and shale gas research."

At DOE's Waste Isolation Pilot Plant (WIPP), Yifeng conceived and developed an innovative concept that used magnesium oxide to sequester microbially generated carbon dioxide and, additionally, to control WIPP disposal room chemistry. The concept proved critical to the EPA's ultimate approval of WIPP. Magnesium oxide, in use since WIPP opened, is still the only engineered backfill in the WIPP repository design. "WIPP is the first project in which I was involved at Sandia," Yifeng says.

Exceptional Service in the National Interest

Yifeng, a distinguished researcher in geoscience engineering, is the technical lead for the DOE Used Fuel Disposition Crystalline Disposal R&D Work Package. He coordinates dozens of technical staff across eight national laboratories and other research organizations for this project. He's also the principal investigator of an LDRD project involving shale gas disposition and release. He has published more than 80 peer-reviewed publications and has six patents issued or pending.

He joined the other 19 recipients to receive the award at the AAEOY award ceremony on Saturday, March 1, in San Francisco.

Yifeng Wang holds a piece of banded iron during a visit to an aquarium. Wang and colleagues have proposed an explanation—published in Nature Geoscience—for the precipitation of banded iron deposits in the planet's oceans billions of years ago. (Photo by Randy Montoya)