

THE UNIVERSITY OF IDAHO MAGAZINE | WINTER 2003

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## PRESIDENTIAL HONOR for a Young Researcher

By Bill Loftus

**A** fascination with clay minerals and the complex way they interact with contaminants helped earn Daniel G. Strawn, UI assistant professor of soil chemistry, one of the nation's top awards for young scientists and a visit to the White House.

In a sense, Strawn's focus on ways clay minerals interact with metals, namely lead and copper, plows old ground. Efforts to understand the structure of the finest soil particles and how water and other materials interact with clay rank among the earliest realms of soil science, itself more than a century old.

Strawn's studies of how heavy metals interact with clay recast the old science and made it newly pertinent, particularly in Idaho. He has an ongoing research project in the Coeur d'Alene River Basin focusing on current environmental issues. He also teaches a geochemistry class geared to professionals at the Idaho National Engineering and Environmental Laboratory.

President George W. Bush honored Strawn and other recipients of the Presidential Early Career Award for Scientists and Engineers. Strawn was one of three scientists funded by the U.S. Department of Agriculture to receive the award.

At the ceremony Strawn represented the USDA National Research Initiative, which supports basic research. His fundamental study explores ways clay minerals or aluminosilicates associate with lead and copper rather than tying in with a specific place or problem.

Strawn uses some of the most sophisticated scientific equipment available, a U.S. Department of Energy-funded synchrotron at Stanford University. With some 1,700 scientists using the equipment each year, time is precious, so the Idaho scientist's time there is limited to three periods of two or three days each year.

The synchrotron, a massive ring of a machine used to accelerate particle beams to near light speed, produces extremely bright X-rays. The equipment is used in a relatively new field practiced by Strawn and others: molecular environmental science.

Strawn also works closely with the staff of the Pacific Northwest National Laboratory in Richland, Wash., to work with advanced equipment there.

Ever since an Englishman in the mid-1800s poured ammonium into one end of a tube packed with clay minerals and retrieved calcium ions from the other end, scientists have been intrigued by the

substance.

Linus Pauling, one of the 20th Century's most noted scientists, performed some of the first experiments on clay mineralogy, before career turns helped him win two Nobel Prizes. At the Washington ceremony, President Bush noted past winners of the Presidential Early Career Award for Scientists and Engineers had gone on to win Nobels of their own.

Clay minerals now serve in numerous industrial processes such as petroleum processing. So powerful is their role in chemical reactions that some scientists believe clay minerals played an integral role in the origin of life.

For his part, Strawn wants to know how lead, copper and other heavy metals associate with clay minerals, and under what conditions. Results from his study will reveal the nature of the clay-metal associations and the likelihood that they will contaminate the environment. "This is an age-old question, that now with modern science, we're able to use cutting-edge tools to gain new insights," he said. **1**

Daniel G. Strawn  
UI assistant professor of soil chemistry