TMS Member Profiles

Meet a Member: Xingbo Liu: TMS' "Energetic" 2010 Early Career Faculty Fellow

By Lynne Robinson

Xingbo Liu's career path was revealed to him in the blink of an eye.

He was on a high school field trip to the Institute of Metal Research, about a mile from his home in Shenyang, northeastern China, when he peered through a transmission electron microscope (TEM) for the first time. "I remember seeing materials down to the atom scale and thinking, 'That's so cool.' Then, I thought, 'I want to do that,'" he recalled. "It was amazing to see something so tiny."

It was little wonder that Liu was taken with the view through the TEM. With his father's being a mechanical engineer and his mother a metallurgist, the lure of materials science was almost a genetic predisposition. His pursuit of "the cool" initially took him to the University of Science and Technology, Beijing, where he was ultimately drawn to research superalloys for jet engine turbines. "It was just really exciting for me to be able to help make something that could fly," he said.

Now an assistant professor in the Mechanical and Aerospace Engineering Department at West Virginia University, Liu has turned his attention to something that he finds not only exciting, but also urgently needed—the development of sustainable sources of

energy. Since joining TMS in 2002, he has worked diligently to "broaden awareness of new materials in new areas, such as renewable energy sources and fuel cells." Currently the JOM advisor for the Energy Committee, Liu is also vice chair of the High Temperature Alloys Committee and was a founding member of the TMS Energy Conversion and Storage Committee. This year marks two new milestones in his TMS involvement. He is a lead symposium organizer for the first time at the TMS 2010 Annual Meeting, namely for Materials in Clean Power Systems V: Clean Coal-, Hydrogen Based-Technologies, Fuel Cells, and Materials for Energy Storage. And, he was named the 2010 TMS Early Career Faculty Fellow.

As a requirement of the Early Career Faculty Fellow award, Liu is presenting the TMS Young Leader Tutorial Luncheon Lecture at the Annual Meeting and, not surprisingly, his topic is "Energy Materials—Past, Present, and Future." Said Liu, "I'm going to make this fun. I plan to present a picture about how energy use has evolved, from ancient India, to the invention of the steam engine, to the impact of high temperature, nickel-based alloys and the development of high efficiency

fuel cells. I want to encourage broad interest in the topic so that the audience will want to learn the details on their own."

As for the Materials in Clean Power Systems V symposium, Liu said that he is particularly pleased that this year's program features a strong energy storage component, focused primarily on energy conversion and generation.

The larger context for Liu's scientific interests is currently shaped by his 18-month-old son, Ethan—"My new inspiration," he notes. An avid reader of philosophical works, Liu is particularly intrigued by the contributions of Bertrand Russell, considered a founder of analytic philosophy. "To me, philosophy is like reading a review paper about the universe," he said. "Every time I study it, I find something new. It challenges me and keeps me from just focusing on what is going on today."

Occasionally, Liu also finds time to play tennis, although since Ethan's birth, he admits to "playing more Wii tennis." His wife, Li Zhao, first taught him the sport in China in the late 1990s. "I started playing tennis with my friends and they became frustrated with me because I was a beginner and they wanted to play more competitive games. They said, 'We know someone who is more patient who can teach you,' and that's how I met my wife. She taught me for half a year and then we started dating. Then she lost her patience.

"She never did teach me how to serve."

Lynne Robinson is a news and feature writer for TMS.

Figure 1: Liu with his son, Ethan—"My new inspiration"—as they hike Mary's Peak on the Oregon Coast.

Each month, *JOM* profiles a TMS member and his or her activities both in and out of the realm of materials science and engineering. To suggest a candidate for this feature, contact Maureen Byko, *JOM* editor, at mbyko@tms.org.