Edward D. Herderick Selected as the 2009 Materials Societies Fellow

Edward D. Herderick, a graduate student at the University of Ohio, was selected to receive the 2009–2010 National Science Foundation (NSF) Materials Societies Congressional Fellowship award. In September, he will begin a one-year fellowship working with congressional staffers on science and engineering legislation in Washington, D.C.

"I am honored to have been chosen by TMS and the other professional societies as the Materials Societies Congressional Fellow," Herderick said. "I hold public service in the highest regard and this unique opportunity to directly contribute to U.S. science policy is something I'm very excited about."

The Materials Societies Fellowship program is administered through the American Association for the Advancement of Science and supported by the American Ceramic Society, the Materials Research Society, and TMS.

Herderick earned a bachelor of science degree in 2005 and later a master of science degree in 2007, both in materials science and engineering, at Ohio State University. He is scheduled to receive his Ph.D., also in materials science and engineering, from Ohio State University in August.

Herderick's graduate research focuses on synthesis, characterization, and property measurement of metal-oxide-metal heterojunction nanowires. However, his main focus deals with solutions to the world's energy challenge. Herderick has been working to improve the way energy is generated, transmitted, and consumed to provide economic growth and strengthen national security in an environmentally sustainable manner. During his graduate studies, he was named an NSF Integrative Graduate Education and Research Traineeship Fellow.

Herderick said he is excited to learn the ins and outs of the legislative process and to apply his expertise in materials to developing policy solutions to what he calls the "21st Century Energy Challenge."

"That is improving the way we generate, transmit, and consume energy to provide economic growth and strengthen national security in an environmentally sustainable manner," he said in describing the challenge. "It's an exciting time to be going to Washington and I can't wait to get started!"

The first Materials Societies Congressional Fellow was Ticora V. Jones. Jones earned her Ph.D. in Polymer Science & Engineering from the University of Massachusetts at Amherst in 2006.

The Materials Societies Congressional Fellowship provides an annual stipend plus money for health insurance, travel, and relocation expenses to the Washington, D.C. area. Information on applying for the 2010–2011 fellowship is available at *www.ceramics.org/congressionalfellowship/*. The deadline to apply is January 9, 2010.

In Memory of TMS Member Harold M. Manasevit, 1927–2009

Editor's Note: This tribute was adapted from a submission by Russell D. Dupuis, professor at the Georgia Institute of Technology.

In March, Harold "Hal" M. Manasevit, a senior scientist at the Thompson Ramo Woolridge (TRW) Technology Center in El Segundo, California, passed away at the age of 80. He was a long-time TMS member.

Manasevit's career was focused on the chemical vapor deposition of various electronic materials. In 1963, he was the first to demonstrate the epitaxial growth of silicon on sapphire (SOS). At that time, North American Aviation was the prime contractor developing the nuclear-warhead-armed Minuteman series intercontinental ballistic missles. It was during that time that Manasevit had the idea of growing epitaxial SOS on a substrate and later developed and patented it.

Building upon his idea of epitaxial growth of semiconductors on insulating substrates, in 1968, Manasevit was the first to publish on the growth of semiconductors by metalorganic chemical vapor deposition (MOCVD), including the heteroepitaxial growth of GaAs on Si as well as on various insulating oxide substrates. For his early experiments, he had to convince some industrial metalorganic companies to create some "high-purity" trimethylgallium and triethylgallium sources which he used with arsine to grow GaAs on sapphire and other insulators. In related work, he was the first to demonstrate the growth of many of the other III-V compound semiconductors on sapphire and other oxide substrates. In addition, he was the first to describe the heteroepitaxial growth of II-VI and IV-VI compound semiconductors on insulators and the first to produce superconducting films on insulators. Manasevit also developed numerous CVD techniques for etching insulators.

He created the term "MOCVD" to indicate that the chemical vapor deposition process he pioneered was an extremely flexible approach and could be used to deposit a wide range of materials. Today, MOCVD is used widely for all of these types of materials.

Manasevit earned a B.S. degree in Chemistry from Ohio University, an M.S. degree in Chemistry from Pennsylvania State University, and a Ph.D. in Physical Inorganic Chemistry from the Illinois Institute of Technology.

Manasevit held 16 patents, and was awarded the 1985 IEEE Morris N. Liebmann Memorial Award "for pioneering work in metalorganic chemical vapor deposition, epitaxial-crystal reactor design, and demonstration of superior quality semiconductor devices grown by this process."

Meet a Member: Eric Taleff, Tourist of Japan's Metallurgical Treasures

By Francine Garrone

Circumscribed by the mountain chains of Kinkakuji-cho, Kita-Ku, Japan, sits a metallurgical treasure that has astounded Eric Taleff since he began traveling to Gunma-ken in the Kanto region on the island of Honshu. Partially covered in gold leaf, the Kinkaku-ji, or Golden Pavilion Temple, has brought metallurgists from across the globe—like Taleff—to examine its long metallurgical history and view its harmonious appearance that reflects in the pond that surrounds the temple on three sides (Figure 1).

Taleff, a professor and Charlotte Maer Patton Centennial Fellow in Engineering in the Department of Mechanical Engineering at the University of Texas at Austin, travels yearly to Japan not only to further his professional career, but also to spend time with his wife's family.

"As a mechanical metallurgist, it is especially interesting to visit Japan, a country steeped in a long history of metallurgical excellence," he said. "Some of the more easily appreciated metallurgical treasures include Kinkaku-ji and the Horyu-ji (Temple of Flourishing Law) treasures housed at the Tokyo National Museum."

The Horyu-ji treasures that Taleff speaks of are various gold and bronze metalwork dating back to the 7th and 8th centuries.

Taleff began traveling to Japan in 2005 to work with industrial as well as university colleagues. His family—wife, Yumiko; son, Michael; and daughter, Emily—have traveled along with him allowing for his children to spend time with their grandparents and become familiar with their heritage, language, and culture.

"The privilege of working with my colleagues in Japan is very meaningful to me," he said. "In particular, it is always an opportunity for me to learn from them. Together, we have shared ideas and knowledge to solve important technological problems and better serve our profession. It is professionally rewarding for me to have access to expertise not necessarily available in my home country and to learn from different ideas and completely different ways of looking at things."

Although Taleff's month-long trip is mainly consumed by work, he said he usually has a few days each year to "play the tourist," which he describes as "tremendous fun." Taleff said he enjoys learning about historical metallurgy from the Sakai region, where traditional techniques of fabricating cutlery are still preserved to this day.

In 2008, Taleff was able to visit Kinkaku-ji. Built in 1393, the Golden Pavilion Temple served as a retirement villa for Shogun Yoshimitsu Ashikaga. The Shogun had intended to cover the exterior of the pavilion with gold, but only managed to coat the ceiling of the third floor before his death. During the Onin War, Kinkaku-ji burned several times and again in 1950. The present temple structure dates back to 1955. Today, both upper stories are covered in gold leaf, in accordance with Ashikaga's original intentions.

He may be well versed in its history, but Taleff admits he is far from proficient in Japan's language. "I have picked up just barely enough of the Japanese language to get into trouble, and to be able to travel a bit on my own," he said. "Each time I visit, I do pick up a bit more of the language. However, it is looking like I might reach retirement before I can become passably fluent in a short conversation." Taleff plans to continue his annual visits despite the language barrier.

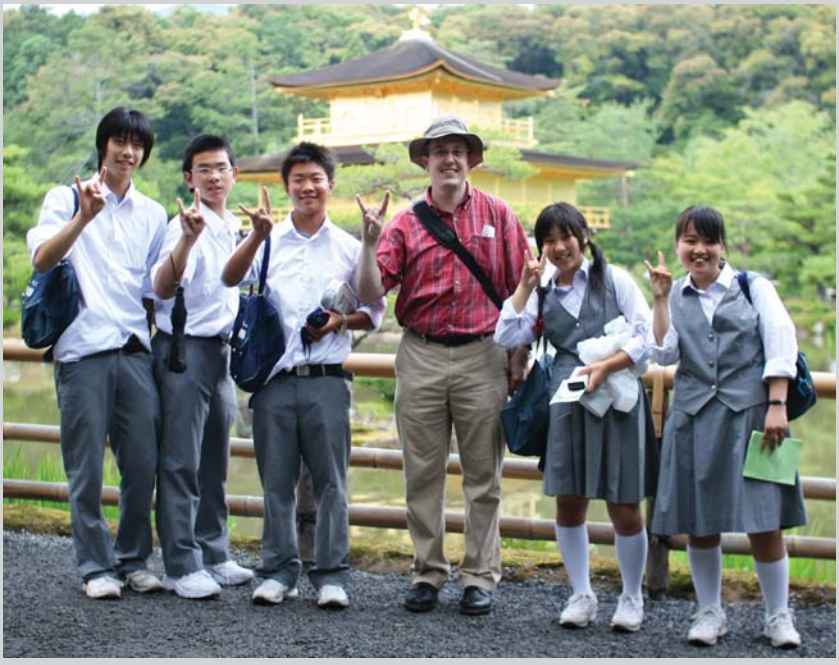

Figure 1. Eric Taleff and a group of local school children give the Texas Longhorn sign in front of Kinkaku-ji. Taleff had helped the children with English practice while in Japan.

Each month, *JOM* features a TMS member and his or her activities outside of the realm of materials science and engineering. To suggest a candidate for this feature, contact Francine Garrone, *JOM* news editor, at *fgarrone@tms.org*.