



Symposia Summary

Bulk Metallic Glasses VIII

Organizers: Peter K. Liaw, Gongyao Wang, Hahn Choo, Yanfei Gao—The University of Tennessee

Since metallic glasses, otherwise known as amorphous alloys, were discovered in the 1960s, they have been developed into bulk forms and attracted much attention due to their unique microstructure (without grain boundaries) and properties, such as high hardness and fracture strength, superior elastic strain limits, good corrosion and wear resistance, and excellent toughness. Since metals are the most widely used structural materials in daily life, bulk metallic glasses (BMGs) show promising potential as structural materials.

While BMGs are generally very strong, they are also brittle. In fact, their mechanical properties depend on the sample geometry due to size effects of BMGs. Decreasing the sample size has been found to increase the plasticity, making small-scale applications for BMGs currently practical. The application fields for BMGs include micromachines, precision microparts, MEMS (microelectromechanical systems), NEMS (nanoelectromechanical systems), surgical tools, and biomedical implants.

To facilitate communication within the community of BMGs, a Bulk Metallic Glasses Symposium has been held successfully at TMS Annual Meeting since 2004 and has proved to be very popular. During the 2011 symposium, 126 presentations were given, which included keynotes from William Johnson, California Institute of Technology, and Takeshi Egami, The University of Tennessee, as well as 62 invited talks. The attendees were from the United States, Germany, Japan, India, Taiwan, China, Hong Kong, Great Britain, Mexico, Korea South, Sweden, Switzerland, Singapore, Ukraine, Austria, Spain, Iran, and Brazil. The topics involved a wide range of BMG research areas, such as the alloy development and applications, glass-forming ability, processing, mechanical behavior, structure characterization, simulation and modeling, and fatigue and corrosion. The symposium papers have been published in *Metallurgical and Materials Transactions A* (MMTA) since 2009.

The symposium organizers would like to express their sincere appreciation to all the attendees for contributing to the success of the Bulk Metallic Glasses symposia. We also want to acknowledge the support of TMS and ASM, especially the TMS Structural Materials Division and the TMS/ASM Mechanical Behavior of Materials Committee. In addition, we thank the key readers, the reviewers, and the staff of MMTA, especially Dora Moscatello, Mary Lynn, and David E. Laughlin, for their assistance in the preparation and approval of the symposium publication. The National Science Foundation and the Center for Materials Processing at The University of Tennessee provided financial support for this year's symposium.

—Submitted by Gongyao Wang