

Bulk Metallic Glasses: Processing and Applications

DR. JIM YURKO

Director of Technology

Materion Brush Beryllium and Composites (MBB&C)

ABSTRACT:

Since the development of the first bulk metallic glass (BMG) alloys almost 25 years ago, these unique materials have had tremendous potential because of their exceptional properties and ability to be manufactured with high volume processes such as die casting. While BMGs have been successfully used in some applications, they have not experienced the widespread adoption many had predicted in the early 1990's. The last few years has seen a resurgence in interest with a number of large companies entering the market, including Materion, and also some smaller firms, such as the local company, Visser Precision Casting. In this seminar, bulk metallic glass properties and how they relate to specific applications, and processing aspects and challenges, will be discussed.

BIOGRAPHICAL SKETCH:

Dr. Jim Yurko is the Director, Technology at Materion Brush Beryllium and Composites (MBB&C) in Elmore, Ohio. The Technology group at MBB&C is focused on advancements in beryllium, but also on commercialization of technologies such as bulk metallic glass alloy production, investment casting of aluminum-beryllium alloys, and fabrication techniques related to aluminum metal matrix composites. Before joining Materion, Dr. Yurko was the Chief Engineer and founder of Electrolytic Research Corporation LLC in Boston and the R&D team leader of BuhlerPrince in Michigan. Jim has a B.S.E. in MSE from the University of Michigan, and a Ph.D. in metallurgy from MIT. Jim is active with TMS and currently serves as the Chair of the Process Technology and Modeling Committee, and is a frequent organizer at their annual meeting. Jim was awarded the 2010 Young Leader Professional Development Award by TMS and in 2012 received the Vittorio de Nora Prize for Environmental Improvements in Metallurgical Industries.

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