Symposium Summary

Materials Research in Microgravity

Organizers: D.M. Matson (Tufts University) , V. Bojarevics (University of Greenwich), J.P. Downey (NASA MSFC), H. Henein (University of Alberta), A. Seidel (EADS Astrium), D. Voss (ESA-ESTEC), R.W. Hyers (University of Massachusetts–Amherst)

Reducing gravitational effects such as thermal and solutal buoyancy enables investigation of a large range of different phenomena in materials science. The Symposium on Materials Research in Microgravity involved six sessions composed of 39 presentations and 14 posters with contributions from more than 14 countries. The sessions concentrated on four different categories of topics related to ongoing reduced-gravity research: (1) recent advances in ground and space-based facilities developed to investigate reduced gravity phenomena involving organic systems, metallic alloys and elements, semiconductors, glasses, powders and composites; (2) modeling activities for experiment control, applied process control, and visualization of microstructural evolution; (3) advances in thermophysical property measurement techniques that support process modeling activities; (4) fundamental studies in materials research topics such as the structure of liquids, combustion/flame propagation, and analysis of the influence of gravity on sedimentation, coarsening, sintering, atomization, and the kinetics of melting, undercooling, solidification, phase transformation, and aerosol formation. Highlights from this symposium will be featured in the September 2012 issue of *JOM* with additional contributions contained in the new book edited by D.M. Herlach and D.M. Matson, *Solidification of Containerless Undercooled Melts* by Wiley-VCH. The symposium was sponsored by the TMS Materials Processing and Manufacturing Division, Process Technology and Modeling Committee and Solidification Committee.

--*Submitted by Douglas Matson*