Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

**Effect of Icosahedral Short-range Order on the Undercoolability of Ti-Zr-Ni Liquid Alloys**[1] G. W. LEE*, A. K. GANGOPADHYAY, K. F. KELTON, Washington University, St. Louis, R. W. HYERS, University of Massachusetts, Amherst, T. J. RATHZ, University of Alabama, Huntsville, J. R. ROGERS, NASA MSFC, Huntsville, A. I. GOLDMAN, Iowa State University, Ames
— Icosahedral short-range order (ISRO) in metallic liquids leads to a high nucleation barrier for crystal phases and is, therefore, an important factor for determining the amount of undercooling. High energy (125 keV) x-ray diffraction studies were made on electrostatically levitated Ti-Zr-Ni liquids that form the solid solution phase, $\beta$(Ti/Zr), the icosahedral quasicrystal (i-phase), and a polytetrahedral C14 Laves phase to correlate undercooling with the short-range order in the liquid phase. The undercoolability increases with increasing Ni concentration for liquids that form the $\beta$(Ti/Zr) and C14 phases. The maximum ISRO and minimum undercooling is found for the liquid that crystallizes to the i-phase. These data are presented and discussed in terms of a local cluster model for the liquid.

[1]Supported by NASA under contract NAG*-1682 and NNM04AA016, and by the National Science Foundation under grant DMR 03-07410. *Current affiliation - Lawrence Livermore National Laboratory.

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Date submitted: 01 Dec 2004 Electronic form version 1.4