

Abstract Submitted
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Determination of the β - γ pressure/temperature phase boundary for tin from dynamic isentropic compression experiments¹ D.H. DOLAN, J.L. WISE, J.-P. DAVIS, C.A. HALL, Sandia National Laboratories, D.B. HAYES — Electromagnetically driven stress-wave tests were conducted in Sandia's Dynamic Integrated Compression Experimental (DICE) Facility to measure the temperature dependence of the β - γ solid/solid structural transition pressure in preheated tin samples subjected to ICE (Isentropic Compression Experiment) loading conditions. For several initial temperatures ranging from 20 to 200 C, velocity interferometer (VISAR) diagnostics provided time-resolved measurements of the sample free-surface motion. These measurements exhibited the distinct two-wave structure expected as a consequence of the phase transition. The locus of the β - γ phase boundary was determined by iteratively adjusting the parameters in a multiphase material model for tin so as to optimize the aggregate agreement between one-dimensional wavecode simulations of the individual experiments with the actual ICE wave-profile data.

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