Abstract Submitted
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Measurement of the Temperature Dependence of the $\beta - \gamma$ Transition Pressure in Tin Using Dynamic Isentropic Compression[1] J.L. WISE, J.-P. DAVIS, D.H. DOLAN, C.A. HALL, D.B. HAYES, Sandia National Laboratories — Electromagnetically driven stress-wave tests employing a new sample preheating capability were conducted in Sandia's Dynamic Integrated Compression Experimental (DICE) Facility to measure the temperature dependence of the $\beta - \gamma$ solid/solid structural transition pressure in 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 ICE wave-profile data have been analyzed to determine discrete points along the $\beta - \gamma$ phase boundary on the basis of wavecode simulations incorporating a multiphase material model for tin. The observed transition pressure decreased as the initial sample temperature was increased, consistent with the equilibrium phase diagram of tin.

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