

Abstract Submitted
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Precision Equation-of-State (EOS) Measurements Using Laser-Driven Shock Waves Using the OMEGA Laser M.A. BARRIOS, D.E. FRATANDUONO, T.R. BOEHLY, D.D. MEYERHOFER, Laboratory for Laser Energetics, U. of Rochester, D.G. HICKS, J.H. EGGERT, P.M. CELLIERS, LLNL — Recent advances in diagnostics and analysis enables highly precise measurements of material properties at very high pressures. When quartz is used as a standard (reference) material for impedance-matched experiments with transparent samples, VISAR is able to track the shock velocity throughout the experiment. This enables the velocities at the impedance-matched point to be determined with an uncertainty of $\sim 1\%$. Similarly, the effects of steadiness and curvature can readily be evaluated. These refinements provide precision EOS data previously unattainable at these high pressures. We report on EOS measurements (at 1 to 10 Mbar) performed at the OMEGA Laser Facility. This work was supported by U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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