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Precision Measurements of the Equation of State (EOS) of GDP Ablator Materials at ~1 to 10 Mbar Using Laser-Driven Shock Waves M.A. BARRIOS, D.E. FRATANDUONO, T.R. BOEHLY, D.D. MEYERHOFER, Laboratory for Laser Energetics, U. of Rochester, D.G. HICKS, P.M. CELLIERS, J.H. EGGERT, LLNL — The behavior of polymer materials at high-pressure (>1 Mbar) is essential for understanding ignition target ablators. We report on EOS measurements on glow-discharge-polymer (GDP) ($C_{43}H_{56}O$) and germanium-doped GDP at shock pressures of ~1 to 10 Mbar. This represents the only available highpressure EOS measurements on these materials to date. These experiments use laser-driven shocks to drive impedance-match measurements using alpha quartz as a standard material. Shock velocities in these transparent samples and the standard can be measured to ~1% precision. This allows the impedance-match technique for laser-driven shock experiments to produce precise data at extreme pressures. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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