Abstract Submitted
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Shock Compression of Multiple Materials up to 120 Mbar at the National Ignition Facility[1] MICHELLE MARSHALL, AMY LAZICKI, DAVE ERSKINE, RICH LONDON, DAYNE FRATANDUONO, PETER CELLIERS, JON EGGERT, DAMIAN SWIFT, FEDERICA COPPARI, SHUAI ZHANG, HEATHER WHITLEY, PHIL STERNE, JOE NILSEN, Lawrence Livermore Natl Lab — We present shock Hugoniot data for quartz, molybdenum (Mo), boron (B), boron carbide (B_4C), beryllium oxide (BeO), and boron nitride (BN) at 100 Mbar pressures, far exceeding the pressure, temperature conditions attained in previous studies on these materials. Impedance-match data were obtained relative to a diamond standard for up to 4 materials during single shots at the National Ignition Facility. Elements and compounds with similar densities (B, C, B_4C, BeO, and BN) were chosen to systematically test our ability to model the equation of state of both pure and mixed low-Z matter in the warm dense matter/plasma regime. New data on quartz and Mo help develop them as material standards to higher pressures than previously characterized.

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