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The Isothermal Equation of State of a Polymer Blended Composite Measured Directly via *in-situ* Tabletop Optical Microscopy and Interferometry (OMI) JOSEPH ZAUG, ELISSAIOS STAVROU, DONALD HANSEN, STEVE FALABELLA, SAM WEIR, Lawrence Livermore National Laboratory — There is a paucity of high-pressure isothermal equation of state (EOS) data from composite and alloyed materials. Recently, we reported on an approach using a diamond-anvil cell to directly measure the EOS of a pressurized triclinic symmetry material (alpha-NTO, 5-nitro-2,4-dihydro-1,2,4,-triazol-3-one). Using commonly available in-house tabletop diagnostics we directly measured pressure dependent single crystal surface area by making Optical Microscopy measurements and single crystal heights via optical Interferometry (OMI) measurements. Here we report tabletop OMI measurements, V(P), conducted on a composite material, LX-17, which is a polymer blended energetic formulation consisting of 92.5 % TATB and 7.5% of Kel-F 800 plastic binder. We modified 400-mm diamond culets to encapsulate 10s of GPa pressurized samples that are 100-microns tall and wide. The modification enabled a 3x increase in sample height. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract No. DE-AC52-07NA27344

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