

Abstract Submitted
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Ultrafast compression of graphite observed with sub-ps time resolution diffraction on LCLS MICHAEL ARMSTRONG, LLNL, A. GONCHAROV, CIW, J. CROWHURST, J. ZAUG, H. RADOUSKY, P. GRIVICKAS, S. BASTEA, N. GOLDMAN, E. STAVROU, J. BELOF, LLNL, A. GLEASON, LANL, H. J. LEE, R. NAGLER, SLAC, N. HOLTGREWE, CIW, P. WALTER, SLAC, V. PAKAPRENKA, APS, I. NAM, E. GRANADOS, SLAC, C. PRESHER, CIW, B. KOROGLU, LLNL — We will present ps time resolution pulsed x-ray diffraction measurements of rapidly compressed highly oriented pyrolytic graphite along its basal plane at the Materials under Extreme Conditions (MEC) sector of the Linac Coherent Light Source (LCLS). These experiments explore the possibility of rapid (<100 ps time scale) material transformations occurring under very highly anisotropic compression conditions. Under such conditions, non-equilibrium mechanisms may play a role in the transformation process. We will present experimental results and simulations which explore this possibility. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Security, LLC under Contract DE-AC52-07NA27344.

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