

Abstract Submitted  
for the SHOCK19 Meeting of  
The American Physical Society

**Probing the Metastability Limit of Liquid Water under Dynamic Compression**<sup>1</sup> MICHELLE MARSHALL, MARIUS MILLOT, DAYNE FRATANDUONO, PHILIP MYINT, JON BELOF, RAY SMITH, JAMES MCNANEY, Lawrence Livermore Natl Lab — Kinetics can play an important role in the transformation of materials to different high-pressure phases on the short time scales associated with dynamic-compression experiments. The study of phase-transition kinetics has motivated many theoretical and experimental works on the rapid freezing of water into the ice VII phase. We present measurements of the over-pressurization of the water-ice VII phase transition at  $10\times$  higher strain rates than previously studied. Water was ramp compressed to peak pressures of  $\sim 15$  GPa over  $\sim 10$  ns using a laser-driven release reservoir technique at the Omega Laser Facility. The stress at which water froze into the ice VII phase is deduced from wave-profile measurements and compared to predictions using a phase-transition-kinetics model recently developed at Lawrence Livermore National Laboratory.

<sup>1</sup>Prepared by LLNL under Contract DE-AC52-07NA27344

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Date submitted: 13 Feb 2019

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