

Abstract Submitted  
for the SHOCK19 Meeting of  
The American Physical Society

**Shock Response of Solid CeO<sub>2</sub> to 25 GPa** JOHN LANG, Los Alamos National Laboratory, JUSTIN STEINER, Georgia Institute of Technology, ANIRBAN MANDAL, AUSTIN GOODBODY, Los Alamos National Laboratory — To examine the shock-induced deformation response of cerium (IV) oxide (CeO<sub>2</sub>) – a widely used x-ray standard – solid samples were shock compressed to peak stresses ranging between 2 – 25 GPa. Shock wave velocities through the sample and particle velocity histories at the sample/window interface were measured using laser velocimetry. A two-wave structure was observed at higher peak stresses, indicating an elastic-inelastic response, from which the Hugoniot elastic limit was determined. The experimental data also provided the elastic-inelastic Hugoniot. Insights obtained from numerical simulations of our results and from comparison with past shock work on porous CeO<sub>2</sub> will be discussed.

John Lang  
Los Alamos National Laboratory

Date submitted: 28 Feb 2019

Electronic form version 1.4