Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

The Importance of the Initial State in Understanding Shocked Porous Materials THOMAS R. MATTSSON, KYLE R. COCHRANE, J. MATTHEW D. LANE, PHILIPPE F. WECK, TRACY J. VOGLER, LUKE SHULENBURGER, Sandia National Laboratories — Modeling the response of porous materials to shock loading presents a variety of theoretical challenges, however if done well it can open a whole new area of phase space for probing the equation of state of materials. Shocked porous materials achieve significantly hotter temperatures for the same drive than fully dense ones. By combining ab initio calculations of fully dense material with a model of porosity we show the critical importance of an accurate treatment of the initial state in understanding these experiments. This approach is also directly applicable to present application of tabular equations of state to the modeling of porous material. Sandia National Laboratories is a multimission laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energys National Nuclear Security Administration under contract DE-AC04-94AL85000.

Thomas R. Mattsson
Sandia National Laboratories

Date submitted: 11 Nov 2016 Electronic form version 1.4