

Abstract Submitted
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Analysis of Shocked and Ramp-Compressed Metals to 5 Mbars

JEFFREY NGUYEN, MINTA AKIN, Lawrence Livermore National Lab, PAUL ASINOW, California Institute of Technology — In this report, we present a series of shocked and ramp compressed data on various metals including tantalum, iron and tin. These samples were shocked and ramp-compressed to pressures as high as 5 Mbars with graded density impactors (GDI). To analyze these data, we utilize both backward (characteristics) and forward analyses. The former method does not require a priori knowledge of a pressure drive, and often fails in the presence of strength or phase transition. By using both of these analysis techniques, we can explore the possibility of looking at phase transition and strength during ramp compression. We will also report on recent efforts to characterize GDI in situ impedance profile. This study also gives us insight into the properties of GDI during ramp compression. The results are compared to non-destructive ultra sound scans of GDIs. This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344

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