

Abstract Submitted  
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**Plastic Behavior of Polycrystalline Tantalum in the  $5 \times 10^7$  ( $s^{-1}$ ) Regime** BENJAMIN HAMMEL, DAMIAN SWIFT, BASSEM EL-DASHER, MUKUL KUMAR, GILBERT COLLINS, JEFF FLORANDO, Lawrence Livermore National Lab — The goal of this experiment is to investigate the plastic response of Tantalum to dynamic loading at high strain rates. The samples used were derived from high purity rolled plate, polished down to thicknesses in the range 25 – 100 microns. Dynamic loading was applied by direct laser ablation of the sample, with pulses up to 10 ns long, at the Jupiter Laser Facility. The elastic-plastic wave structure was measured using two line VISAR systems of different sensitivity, and strain rates were inferred from the rise time of the waves. The elastic wave amplitudes indicated flow stresses between 2 and 3 GPa, depending on the sample thickness. Samples were recovered for post-shot metallographic analysis. This work was 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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