

Abstract Submitted
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Compaction and High-Pressure Response of Granular Tantalum Oxide TRACY VOGLER, SETH ROOT, MARCUS KNUDSON, TOM THORNHILL, WILLIAM REINHART, Sandia National Laboratories — The dynamic behavior of nearly fully-dense and porous tantalum oxide (Ta_2O_5) is studied. Two particle morphologies are used to obtain two distinct initial tap densities, which correspond to approximately 40% and 15% of crystalline density. The response is characterized from low pressures, which result in incomplete compaction, to very high pressures where the thermal component of the EOS dominates. Issues related to a possible phase transformation along the Hugoniot and to establishing reasonable error bars on the experimental data will be discussed. The suitability of continuum and mesoscale models to capture the experimental results will be examined. Sandia National Laboratories is a multi-program laboratory operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Company, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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