Abstract Submitted
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The effects of orientation on the shock induced microstructure of single crystal tantalum GLENN WHITEMAN, Atomic Weapons Establishment, BO PANG, University of Birmingham, JEREMY MILLETT, Atomic Weapons Establishment, YU-LUNG CHIU, IAN JONES, University of Birmingham — The understanding of a materials response to shock loading (or any other loading regime) requires knowledge of microstructural development during the loading process. Given that many engineering materials have complex microstructures consisting of individual grains of different orientations, textural effects and the possibility of multiple phases, the mechanical response can be cumulative in nature, making the individual aspects difficult to isolate. Matters can be simplified for example by examining the response of single crystals, where many, if not all of these additional features can be eliminated. In this paper, we investigate the microstructural response of single crystal tantalum, orientated in the principal ([100], [110] and [111]) orientations. Recovered samples have been shock loaded and released under full one dimensional strain conditions, using a technique where all three orientations were loaded simultaneously in the same fixture.

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