Abstract Submitted
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Effect of dilute tungsten alloying on the dynamic strength of tantalum under ramp compression[1] C.S. ALEXANDER, J.L. BROWN, Sandia National Laboratories, J.C.F. MILLETT, G. WHITEMAN, AWE, J.R. ASAY, Consultant, N.K. BOURNE, The University of Manchester — The strength of tantalum and tantalum alloys are of considerable interest due to their widespread use in both military and industrial applications. Previous work has shown that strength in these materials is tied to dislocation density and mobility within the microstructure. Accordingly, strength has been observed to increase with dilute alloying which serves to increase the dislocation density. In this study, we examine the effect of alloying on the strength of a dilute tantalum-tungsten alloy (2.5 weight percent W) under ramp compression. The strength of the alloy is measured using the "self-consistent" technique which examines the response under longitudinal unloading from peak compression. The results are compared to previous studies of pure tantalum and dilute tantalum-tungsten alloys under both shock and ramp compression and indicate strengthening of the alloy when compared to pure tantalum.

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