

Abstract Submitted
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Modeling shear instability and fracture in dynamically deformed Al/W granular composites KARL OLNEY, DAVID BENSON, VITALI NESTERENKO, University of California, San Diego — Aluminum/Tungsten granular composites are materials which combine high density and strength with bulk distributed fracture of Al matrix into small particles under impact or shock loading. They are processed using cold and hot isostatic pressing of W particles/rods in the matrix of Al powder. The presentation will describe modeling of these materials under dynamic conditions simulating low velocity high energy impact in drop weight test (10 m/s) and also behavior following impact with velocities up to 1200 m/s. It will be demonstrated that morphology of W component and bonding between Al particles dramatically affects their strength, shear localization and mode of fracture of Al matrix. The support for this project provided by the Office of Naval Research Multidisciplinary University Research Initiative Award N00014-07-1-0740 (Program Officer Dr. Clifford Bedford).

Karl Olney
University of California, San Diego

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