1st TMS/ABM International Materials Congress
TMS CO-ORGANIZADOR
ANAIS PROCEEDINGS
ISSN 1516-392X

# MESOSCALE EFFECTS IN DYNAMIC STRENGTH AND FRACTURE OF GRANULAR COMPOSITE ALUMINUM/TUNGSTEN

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**Abstract**

Compressive dynamic strength and fracture pattern of high density Al-W granular composites with an identical weight ratio between Al (23.8 wt%) and W (76.2 wt%) and with different porosities, size, shape and orientation of W component were investigated at strain rate 0.001 1/s. Samples were fabricated by Cold Isostatic Pressing with subsequent sintering and Hot Isostatic pressing. Size of particles and morphology of W inclusions had a strong effect on dynamic strength. Samples with W wires arranged in axial direction (diameter 100 microns) had a highest dynamic strength and exhibited bulk distributed fragmentation of Al matrix. Dynamic strength and fracture pattern of composites was numerically simulated using computer code Raven. 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).

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