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High Strain, Strain Rate Behavior of PTFE/Al/W[1] JOHN ADDISS, Cavendish Laboratory, University of Cambridge, Cambridge CB3 0HE, UK, JING CAI, Materials Science and Engineering Program, University of California San Diego, CA 92093, STEVE WALLEY, WILLIAM PROUD, Cavendish Laboratory, University of Cambridge, Cambridge CB3 0HE, UK, VITALI NESTERENKO, Department of Mechanical and Aerospace Engineering,University of California San Diego, CA 92093 — Conventional dropweight technique was modified to accommodate low amplitude signals from low strength, cold isostatically pressed energetic "heavy" composites of polytetrafluoroethylene (PTFE)/AL/W. The fracture strength, strain and post-critical behaviour of fractured samples were measured for samples of different porosity and W grain size (the masses of each component being the same in each case). Unusual phenomenon of significantly higher strength (55 MPa) of porous composites (density 5.9 g/cc) with small tungsten particles (1 micron) in comparison with strength (32 MPa) of dense composites (7.1 g/cc) with larger tungsten particles (20 micron) was observed. This is attributed to force chains created by a network of small tungsten particles. Interrupted tests at the different level of strains revealed mechanism of fracture under dynamic compression.

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