

Abstract Submitted  
for the SHOCK19 Meeting of  
The American Physical Society

**Dynamic strength and failure of additively manufactured Ti-6Al-4V alloy** VITALY PARIS, PINHAS FRIDMAN, Department of Physics, Nuclear Research Center Negev, Israel, EITHAN TIFERET, Department of Materials, Nuclear Research Center Negev, Israel, ARNON YOSSEF-HAI, Department of Physics, Nuclear Research Center Negev, Israel — Additive manufacturing of metallic alloys (AM) by Electron Beam Melting (EBM) or Selective Laser Melting (SLM) is an emerging field. Understanding the relationships between the AM and post-processing parameters and resulting microstructure and the mechanical (and particularly dynamic) properties is of great practical interest. The Ti-6Al-4V alloy made by EBM has been studied in series of Split Pressure Bar tests (SHPB). The effects of Hot Isostatic Pressing (HIP) and of orientation of loading to build direction on dynamic compressive strength and failure properties were investigated. Stopper rings were employed in the tests to softly recover the specimens for post-mortem characterization. Results indicate that the effect of HIP on flow stress is small. The strain to failure of HIPed alloy is significantly higher than of as-built alloy. Results display small effect of the relation of loading direction with respect to build direction on the flow stress. On the other hand, EBM Ti-6Al-4V demonstrates strong effect of the loading direction on the strain to failure. The fractography images of soft-recovered specimens loaded in or normal to build direction also indicate different fracture characteristics.

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Date submitted: 28 Feb 2019

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