Abstract Submitted
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Effect of chemical composition on the shock response of Zr-based metallic glasses A.D. BROWN, F. WANG[1], School of Engineering and Information Technology, K.J. LAWS, UNSW Australia, D. EAKINS, D.J. CHAPMAN, Institute of Shock Physics, Imperial College London, P.J. HAZELL, School of Engineering and Information Technology, M. FERRY, UNSW Australia, J.P. ESCOBEDO, School of Engineering and Information Technology — Plate impact experiments were conducted on Zr-based bulk metallic glasses (BMG) with nominal compositions of $Zr_{55}Cu_{30}Ni_5Al_{30}$ and $Zr_{46}Cu_{38}Ag_8Al_{38}$. Velocity interferometry was used to measure the free surface velocity (FSV) histories. These measurements allowed calculation of the Hugoniot elastic limits and onset stresses of fracture (i.e. spall strength) for each alloy. The soft recovered specimens were fully characterized by means of optical and electron microscopy, x-ray diffraction and differential scanning calorimetry. The characterization results aided to assess the effect of chemical composition on the microstructural evolution, i.e. phase changes or crystallization, within the BMGs during shock loading. These changes were then correlated to the differences in strength and ductility on the nominally brittle amorphous BMGs. The most significant results from this study will be presented.

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