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Spall and Damage Behavior of Intrinsically-Reinforced Bulk Metallic Glass Composites RENE DIAZ, GREG KENNEDY, Georgia Institute of Technology, DOUGLAS HOFMANN, NASA Jet Propulsion Laboratory, NARESH THADHANI, Georgia Institute of Technology — We have performed uniaxial-strain plate-impact experiments to study the strength and spall damage of bulk metallic glass-matrix composites (BMGMCs). BMGMCs counteract the brittle nature of monolithic BMGs through in-situ formed crystalline dendrites which increases toughness and ductility. Applications for micrometeoroid shielding, kinetic energy penetrators (KEP) and armor shielding raises the question of the dynamic stability of BMGMCs. Multicomponent Ti-based BMGMCs were investigated using uniaxial-strain plate-impact experiments to examine the phase stability of the dendrite-reinforced BMGMCs under high pressure and their high strain-rate deformation and failure response. The experiments involve impact of 303 stainless steel flyer plate on 303 stainless steel sample holder containing two BMGMC samples at varying velocities. The Hugoniot Elastic Limit (HEL) and the spall strength of the BMGMC samples was determined using velocity interferometry system for any reflector (VISAR). Post-mortem microstructural characterization is done the on the recovered sample and correlated with the measured damage response. The results obtained to date will be presented.

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