SHOCK13-2013-000221
Abstract for an Invited Paper
for the SHOCK13 Meeting of
the American Physical Society

**Equation of State for Shock Compression of High Distension Solids**

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Shock Hugoniot data for full-density and porous compounds of boron carbide, silicon dioxide, tantalum pentoxide, uranium dioxide and playa alluvium are investigated for the purpose of equation-of-state representation of intense shock compression. Complications of multivalued Hugoniot behavior characteristic of highly distended solids are addressed through the application of enthalpy-based equations of state of the form originally proposed by Rice and Walsh in the late 1950's. Additivity of cold and thermal pressure intrinsic to the Mie-Gruneisen EOS framework is replaced by isobaric additive functions of the cold and thermal specific volume components in the enthalpy-based formulation. Additionally, experimental evidence supports acceleration of shock-induced phase transformation on the Hugoniot with increasing levels of initial distention for silicon dioxide, uranium dioxide and possibly boron carbide. Methods for addressing this experimentally observed facet of the shock compression are introduced into the EOS model.