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Mesoscale Calculations of Shock Loaded Granular Ceramics
JOHN BORG, Marquette University, TRACY VOGLER, Sandia National Laboratories — Mesoscale hydrodynamic calculations have been conducted in order to gain further insight into the dynamic compaction characteristics of granular ceramics. From these calculations both bulk material characteristics such as stress and density, as well as local characteristics such as compaction wave thickness and rise time have been obtained and compared to experimentally obtained data in order to assess the viability of the computational method. A parametric study has been conducted in order to assess the sensitivity of the computationally derived characteristics to micro material properties such as strength, particle morphology, and particle size distribution. A discussion as to the shortcomings in the mesoscale modeling technique, as well as, future considerations is included.

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