

Abstract Submitted
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Discrete Particle Simulation of Shock Compression of Powder Mixtures DAN EAKINS, ADAM JAKUS, NARESH THADHANI, Georgia Institute of Technology — Numerical continuum simulations have been performed on real, imported powder microstructures, to explore the effect of heterogeneity on changes in configuration during shock compression. A technique has been developed to import two-dimensional micrographs in order to accurately reconstruct the irregular particle sizes, morphologies, and distributions of real powder mixtures. The mechanical response of powder mixtures of widely varying constituent behavior and initial density is investigated at particle velocities of 0.5, 0.75, and 1.0 km/s, through a range of length-scales. Results reveal a strong correlation between powder configuration and micromechanical response during the initial consolidation event. The analysis can be used to design systems for controlled reactions.

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