

Abstract Submitted
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On predicting the shock densification response of heterogeneous powder mixtures NARESH THADHANI, Georgia Institute of Technology, ANTHONY FREDENBURG, Los Alamos National Laboratory — Predicting the dynamic crush-up response of heterogeneous powder mixtures is vital to the design of high-strain-rate experiments. A methodology has been developed which utilizes an experimentally obtained stress-density response in the low-strain-rate (quasi-static) regime to predict the dynamic densification response of heterogeneous powder mixtures. Specifically, the compaction behavior of an equivolometric Ta + Fe₂O₃ mixture is investigated. Experimental data is analyzed within the scope of existing continuum level compaction models, where the present combination and manipulation thereof allows for an accurate prediction of the dynamic crush-up response of Ta + Fe₂O₃ powder mixtures. Discussion is also given regarding model extension to alternate systems.

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