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Interpreting the shock response of porous oxide systems DAVID FREDENBURG, DARCIE KOLLER, Los Alamos National Laboratory — Oxide powders subjected to varying levels of shock loading can exhibit a complex response that differs significantly from that which is commonly observed in metals. As much of the early model development for particulates has been focused on metallic systems, the current state of the art in compaction and equation of state modeling is often unable to capture the wide range of compression responses observed in porous oxides. Specifically, the possibility of polymorphic phase transformations requires additional considerations in the development of compaction and equation of state models for these systems. In the present work, the shock response of several porous oxide systems is critically examined with respect to the equilibrium phase boundaries to identify the existence and extent of transformations under shock loading, and the influence of intrinsic and extrinsic properties on the onset of transformation.

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