

Abstract Submitted  
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**Dynamic Crush-up Response of CeO<sub>2</sub>** ANTHONY FREDENBURG, DARCIE DENNIS-KOLLER, DANA DATTELBAUM, Los Alamos National Laboratory — The shock consolidation and dynamic response of varying morphology ( $10^{-1}$  to  $10^1$   $\mu\text{m}$ ) CeO<sub>2</sub> is investigated through a series of parallel plate impact experiments. At pressures below those required to reach full density, the effect of morphology on the compaction response is examined for samples with similar initial densities. Shock velocity is measured directly, from which the pressure-volume response in the specimen is calculated; experimental results are discussed within the context of existing compaction models. Further, an embedded gauge technique is used to obtain several measurements of the sound speed at pressure for a single morphology at an alternate initial density. Measurements of the sound speed at pressure are used in conjunction with Hugoniot measurements to estimate the Gruneisen parameter for CeO<sub>2</sub>.

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