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Investigating strong shocks in low density Aerogel foams using x-ray phase contrast imaging JAMES HAWRELIAK, Washington State University — Understanding the performance of heterogeneous materials and the impact of changes in composition and morphology are complex to understand at a fundamental level because the relevant physical phenomena occur over a wide range of time and length scales. Low density foams are a unique subset of heterogeneous materials where morphology not composition is varied to achieve the desired physical properties. Assumptions about bulk behavior of these foams ignore that foams are fundamentally a heterogeneous material at some length scale. We use the coherent free electron laser of the Linac Coherent Light Source at the Materials in Extreme Conditions end station to probe the shock front generated by a tight laser focal spot in low density silica aerogels. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Fusion Energy Sciences

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