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Phase transitions in shocked porous quartz M. C. AKIN, R. S. CRUM, J. LIND, D. C. PAGAN, M. A. HOMEL, R. C. HURLEY, E. B. HERBOLD, Lawrence Livermore Natl Lab — The presence of porosity in granular media provides the means to probe regions of the phase diagram that do not coincide with the principal Hugoniot. In particular, the potential for increased heating is likely to lead to observable changes in phase boundaries. 55% dense quartz and forsterite were prepared by tap filling. These samples were shock compressed using the two stage light gas gun at DCS-APS to examine the impact of the increased porosity on the phase boundary. Here we discuss the observed changes to phase in quartz and forsterite compared to the fully dense materials, the effects of porosity upon compaction and phase transitions, and the implications for constructing the phase diagram.

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