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Estimating the onset of reaction for porous reactive polymer systems DAVID FREDENBURG, JOSHUA COE, KATIE MAERZKE, DANA DATTELBAUM, JOHN LANG, Los Alamos National Laboratory — Shock-induced volume changes are a feature common to many polymeric materials, where the volume change is associated with decomposition of the inert material into a reacted, 'products' phase. The onset of this transition has been measured experimentally for many materials whose density is near theoretical, and, generally speaking, the onset is restricted to a relatively narrow range in pressures for near solid density materials. For initially porous polymeric materials, characterizing the onset of reaction with changes in initial porosity is much less well defined. The present work examines how the onset of reaction varies with initial porosity for several polymer systems, and presents a methodology for estimating this onset for an arbitrary initial density sample.

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