

Abstract Submitted
for the SHOCK13 Meeting of
The American Physical Society

The Deflagration of Energetic Crystals at Pressures above the Weak Shock Limit STEPHEN GOVEAS, NEIL BOURNE, JEREMY MILLETT, AWE Plc — The response of inert solid to shock loading may be divided into two regimes of contrasting behaviour. In the lower of these, the material deforms in a regime below the theoretical strength of the material where deformation is triggered at discrete flaws within the microstructure at grain boundaries, second-phase particles, or vacancies within the lattice at the higher pressures. There comes a point however, where the theoretical strength of the material is overcome and response becomes truly homogeneous behind the shock front and this point corresponds to the limit of weak shock behaviour within the crystal. Recent work of Zaig discussing burning rate of HMX as a function of pressure is reviewed and the onset of rapid deflagration is shown to commence as the WSL is exceeded. Implications for the shock response of energetic materials are discussed.

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Date submitted: 21 Feb 2013

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