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Simulated Shockwaves in Nanoparticles Embedded Energetics WILLIAM MATTSON, DONALD JOHNSON, JONATHAN MULLIN, US Army Research Laboratory — Practical energetic materials often consist of mixtures of distinct materials formulated to optimize specific properties. Nanoparticles of traditional as well as novel additives, with their large surface to volume ratio, have been of particular recent interest to the energetics community. Using density functional theory, we have simulated high-velocity shocks of an energetic material containing nanoparticles. We will report on simulations of shocks in crystalline PETN embedded with nanodiamonds of different sizes, and at various shock speeds.

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