

Abstract Submitted
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Condensation of carbon during high explosive detonation LAURENCE FRIED, SORIN BASTEVA, RAUL GARZA, Lawrence Livermore National Lab — The formation of nano-carbon clusters is believed to be responsible for the non-ideal detonation behavior of carbon-rich explosives, such as triamino-trinitrobenzene (TATB). We have developed a new model of carbon formation during detonation. The model is based on the assumption that carbon cluster growth has features of both activated Arrhenius kinetics and diffusion controlled kinetics. In our model the variation of temperature, density, and viscosity throughout the high explosive reaction zone and expansion is calculated using a thermochemical model linked to a hydrodynamic code. We compare our model to new experimental results on the size scaling of detonations in TATB-based explosives.

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