

Abstract Submitted
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Measurements of observables during detonator function LAURA SMILOWITZ, BRYAN HENSON, DENNIS REMELIUS, LANL — Thermal explosion and detonation are two phenomena which can both occur as the response of explosives to thermal or mechanical insults. Thermal explosion is typically considered in the safety envelope and detonation is considered in the performance regime of explosive behavior. However, the two regimes are tied together by a phenomenon called deflagration to detonation transition (DDT). In this talk, I will discuss experiments on commercial detonators aimed at understanding the mechanism for energy release during detonator function. Diagnostic development towards measuring temperature, pressure, and density during the extreme conditions and time scales of detonation will be discussed. Our current ability to perform table-top dynamic radiography on functioning detonators will be described. Dynamic measurements of temperature, pressure, and density will be shown and discussion of the function of a detonator will be given in terms of our current understanding of deflagration, detonation, and the transition between the two.

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