

Abstract Submitted  
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**Modeling Ignition of HMX with the Gibbs Formulation**<sup>1</sup> KIBAEK LEE, D. SCOTT STEWART, University of Illinois at Urbana-Champaign — We present a HMX model with the Gibbs formulation in which stress tensor and temperature are assumed to be in local equilibrium, but phase/chemical changes are not assumed to be in equilibrium. We assume multi-components for HMX including beta- and delta-phase, liquid, and gas phase of HMX and its gas products. Isotropic small strain solid model, modified Fried Howard liquid EOS, and ideal gas EOS are used for its relevant component. Phase/chemical changes are characterized as reactions and are in individual reaction rate. Maxwell-Stefan model is used for diffusion. Excited gas products in the local domain lead unreacted HMX solid to the ignition event. Density of the mixture, stress, strain, displacement, mass fractions, and temperature are considered in 1D domain with time histories.

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