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Analysis of the Requirements on Modern Energetics and Their Impact on Materials Design JOSEPH C. FOSTER, JR., NICK GLUMAC, University of Illinois/Urbana-Champaign, D. SCOTT STEWART, University of illinois/Urbaan-Champaign — We have characterized the "design" of explosive materials as represented by the complete suite of engineering specifications on ingredients and processes used in the manufacture of specific components used in various application. The detonation of explosive materials and the associated high power density of this process has historically been an essential element of the design. Evolving requirements such as the desire for insensitive munitions and broadened demands on the control of the power output are producing a new class on energetic materials whose thermo-chemical response to specific intentional trigger mechanisms result in reactive behavior far removed the classical detonation modeling represented by the physics and chemistry of Chapman-Jouguet [CJ] or Zel'dovich, VonNeuman, Doering [ZND] detonation model. Experimental studies of representative designs and analysis of the role of processes controlled by the mesostructure suggest functional paths to establishing the desired output.

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