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Meso-Structural Influences on Energetic Material Response to Thermal Mechanical Loading[1] JOSEPH C. FOSTER, JR.[2], D. SCOTT STEWART, SUNHEE YOO, University of Illinois, Urbana, IL — The engineering design of energetic material is often application specific. In order to analyze the functional relationship between design and application we have adopted the position that the design is defined by the suite of specifications and processes used to fabricate the component. An analysis of this statement leads us to the conclusion that depending on the proposed function there exist a myriad of physical realization of the configuration at the subcomponent level in the design where there exist significant gaps in the specifications. This is particularly true when analyzing the meso-structure of the energetic material. This leads us to an investigation of the relationship between the family of physical configurations allowed by the design specification and our physically based understanding of the functional requirements. Preliminary analysis of specific realizations of allowed configurations high light the range in structure and response based upon specification.

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