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### **Enhancing Reactivity in Structural Energetic Materials<sup>1</sup>**

NICK GLUMAC, Univ of Illinois - Urbana

In many structural energetic materials, only a small fraction of the metal oxidizes, and yet this provides a significant boost in the overall energy release of the system. Different methodologies to enhance this reactivity include alloying and geometric modifications of microstructure of the reactive material (RM). In this presentation, we present the results of several years of systematic study of both chemical (alloy) and mechanical (geometry) effects on reactivity for systems with typical charge to case mass ratios. Alloys of aluminum with magnesium and lithium are considered, as these are common alloys in aerospace applications. In terms of geometric modifications, we consider surface texturing, inclusion of dense additives, and inclusion of voids. In all modifications, a measurable influence on output is observed, and this influence is related to the fragment size distribution measured from the observed residue.

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