

Abstract Submitted
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The Effect of Gaseous Additives on Dynamic Pressure Output and Ignition Sensitivity of Nanothermites JAN PUSZYNSKI, South Dakota School of Mines and Technology, ZAC DOORENBOS, Innovative Materials and Processes, LLC, IAN WALTERS, South Dakota School of Mines and Technology, PAUL REDNER, DEEPAK KAPOOR, Armament Research, Development and Engineering Center, JACEK SWIATKIEWICZ, South Dakota School of Mines and Technology — This contribution addresses important combustion characteristics of nanothermite systems. In this research the following nanothermites were investigated: a) Al-Bi₂O₃, b) Al-Fe₂O₃ and c) Al-Bi₂O₃-Fe₂O₃. The effect of various gasifying additives (such as nitrocellulose (NC) and cellulose acetate butyrate (CAB)) as well as reactant stoichiometry, reactant particle size and shape on processability, ignition delay time and dynamic pressure outputs at different locations in a combustion chamber will be presented. In addition, this contribution will report electrostatic and friction sensitivities of standard and modified nanothermites.

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