Abstract Submitted
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**Iodine Oxide Thermite Reactions: Physical and Biological Effects**[1] ROD RUSSELL, The University of Texas at Austin, Institute for Advanced Technology, MICHELLE PANTOYA, Texas Tech University, STEPHAN BLESS, The University of Texas at Austin, Institute for Advanced Technology, WILLIAM CLARK, Texas Tech University — We investigated the potential for some thermite-like material reactions to kill bacteria spores. Iodine oxides and silver oxides react vigorously with metals like aluminum, tantalum, and neodymium. These reactions theoretically produce temperatures as high as 8000K, leading to vaporization of the reactants, producing very hot iodine and/or silver gases. We performed a series of computations and experiments to characterize these reactions under both quasi-static and ballistic impact conditions. Criteria for impact reaction were established. Measurements of temperature and pressure changes and chemical evolution will be reported. Basic combustion characterizations of these reactions, such as thermal equilibrium analysis and reaction propagation rates as well as ignition sensitivity, will be discussed. Additionally, testing protocols were developed to characterize the biocidal effects of these reactive materials on *B. subtilis* spores. The evidence from these tests indicates that these reactions produce heat, pressure, and highly biocidal gases.

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Sandra Spicher
The University of Texas at Austin, Institute for Advanced Technology

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