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**Chemical Dynamics of nano-Aluminum and Iodine Based Oxidizers.** BRIAN LITTLE, CLARON RIDGE, University of Dayton Research Institute, Energetic Materials Branch, Eglin Air Force Base, FL 32542, KYLE OVERDEEP, DYLAN SLIZEWSKI, MICHAEL LINDSAY, AFRL/RWME, Energetic Materials Branch, Ordnance Division, Eglin Air Force Base, FL 32542 — As observed in previous studies of nanoenergetic powder composites, micro/nano-structural features such as particle morphology and/or reactant spatial distance are expected to strongly influence properties that govern the combustion behavior of energetic materials (EM). In this study, highly reactive composites containing crystalline iodine (V) oxide or iodate salts with nano-sized aluminum (nAl) were blended by two different processing techniques and then collected as a powder for characterization. Physiochemical techniques such as thermal gravimetric analysis, calorimetry, X-ray diffraction, electron microscopy, high speed photography, pressure profile analysis, temperature programmed reactions, and spectroscopy were employed to characterize these EM with emphasis on correlating the chemical reactivity with inherent structural features and variations in stoichiometry. This work is a continuation of efforts to probe the chemical dynamics of nAl-iodine based composites.

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