

Abstract Submitted
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Mid-infrared Molecular Emission Studies from Energetic Materials using Laser-Induced Breakdown Spectroscopy EI BROWN, UWE HOMERICH, Hampton University, CLAYTON YANG, SUDHIR TRIVEDI, ALAN SAMUELS, PETER SNYDER — Laser-induced breakdown spectroscopy (LIBS) is a powerful diagnostic tool for detection of trace elements by monitoring the atomic and ionic emission from laser-induced plasmas. The laser-induced plasma was produced by focusing a 30 mJ pulsed Nd:YAG laser (1064 nm) to dissociate, atomize, and ionize target molecules. In this work, LIBS emissions in the mid-infrared (MIR) region were studied for potential applications in chemical, biological, and explosives (CBE) sensing. We report on the observation of MIR emissions from energetic materials (e.g. ammonium compounds) due to laser-induced breakdown processes. All samples showed LIBS-triggered oxygenated breakdown products as well as partially dissociated and recombination molecular species. More detailed results of the performed MIR LIBS studies on the energetic materials will be discussed at the conference.

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