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Standoff Detection of Nitro Compounds Using Ultrashort Laser Induced Breakdown Spectroscopy¹ TARIQ AHMIDO, Howard University, ANTONIO TING, Naval Research Laboratory, PRABHAKAR MISRA, Howard University — Ultrashort Laser-Induced Breakdown Spectroscopy (LIBS) is being used for the analysis of contaminants on surfaces. In this technique, emission radiation from the breakdown of surface contaminants is spectrally investigated. An ultra short laser pulse (~ 50 fs) produced by a Ti: Sapphire chirped pulse amplification laser at a wavelength of 800 nm is used. The large bandwidth associated with this laser allows it to be propagated and focused transversely and longitudinally at standoff distances to initiate the LIBS. Analysis of the return signatures from remote target locations can indicate the presence of undesirable chemical compounds. The application of this research is to detect surface chemical compounds, such as pollutants and molecules containing the nitro group NO_x. The research focuses on the detection of molecular fragments present in the plasma, which are generated when the laser breaks down the surface. Aspects of generation, detection, and analysis of ultrashort pulse LIBS detection of chemical contaminants will be presented.

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