Laser Induced Breakdown Spectroscopy

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During the period 8-30 Jun 04, I performed research on laser induced breakdown spectroscopy (LIBS) with Dr. Andrzej Miziolek and Dr. Frank C. DeLucia, Jr. at the Army Research Lab in Aberdeen, MD. LIBS has the potential to perform real-time close stand-off detection or identification of chemical and biological agents, buried mines, explosives, pollutants, etc. We worked with a spectrometer system that enables concurrent observation of seven different spectral regions between 200 and 1000 nm. The main challenge is in obtaining reproducible spectral results to ensure reliable discrimination. In one experiment, we examined various different explosive materials. In another, in collaboration with Dr. Russell Harmon, Army Research Office, and Dr. Aaron LaPointe, CECOM Night Vision and Electronic and Sensors Directorate, we tested various different mine casings against items of clutter that might be encountered in a minefield or IED environment. The results are encouraging, and we remain optimistic about the feasibility of this real-time detection system for future use in the field.

KEY WORDS: Laser induced breakdown spectroscopy

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