Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Comparison of Laser-Induced Plasmas and Electrostatic Discharges for Ignition of Energetic Materials ERIC COLLINS, JENNIFER GOTTFRIED, US Army Research Laboratory — Ignition and deflagration experiments with small quantities (5-10 mg) of energetic materials were conducted using either a laser-induced plasma or an electrostatic discharge for ignition. High-resolution emission spectra, time-resolved temperatures, and combustion emission from the deflagration of energetic materials were measured using advanced diagnostics. Ignition of the energetic materials from the extreme environments created by the laser-induced plasma and electrostatic discharge showed similar behavior including particle ejection, heating of particles from the plasma/spark, and a shockwave formation. The shock waves generated by the laser-induced plasma and the electrostatic discharge were analyzed at various energy levels using schlieren imaging.

Gerrit Sutherland
US Army Research Laboratory

Date submitted: 09 Nov 2016 Electronic form version 1.4