Abstract Submitted
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Explosively Generated Plasmas: Measurement and Models of Shock Generation and Material Interactions[1] SAMUEL EMERY, Naval Surface Warfare Center Indian Head EOD Technology Division, MARK ELERT, United States Naval Academy, PAUL GIANNUZZI, Naval Surface Warfare Center Indian Head EOD Technology Division, RYAN LE, United States Naval Academy, DANIEL MCCARTHY, Naval Surface Warfare Center Indian Head EOD Technology Division, IGOR SCHWEIGERT, U.S. Naval Research Laboratory — Explosively generated plasmas (EGPs) are created by the focusing of a shock produced from an explosive driver via a conical waveguide. In the waveguide, the gases from the explosive along with the trapped air are accelerated and compressed (via Mach stemming) to such extent that plasma is produced. These EGPs have been measured in controlled experiments to achieve temperatures on the order of 1 eV and velocities as high as 25 km/s. We have conducted a combined modeling and measurement effort to increase the understanding for design purposes of the shock generation of EGPs and the interaction of EGP with explosive materials. Such efforts have led to improved measures of pressure and temperature, spatial structure of the plasma, and the decomposition/deflagration behavior of RDX upon exposure to an EGP.

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Samuel Emery
Naval Surface Warfare Center Indian Head EOD Technology Division

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