Abstract Submitted
for the SHOCK19 Meeting of
The American Physical Society

High-Throughput Initiation: Flyer and Thin-Film Explosive Characterization[1] ALEXANDER TAPPAN, ROBERT KNEPPER, Sandia National Laboratories, SAMUEL D. PARK, Naval Research Laboratory, RANDAL SCHMITT, STEPHEN RUPPER, JOHNATHAN VASILIAUSKAS, CAITLIN H. O'GRADY, SHAWN C. STACY, MICHAEL P. MARQUEZ, Sandia National Laboratories — Experiments on explosive initiation are important for generating reactive burn modeling parameters yet can be expensive and time-consuming. We present a novel framework for high-throughput testing of explosives based on the well-known microplate standard, which is ubiquitous in the biological sciences. This framework uses a laser-driven flyer similar to that used in numerous laboratories. Experiments on explosive initiation using vapor-deposited explosive samples on transparent substrates using the 96-well microplate standard are presented. These samples are characterized with optical microscopy, stylus profilometry, and scanning electron microscopy. Initiation experiments are performed in the 96-well configuration using laser-driven flyers and photonic Doppler velocimetry. Flyer characterization and shock initiation data are presented.

[1]This work was supported in part by the Joint Department of Defense/Department of Energy Munitions Technology Development Program as well as Sandias Laboratory Directed Research and Development program. Sandia National Laboratories is a multimission laboratory managed and operated by National Technology Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energys National Nuclear Security Administration under contract DE-NA0003525.

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Date submitted: 28 Feb 2019 Electronic form version 1.4