

Abstract Submitted
for the SHOCK19 Meeting of
The American Physical Society

Temperature control in shock physics experiments SANTIAGO MARTINEZ, Los Alamos National Laboratory — Recent efforts to upgrade and modernize shock compression facilities at Los Alamos National Laboratory includes the development of the new Dynamic Equation-of-State (DEOS) impact laboratory. This facility will consolidate the legacy gun systems that have operated in Ancho Canyon since the 1960s with new impact systems that support research around the complex including the TA-55 40mm powder gun, the pRad 40mm powder gun, and experiments at the Advanced Photon Source (Argonne, IL). A significant part of this is the development and modernization of diagnostics including radiance and velocimetry, and the ability to pre-heat and pre-cool targets prior to impact. The latter allows researchers to access different regions of the phase diagram (off the room temperature Hugoniot) to study shock-induced phenomena including solid-solid phase transitions, shock-induced melting, and strength & damage effects, for example. In this presentation, we highlight our target preheating/cooling system available at the new DEOS facility. Bench-top testing that shows required cooling/heating rates, sample fabrication, and test experiments designed to study the melt boundary in materials will be presented.

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Date submitted: 28 Feb 2019

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