

Abstract Submitted
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Progress towards Single Shot Spectroscopic Techniques for Time-Resolved Measurements in the Diamond Anvil Cell DOUGLAS ALLEN DALTON, Geophysical Laboratory, Carnegie Institution of Washington, R. STEWART MCWILLIAMS, M.F. MAHMOOD, Howard University and Geophysical Laboratory, ALEXANDER F. GONCHAROV, Geophysical Laboratory — We will discuss how we are bridging the gap between static diamond anvil cell and dynamic shock experiments using various spectroscopic techniques which utilize nonlinear optics. Using pulsed laser techniques, we can achieve extreme temperatures while probing optical and chemical changes on fast time scales. Recent developments incorporating broadband spectroscopy into the laser heated diamond anvil cell have indicated that probing phase transitions while measuring temperature is possible [1]. Various methods for incorporating nonlinear vibrational spectroscopy (such as CARS) into the diamond anvil cell will be discussed. The application of these optical diagnostics to pulsed laser heating and table-top shock experiments [2] will be presented.

[1] R.S. McWilliams et al., in preparation.

[2] M.R. Armstrong et al., *J. Appl. Phys.*, **108**, 023511, (2010).

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