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[Session C2: Equation of State II: Very High Pressure](#)

11:15 AM–12:45 PM, Monday, June 15, 2015

Room: Grand F

Abstract: C2.00004 : New Hugoniot measurements on LiF and diamond from laser-driven compression

12:00 PM–12:15 PM

[Preview Abstract](#)

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The measurement of materials' equations of state (EOS) is relevant to a variety of applications, ranging from material science to geophysics and planetary science. EOS measurements along a shocked state (Hugoniot) are particularly useful for developing and benchmarking models because they yield data from well-defined thermodynamic states. Impedance-matching (IM) techniques, which are most often used to determine the shock state at multi-megabar pressure, rely on the accuracy of the impedance matching standard. We present new Hugoniot measurements of LiF from 15-30 Mbar, using the recently refined quartz standard, extrapolated to the pressures we achieved in our experiments. We also present the concept and initial experimental results for establishing diamond as an absolute (reference-free) impedance-matching standard up to tens of megabars, using symmetric impact of laser-accelerated diamond flyer plates on diamond windows, and our plans for extending the technique to perform higher-accuracy EOS measurement on opaque materials.

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