Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

**Measurements of Strain-Induced Refractive Index Changes in Shocked and Ramp-Compressed Lithium Fluoride** D.E. FRATANDUONO, M.A. BARRIOS, T.R. BOEHLY, D.D. MEYERHOFER, Laboratory for Laser Energetics, U. of Rochester, R. SMITH, D.G. HICKS, P.M. CELLIERS, J.H. EGGERT, G.W. COLLINS, LLNL — Lithium fluoride is frequently used as a window in equation-of-state experiments because it remains transparent for multishocks up to 5 Mbar. When compressed, its refractive index changes, affecting the sensitivity of velocity interferometry measurements. For shocked LiF, the refractive index has been measured for pressures up to 1.15 Mbar using gas gun flyer-plate experiments. It has become commonplace to extrapolate the linear dependence for higher-pressure experiments, i.e., those above 1.15 Mb. We report on experiments at the Omega/Omega EP Laser Facilities that use laser-driven shocks and ramp compression to compress diamond targets with LiF windows up to 5 Mbar. Diamond-free surface velocity and diamond/LiF interface velocities are measured. By comparing these velocities, the refractive index of compressed LiF is deduced. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

D.E. Fratanduono
Laboratory for Laser Energetics, U. of Rochester

Date submitted: 14 Jul 2009 Electronic form version 1.4