

Abstract Submitted
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Index of Refraction Measurements and Window Corrections for PMMA under Shock Compression DAVID CHAPMAN, Imperial College London, DANIEL EAKINS, DAVID WILLIAMSON, WILLIAM PROUD — Symmetric plate impact experiments were performed to investigate the change in the refractive index of PMMA under shock loading. Flyer and target geometries allowed the measurement of shock velocity, particle velocity, and refractive index in the shocked state, using the simultaneous application of VISAR (532nm) and Het-V (1550nm). The change in refractive index of PMMA as a function of density is generally considered to be well described by the Gladstone-Dale relationship, meaning that the “apparent” velocity measured by a laser velocity interferometer is the “true” velocity, and hence there is no window correction. The results presented characterise the accuracy of this assumption at peak stresses up to 2 GPa.

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