

Abstract Submitted  
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**Hydrodynamic response from oxygen non-uniformities in glow-discharge polymer (GDP) plastic in OMEGA OHRV experiments<sup>1</sup>**  
SUZANNE ALI, PETER CELLIERS, STEVE HAAN, SALMAN BAXAMUSA, MICHAEL JOHNSON, JIM HUGHES, Lawrence Livermore Natl Lab, HANNAH REYNOLDS, BRIAN WATSON, General Atomic — Simulations and target characterization indicated that inhomogeneity in oxygen content could be a significant seed for Rayleigh-Taylor growth in GDP-ablator NIF implosions. This has been indirectly supported by observation of larger than expected in-flight modulations during NIF GDP capsule implosions, and the realization that such inhomogeneities can result from photo-induced oxygen uptake. In order to investigate the magnitude of the effect of these oxygen heterogeneities on the hydrodynamic response of GDP ablaters, oxygen modulations were photo-induced in GDP foils by illuminating the foils with blue light through a periodic mask pattern. The foils were then used as ablaters driven on OMEGA by a halfraum to replicate foot conditions on NIF. The resulting optically reflective shock wave was observed using the OMEGA High Resolution Velocimeter (OHRV). Two-dimensional velocity maps were obtained for both oxygen-modulated and unmodulated samples, with the modulated samples showing clear evidence of the propagation of a rippled shock wave as a result of the photo-induced oxygen heterogeneity.

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