Focused Experiments on High-Z Coating Dynamics on OMEGA EP
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During FY20, the Naval Research Laboratory (NRL) in collaboration with LLE executed two shot days on OMEGA EP. The experiments were designed to study the detailed physics of high-Z coatings that are highly effective for imprint mitigation. Soft x-ray spectra of the indirect-direct hybrid drive with high-Z coatings were obtained using the NRL transmission grating spectrometer (NRL TGS) installed on OMEGA EP. Measurement of coating pre-expansion (Fig. 1) needed to maximize the effect of the coating was obtained using the $4\omega$ probe. High-Z coating dynamics were monitored using streaked soft x-ray self-emission. VISAR (velocity interferometer system for any reflector) and SOP (streaked optical pyrometer) images of the shocks generated in the coated and uncoated foils provide data on shock velocity and uniformity.

![Image](U2667IR)

Figure 1
(a) $4\omega$ probe measurement of coating pre-expansion; (b) streaked soft x-ray emission showing coating dynamics; (c) time-resolved soft x-ray spectrum from NRL TGS measurement; and (d) VISAR streak of a high-uniformity shock from a coated target.