

Abstract Submitted
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Soft X-Ray Narrowband Radiography of Direct-Drive Cryogenic DT Implosions on OMEGA C. STOECKL, R. EPSTEIN, V.N. GONCHAROV, D.W. JACOBS-PERKINS, R.K. JUNGQUIST, C. MILEHAM, S.P. REGAN, T.C. SANGSTER, W. THEOBALD, Laboratory for Laser Energetics, U. of Rochester — Backlit images of cryogenic direct-drive implosions on OMEGA were recorded with a narrowband x-ray imager using an aspherically bent quartz crystal for the Si He $_{\alpha}$ line at ~ 1.865 keV. These implosions are driven on a low adiabat (shell pressure/Fermi degenerate pressure), making them susceptible to Rayleigh–Taylor instabilities. The radiographic images can be used to study the performance of different shell materials like polystyrene and glow-discharge polymer with respect to small-scale mix from laser imprint, and long-wavelength variations of the compressed shell caused by target imperfections and laser illumination nonuniformities. The status of the radiography setup including work to improve the brightness of the backlighter, the alignment accuracy, and the spatial resolution of the imager will be presented. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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