Comparison of Measured Cold-Shell ρΔr Modulation with ORCHID 2-D Simulations: A novel technique enables us to measure for the first time the modulations of the cold, compressed shell at peak compression (i.e., shell integrity). We use a recently developed pinhole-array x-ray spectrometer to obtain images of imploded Ti-doped capsules both above and below the Ti *K* edge. By dividing, point by point, the above-*K*-edge intensity by the below-*K*-edge intensity, we obtain the spatial distribution of the shell opacity. Figure 1(a) shows the map of this opacity, after using a Wiener filter in the Fourier space to reduce noise. Figure 1(b) shows the azimuthally summed (in the Fourier plane) power spectrum of the modulations in opacity, which adds up to a relative rms modulation of 23%. This is also the relative rms modulation in the cold-shell $\rho\Delta r$. Figure 2 shows the corresponding $\rho\Delta r$ modulations calculated by the *ORCHID* 2-D hydrocode. The upper curve is at peak compression. The lower curve is the time-integrated calculation (weighted by the core emission). The relative rms of the time-integrated modulations (24%) agrees well with the experiment (σ <OD>/<OD> = 0.23).

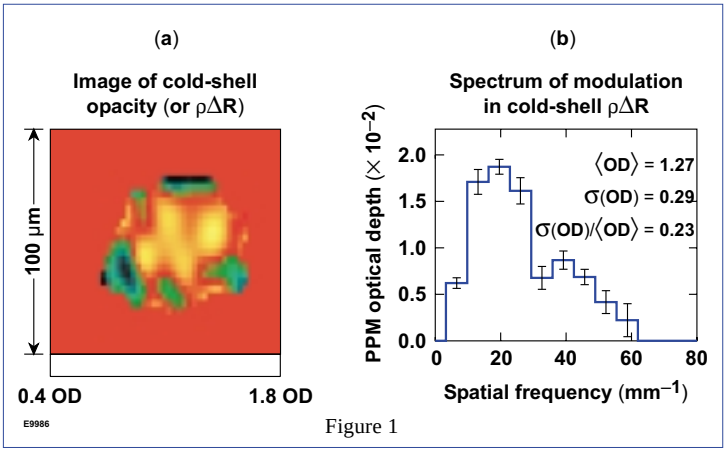

Figure 1

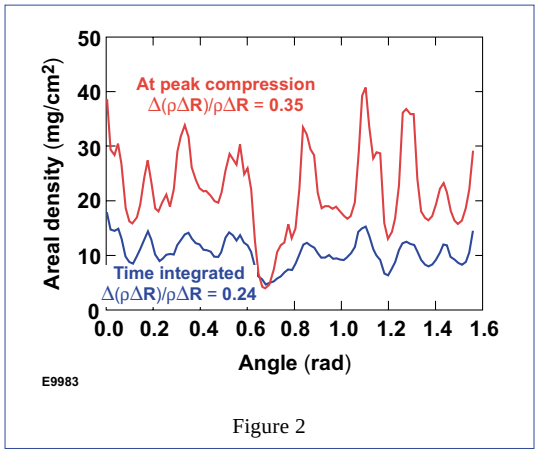

Figure 2

Laser Source: A simple and reliable laser system for UV fiber characterization and streak camera testing has been developed. The block diagram of the system is shown in Fig. 3. A 10-ns FWHM square pulse selected from the monomode laser is amplified and compressed to 350 ps in an SBS cell (carbon tetrachloride). After second-harmonic generation, the 350-ps pulse is further compressed to 20 ps using a pressurized hydrogen SRS cell. The 20-ps pulse is shifted in wavelength by 4156 cm^{-1}. After the SRS compressor the energy of the 20-ps pulse is ~2.5 mJ at 684 nm. The output amplitude fluctuations are ~10% (rms) with a timing jitter of ~100 ps rms. The rep rate of the laser system ranges from single pulse to 10 Hz and is externally triggerable. Short 15- to 20-ps pulses are also available at the 342 nm and 228 nm wavelengths after doubling and tripling of the SRS-compressed pulse.

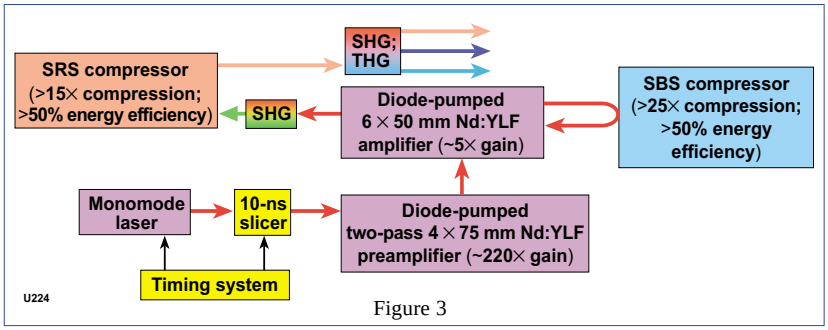

Figure 3

OMEGA Operations: During November, OMEGA was operated for target shots for two weeks and one day. Scheduled maintenance and the installation and activation of 1-THz SSD occupied the remaining time. A total of 67 shots were taken for 10 different campaigns. External users were principal investigators for seven of these campaigns (receiving 45 shots): 9 shots for collaborative [Lawrence Livermore National Laboratory (LLNL) and the United Kingdom's AWE laboratory] supersonic jet experiments; 5 shots for LLNL radiation transport experiments; 6 shots for LLNL polychromatic backlighter development; 5 shots for a LLNL experiment on x-ray backlit implosions (BLIMP); 4 shots for a LLNL experiment on pinhole closure; and 11 shots for a collaborative experiment between the Commissariat à L'Energie Atomique (CEA) of France and LLNL on x-ray conversion efficiency measurements. The LLE campaigns included 18 shots for flat-foil Rayleigh–Taylor instability (RTI) experiments and 4 shots for high-energy electron preheat measurements.

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