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Development of Multi-keV X-Ray Backlighters for Implosion Experiments at the National Ignition Facility[1] K.B. FOURNIER, M.A. BARRIOS, Lawrence Livermore National Laboratory, S.P. REGAN, Laboratory for Laser Energetics, University of Rochester, Y.P. OPACHICH, E. DEWALD, Lawrence Livermore National Laboratory, R. OLSON, Sandia National Laboratories, J. KANE, K. WIDMANN, D. FARLEY, S. ROSS, O. LANDEN, A. MACKINNON, Lawrence Livermore National Laboratory — For ignition experiments at the National Ignition Facility, it is important to know the trajectory and velocity of the capsule's ablator shell, as well as the mass remaining in the ablator at times near peak compression. To make these measurements, high-photon-energy, bright x-ray backlighters are required. Backlighter targets composed of Zn (Z=30), Ge (Z=32) and Br (Z=35) were optimized as a function of target thickness and laser intensity for specific applications to 1-D streaked and 2-D gated radiography of imploding capsule shells. Work will continue with higher-Z foils, specifically Zr (Z=40) and Mo (Z=42) for radiographs of denser, more opaque material. Targets were driven with up to 2 NIF quads, delivering up to 60 kJ of 3ω laser energy. Intensity on target ranged from $5\text{x}10^{14}$ to $\approx 1\times10^{16}$ W/cm^2. We will present the streaked records of the x-ray power emitted from the target, the spectral content of the backlighter signal, and 2-D images of the backlighter emission. Comparison of the backlighter signal to hohlraum background will also be given.

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