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**Bright X-ray Fe K-shell Source Development at the National Ignition Facility** MARK MAY, K.B. FOURNIER, J. COLVIN, M.A. BARRIOS, K. WIDMANN, R. PATTERSON, M. SCHNEIDER, LLNL, S. REGAN, LLE-UR — High conversion efficiency (CE) K-shell sources are being developed for High Energy Density (HED) experiments for use as backlighters and for the testing of materials exposed to high X-ray fluences. Recently, sources with high CE in the Fe K-shell have been investigated at the National Ignition Facility. These targets were 4.1 mm in diameter 4 mm tall hollow epoxy tubes having a 50  $\mu\text{m}$  thick wall supporting a tube of 3.5  $\mu\text{m}$  thick stainless steel. 160 of the NIF laser beams deposited 500 kJ of  $3\omega$  light into the target in a 150 TW 3.3 ns square pulse. This laser configuration sufficiently heated the target to optimize the K-shell emission. The absolute X-ray emission of the source was measured by two calibrated Dantes, which are filtered X-ray spectrometers. Time resolved and time integrated images filtered for the Fe K-shell were recorded to understand the heating of the target. Time integrated high resolution spectra were recorded in the K-shell range. Details of the experiment and CE's will be discussed. This work was done under the auspices of the U. S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344 and Defense Threat Reduction Agency IACRO no. 11-45511, "Research Program for X-Ray Experimentation Cap

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