Abstract Submitted
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Understanding Bright 13 keV Kr K-shell X-ray Sources at the NIF M.J. MAY, J.D. COLVIN, G.E. KEMP, K.B. FOURNIER, H. SCOTT, M. PATEL, WIDMANN BARRIOS, K. WIDMANN, LLNL — High x-ray conversion efficiency (CE) K-shell Kr sources are being investigated for High Energy Density experiments. These sources are 4.1 mm in diameter 4.4 mm tall hollow epoxy tubes having a 40 μm thick wall holding either 1.2 or 1.5 atm of Kr gas. The CE of K-shell Kr is dependent upon the peak electron temperature in the radiating plasma. In the NIF experiments, the available energy heats the source to T_e = 6-7 keV, well below the temperature of T_e $\sim$25 keV needed to optimize the Kr CE. The CE is a steep function of the peak electron temperature. A spatially averaged electron temperature can be estimated from measured He(α) and Ly(α) line ratios. Some disagreement has been observed in the simulated and measured line ratios for some of these K-shell sources. Disagreements have been observed between the simulated and measured line ratios for some of these K-shell sources. To help understand this issue, Kr gas pipes have been shot with 3ω light at ?750 kJ at $\sim$210, $\sim$140 TW and $\sim$120 TW power levels with 3.7, 5.2 and 6.7 ns pulses, respectively. The power and pulse length scaling of the measured CE and K-shell line ratios and their comparison to simulations will be discussed. This work was performed under the auspic

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