

Abstract Submitted
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Development Of Hard X-Ray Sources With High Radiative Power Output At The National Ignition Facility Utilizing Molybdenum and Silver Cavities¹ KLAUS WIDMANN, RUSS BENJAMIN, MARK MAY, DANIEL THORN, JEFF COLVIN, MARIA BARRIOS, G. ELIJAH KEMP, KEVIN FOURNIER, BRENT BLUE, LLNL — In our on-going x-ray source development campaign at the National Ignition Facility, we have recently extended the energy range of our laser-driven cavity sources to the 20 keV range by utilizing molybdenum-lined and silver-lined cavity targets. Using a variety of spectroscopic and power diagnostics we determined that almost 1% of the nearly 1 MJ total laser energy used for heating the cavity target was converted to Mo K-shell x rays using our standard cavity design. The same laser drive for silver-lined cavities yielded about 0.4% conversion efficiency for the Ag K-shell emission. Comparison with HYDRA simulations are used to further optimize the x-rays conversion efficiency. The simulations indicate that minor changes in the aspect ratio of the cavity and the layer thickness may double the radiative power of the K-shell emission.

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