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Searching for efficient Z-pinch L-shell Radiators using Cu, Mo, and Ag Single Planar Wire Arrays on 1.6 MA ZEBRA at UNR A.S. SAFRONOVA, V.L. KANTSYREV, A.A. ESAULOV, N.D. OUART, M.F. YILMAZ, V. SHLYAPTSEVA, I. SHRESTHA, K.M. WILLIAMSON, M.E. WELLER, G.C. OSBORNE, UNR, C.A. COVERDALE, SNL, C. DEENEY, DOE — The comparative analysis of the results of recent experiments with single planar wire array (SPWA) loads made from Cu, Mo, and Ag performed on 1.6 MA Zebra at UNR is presented. The diagnostic set included a bolometer, x-ray detectors, laser shadowgraphy, x-ray time-gated and integrated imaging, and x-ray time integrated spatially resolved and time-gated spatially integrated spectrometers. The x-ray yields from such mid-Z_a SPWAs exceed twice those from low-Z_a wire arrays such as Al PWAs, increase with Z_a, and reach more than 24 kJ for Ag. The size of the x-ray source decreases as Z_a increases, which lowers the opacity effects. The maximum L-shell plasma electron temperature increases as Z_a increases, up to 1.4 keV for Mo and Ag. These results and the developed models have much broader application, not just only for SPWAs on Zebra, but for higher current Z-pinch generators such as Z at SNL. This work was supported by NNSA under DOE CA DE-FC52-06NA27588, DE-FC52-06NA27586, and in part by DE-FC52-06NA27616. Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the US DOE under Contract DE-AC04-94AL85000.

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