

Abstract Submitted  
for the 4CF13 Meeting of  
The American Physical Society

**Bright X-ray Sources from Ultra-high Density Matter in Volumetrically Heated Nanowire Arrays**<sup>1</sup> AMANDA TOWNSEND, REED HOLLINGER, CLAYTON BARGSTEN, MICHAEL PURVIS, DAVID KEISS, CHRIS BENTON, AMY PRIETO, Colorado State University, ALEXANDER PUKHOV, Heinrich-Heine-Universitat, V.N. SHLYAPTSEV, JORGE ROCCA, Colorado State University — Trapping femtosecond laser pulses of relativistic intensity within ordered nanowire arrays results in the volumetric heating of matter to multi-KeV, near solid density plasmas. Using high contrast pulses of 60fs FWHM duration from a frequency doubled Ti:Saph laser, we irradiated arrays of 55nm and 80nm diameter Au and Ni targets with 12% of solid density at intensities of  $5 \times 10^{18} \text{ Wcm}^{-2}$ . We observed strong He-like line emission that surpassed the characteristic K- $\alpha$  emission by an order of magnitude. The Au nanowire spectrum displayed strong Au M-shell emission with unresolved 4-3 lines from ions ranging from Co-like to Ga-like Au. Filtered photodiode measurements show a  $\sim 100x$  emission increase with respect to smooth solid targets for photon energies  $>9\text{keV}$ .

<sup>1</sup>Work supported by Defense Threat Reduction Agency grant HDTRA- 1-10-1-0079 and by the HEDLP program of the Office of Science of the U.S Department of Energy. Equipment developed under NSF grant MRI-ARRA 09-561. A.P was supported by DFG-funded project TR18

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Date submitted: 20 Sep 2013

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