

Abstract Submitted
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Demonstration of saturated tabletop soft x-ray lasers at 5 Hz repetition rate in transitions of Ne-like ions with wavelengths near 30 nm¹ YONG WANG, MIGUEL A. LAROTONDA, DAVID ALESSI, BRADLEY M. LUTHER, MARK BERRILL, NSF ERC for Extreme Ultraviolet Science and Technology, Colorado State University, VYACHESLAV N. SHLYAPTSEV, Dept. of Applied Science, University of California Davis-Livermore, JORGE J. ROCCA, NSF ERC for Extreme Ultraviolet Science and Technology, Colorado State University — Recent experiments have demonstrated that the laser pump energy required to operate collisional soft x-ray lasers in the gain saturated regime can be significantly reduced by directing the heating pulse into the plasma at grazing incidence for a more efficient energy deposition [1-2]. Optimization of the incidence angle led to gain-saturated operation at 5Hz repetition rate in several transitions of Ni-like ions at wavelengths ranging from 18.9nm to 13.2nm [3]. We report saturated high repetition rate laser-pumped table-top soft x-ray lasers in Ne-like ions at wavelengths near 30nm. Gain-saturated lasers operating at 5Hz repetition rate were obtained in Ne-like Ti at 32.6nm and in Ne-like V at 30.4nm heating plasmas with laser pulses of ~ 1 J and 8ps impinging at 20° grazing incidence. Average powers $> 1\mu$ W were measured. Strong lasing was also observed in Ne-like Cr at 28.6nm. 1. R. Keenan et al, Phys. Rev. Lett., 94, 103901, (2005). 2. B. M. Luther et al, Opt. Lett., 30, 165, (2005). 3. Y. Wang et al, submitted to Phys. Rev. A, (2005).

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