

XUV AND SOFT X-RAY RADIATION FROM LASER PRODUCED  
PLASMAS AS LABORATORY SPECTROSCOPIC SOURCES\*

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Laser produced plasmas have been shown to be excellent sources for applications in the XUV and soft X-ray spectral region. We are using a 550 mj, 25 ns (FWHM) ND:YAG laser operating at a repetition rate of 10 Hz to produce plasmas above rotatable solid targets. The focal spot of the laser beam with a 31 cm lens was measured to be  $170\mu\text{m}$  (approximately twice the diffraction limit), using a diode array having a  $17\mu\text{m}$  resolution. Broadband output in the soft X-ray region was studied using a windowless PIN photodiode with an  $\text{Al}_2\text{O}_3$  surface covered with a polyethylene filter with transmission between  $244\text{ \AA}$  and  $120\text{ \AA}$ . Results are presented for the source's soft X-ray intensity for several elements as a function of laser energy, focus and driving wavelength, as are preliminary results using the source for high resolution spectroscopy and for soft X-ray lithography.

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