1. Title:	Table-Top EUV Lasers for Metrology
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3. Abstract body:

To date most at-wavelength metrology for EUV lithography has been conducted at synchrotron facilities. There is significant interest in the development of compact coherent EUV sources for interferometry and imaging of defects. We will summarize the recent progress in the development of table-top EUV lasers operating in the vicinity of 13.5 nm that are promising sources of coherent light for metrology. We have demonstrated the generation of laser average powers of 1-2 microwatt at 13.2 nm and 13.9 nm in transitions of Ni-like Cd and Ag atoms respectively. Laser amplification occurs in a laser created plasma heated by a 1J short pulse Ti:Sapphire laser. The characteristics of the EUV radiation produced by these lasers will be discussed.

We have recently used these new EUV lasers as the illumination source for a table-top EUV microscope. This microscope, using zone plate condenser and objective lenses, has achieved a spatial resolution better than 38 nm. High resolution, broad area images in transmission were obtained with exposure times of 6-30 seconds. Possible operation of this microscope in reflection mode to image defects on EUV lithography masks will be discussed along with the possible use of these lasers in other metrology tasks, such as EUV interferometry.