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### **Title**

Nanometer-scale imaging with compact soft x-ray lasers

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## Nanometer-scale imaging with compact soft x-ray lasers

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### Abstract

We have demonstrated imaging at soft x-ray wavelengths in transmission and reflection modes using high repetition rate table-top soft x-ray lasers. Transmission mode imaging with a resolution better than 50 nm was demonstrated using the output from a 13.9 nm Ni-like Ag laser in combination with condenser and objective Fresnel zone plate optics. Reflection mode imaging of a microelectronic chip with a resolution of 120-150 nm was demonstrated using the illumination provided by the 46.9 nm output from a compact capillary-discharge Ne-like Ar laser. This microscope combines a Schwarzschild condenser and a zone plate objective. The results demonstrate the feasibility of practical nanometer-scale microscopy with compact soft-x-ray laser sources.

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