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Extreme Ultraviolet lithography by de-magnified generalized Talbot imaging LUKASZ URBANSKI, Colorado State University, ARTAK ISOYAN, University of Wisconsin, Madison, AARON STEIN, Center for Functional Nanomaterials, Brookhaven National Laboratory, CARMEN MENONI, JORGE ROCCA, MARIO MARCONI, Colorado State University, NSF ERC for EUV science and technology, COLORADO STATE UNIVERSITY, NSF ERC FOR EUV SCIENCE AND TECHNOLOGY COLLABORATION, UNIVERSITY OF WISCONSIN, MADISON COLLABORATION, CENTER FOR FUNCTIONAL NANOMATERIALS, BROOKHAVEN NATIONAL LABORATORY COLLABORATION — We present first to our knowledge demonstration of Extreme Ultraviolet (EUV) lithography scheme based on de-magnified generalized Talbot imaging. A self image of a periodic mask is de-magnified and recorded in photoresist resulting in a scaled down image of the mask. De-magnification is achieved by introducing a converging beam illumination. The illumination source is 46.9nm neon-like argon laser, which emits highly temporally and spatially coherent EUV light. This laser provides high resolution printing due to short wavelength of illumination. Presented method enables cost effective, high resolution printing of arrays of arbitrary patterns over large areas in a noncontact mode which can be further de-magnified by several tens of percent.

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