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Performance of EUV photoresists on the ALS micro exposure tool

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Abstract

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Performance of EUV photoresists on the ALS micro exposure tool

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The new high NA (0.3) Micro Exposure Tool at the Advanced Light Source (MET@ALS) at Lawrence Berkeley National Laboratories provides the first opportunity to evaluate the ultimate resolution capabilities of chemically amplified resists using EUV lithography. We characterized the imaging capabilities of a well-known tool-test resist (EUV-2D, XP98248B) and a new high resolution resist (MET-1K, XP3454C). Emphasis was placed on evaluating resists for focus and exposure latitude at 50 nm dense and isolated lines. MET-1K is capable of resolving 30 nm lines and shows modulation in 25 nm dense lines. We describe some early process optimization experiments using MET-1K that show further advances in lithographic capability. Another new series of resists (MET-2A, 2B, 2C, 2D) also show great promise for good resolution, LER and sensitivity.