EUV actinic mask inspection using coherent scattering methods

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Actinic pattern inspection of EUV masks is considered as essential for the EUV lithography. Nevertheless, there is no available solution yet. The main challenges for any mask defect inspection platform are resolution, sensitivity, and throughput, which become increasingly difficult for future technology nodes and in particular for EUV. We are developing a reflective-mode EUV mask scanning lensless imaging microscope to provide actinic mask inspection capabilities for defects and patterns with high resolution and high throughput, for node 7 and beyond. The inspection is performed scanning the reticle with a coherent EUV beam and recording the diffraction patterns with high NA. In this paper, we demonstrate the capabilities of our tool and show recent results. We also describe the status and outlook of the experimental platform with the aim of development of a stand-alone actinic pattern inspection tool for EUV masks.