



1. Title:	Recent imaging results from the RIM-13 high-resolution EUV aerial image microscope
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3. Abstract body:

The Exitech RIM-13 is a fully automated tool for at-wavelength inspection of aerial images produced by EUV lithography masks, facilitating mask-defect printability studies. Its 10x, 0.0625 NA EUV objective, images the mask onto a single crystal scintillator. The resulting, green, fluorescent image is reimaged, further magnified by a visible microscope, onto a cooled CCD camera. Total magnification can be set to 250x, 500x or 750x. The Kohler EUV condenser system illuminates a 50 micron diameter mask area at 6° angle of incidence, with adjustable partial coherence. Hence, the optical system of a 0.25NA 4x demagnification exposure tool (0.0625NA at the mask) is faithfully emulated.

The RIM-13 software facilitates image acquisition and analysis. It is optimised to predict defect printability and effect on resist process windows. This defect analysis application adjusts tool settings and acquires images, as required, with minimal prompting from the analyst. The only operator intervention necessary is to load SMIF pods into the reticle loader.

Here, we present recent results from RIM-13 inspection of patterned EUV reticles and show how the RIM-13 software is used to analyse images. We use this software and other techniques to derive the key performance parameters of the tool: resolution, magnification, stability, etc.