Recent developments in EUV photomask metrology

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EUV masks could be introduced for some critical layers at the 7nm technology node, so metrology has to keep pace with the demanding mask specifications. For the critical dimension of the structured absorber, measurement capabilities rapidly approaching 1nm for variations across the mask and for mask to mask variation with a target line width of 50nm and below.

We report about recent developments to tackle this task and focus on two aspects. The first aspect is the actual 3D shape of the absorber, in order to expand the description of the lithographic behavior beyond the (abstract) absorber width. The second aspect is the importance of standards. In cooperation with PTB we try to establish an EUV photomask artifact for small targets and get 3D information by combining SEM, AFM and scatterometry.