1. Title:	Development and evaluation of EUV mask substrates
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3. Abstract body:
Critical challenges on the substrates for an EUV mask are to achieve high flatness of less than 50 nm and low defects at smaller size on LTE (Low Thermal Expansion) glass substrates, simultaneously. Furthermore, the substrates must meet other specifications such as HSFR and local slope. In order to achieve high flatness of less than 50 nm, the substrates was produced by mainly local polishing process using NC (Numerical Control). Flatness was measured by a flatness measurement tool with high accuracy. HSFR and local slope were measured by AFM and optical profiler, respectively. Defect quality was inspected by M1350 produced by Lasertec. ULE of Corning was mainly used as LTE material.

As a LTE material has not same chemical stability to conventional quartz, optimization of polishing and cleaning processes for a LET material was performed. LTM glass substrates with low defects and high flatness of less than 100 nm were obtained by the optimized process. HSFR and local slope are measured for the substrates. The latest performance on the substrates for an EUV mask will be presented.