

EUV Mask Technical Session

Panel Discussion #1: LTEM & Substrates

Customer

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Strategy of SCHOTT Lithotec

- SL stopped polishing LTEM substrates and focuses on blank development
- SL continues providing LTEM (Zerodur for stages, frames, substrates, ...)
- Cooperation with different polishers ongoing, partly including feedback/support/know-how transfer from SL
- SL-partners are expected to commercialize LTEM substrate polishing
- Cleaning and defect inspection: SL has prolonged cooperation with Sematech (MBDC)
- Current status of LTEM polishing
 - 70nm flatness on both sides (142 mm x 142 mm)
 - HSFR of 1.7 Å rms
 - Local slope of 2.3 mrad ($250 \text{ nm} < \lambda_{\text{spatial}} < 5 \mu\text{m}$)

Risk issues

■ LTEM

- IP might become a concern for commercialization of Ti-doped fused silica
- Striae of TiO₂-doped fused silica can limit the improvement of substrate flatness, thickness variation and MSFR

■ LTEM-Polishing

- Substrate defect density to be improved, but will no showstopper observed
- High price of tooling (e.g. defect inspection) and limited quantities of needed substrates endanger improvements needed according to ITRS