SUPPLEMENTARY MATERIAL

# Advanced wafer scale uniformity characterization method for conformal 3D thin films

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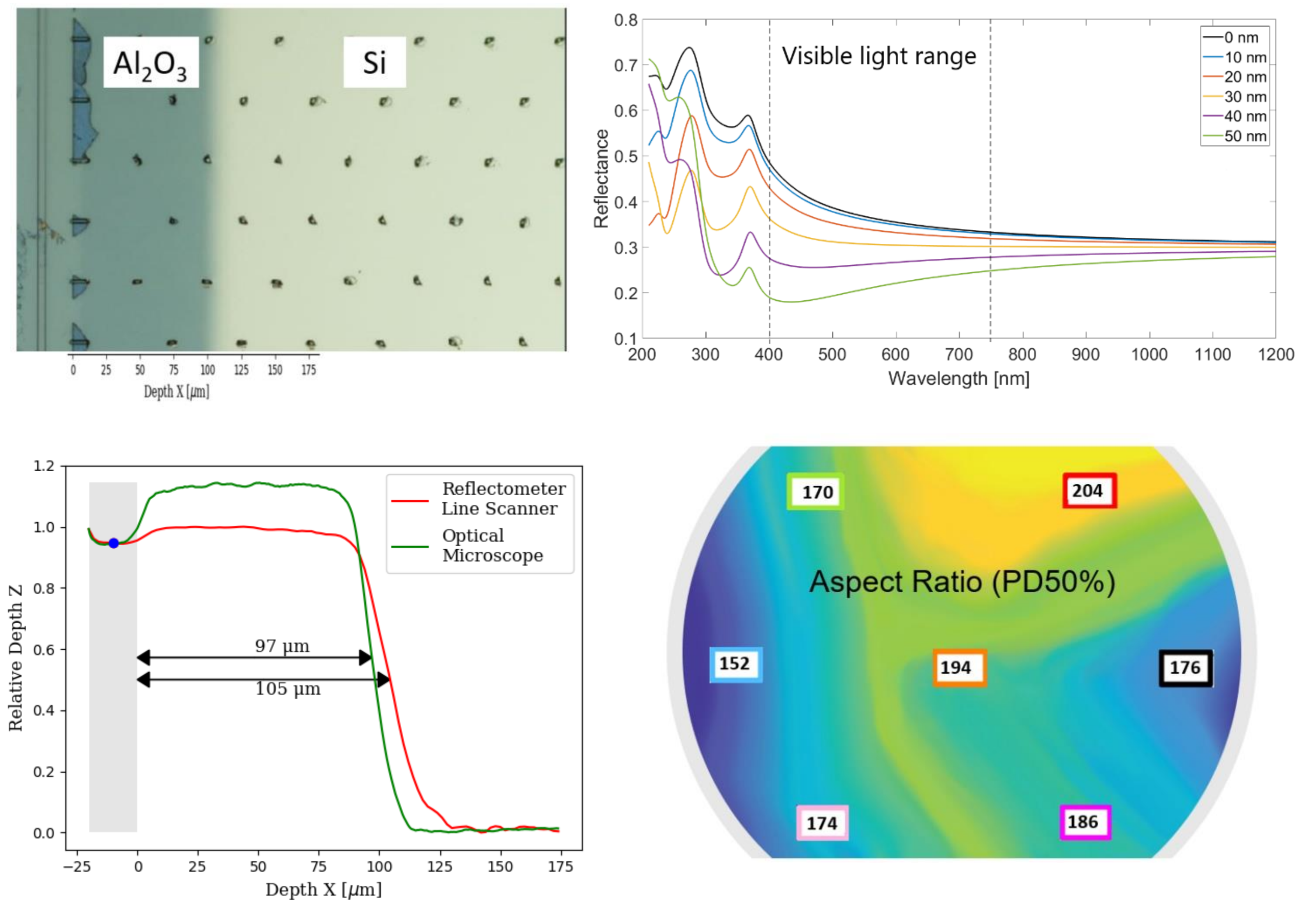


**Figure 1.** Results of ALD $Al_2O_3$ (TMA+$H_2O$) at 300C, 500 cycles, thickness average 47.2 nm (stdev 0.2 nm over wafer area) deposited onto PillarHall™ LHAR test chips placed on the Si carrier wafer.
**Up-left:** Optical microscope image of the LHAR test structure after removal of the roof membrane.
**Up-right:** Modelled reflectivity from ALD $Al_2O_3$ coated silicon substrate with coating thicknesses ranging from 0 to 50 nm at wavelength range of 210 to 1200 nm. Dashed vertical lines separate the visible range observed with the optical microscope. Reflectivity was calculated for unpolarised light at direct incidence angle.
**Down-left:** Film penetration depth PD50% (*penetration depth in 50% of thickness*) calculation by optical microscope image analysis and from reflectometer line-scan reference measurement.
**Down-right:** Visualized conformality map in 150 mm silicon wafer by using PD50% values from the optical microscope image analyses of 7 PillarHall chips placed evenly on the carrier wafer.