

Raith 150 - Lithography

RAITH150 is used for ultra high resolution patterning, pattern inspection and dimensional metrology. It has the ability to handle wide range of samples including up to 8 inch wafers.

Specifications :

- TFE Filament with Beam size ≤ 2 nm at 20KV
- Beam current range 5 pA - 20 nA
- Beam energy 100 eV - 30 keV
- Stage travel range 150 x 150 x 20 mm
- Current density $\geq 20,000$ A/cm²
- Current stability ≤ 0.5 % / 8 hours
- Minimum line width < 20 nm
- Stitching accuracy ≤ 40 nm (mean +3 sigma)
- Overlay accuracy ≤ 40 nm (mean +3 sigma)

Process capabilities:

- Imaging, Lithography, EBID

Imaging

- Substrates used: Si, Sapphire, Pt-Si, Glass plate
- Substrate history: Powdered sample cannot be used, Non-conducting sample need 10~20nm Au/Al coated on them to avoid charging.
- Substrate size: For surface imaging- small pieces up to 100mm or 4" wafer; for cross sectional imaging at 45deg: (20mmW x 10mmH) at max 90deg: (20mmW x 7mmH)

Lithography

- Substrates used: same as above
- Resist used: PMMA (950K, 495K), XR 1541(2%)

Deposition

- Substrates used: Si (till now)
- Substrate Size: Small pieces (up to 10 mm) to 2" wafer
- Materials that can be deposited: Platinum, Tungsten, SiO₂
- Patterned deposition only or pads up to 50um can be deposited depending on the time and precursor availability.

