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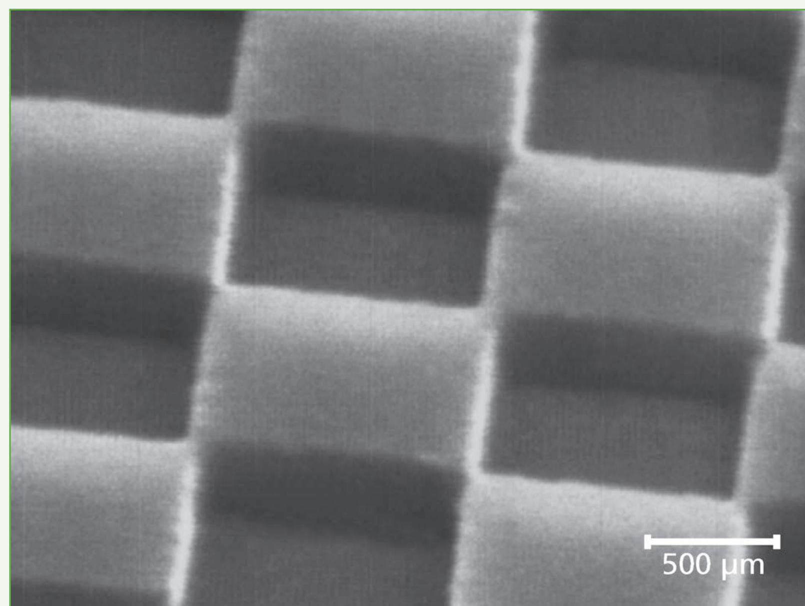
micro resist technology

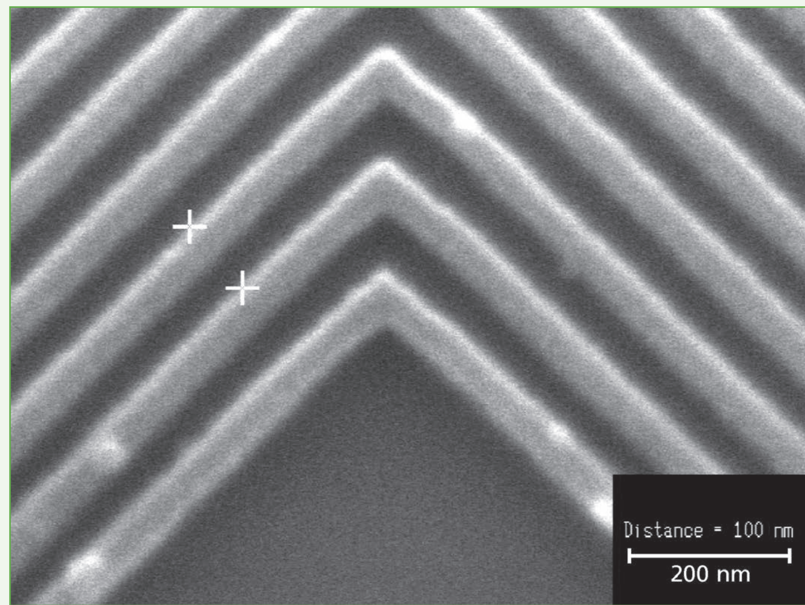
ma-N 2400 and mr-EBL 6000 - Negative Tone Photoresists

For thin Film E-beam or Deep UV Lithography

ma-N 2400 – E-beam and Deep UV sensitivity



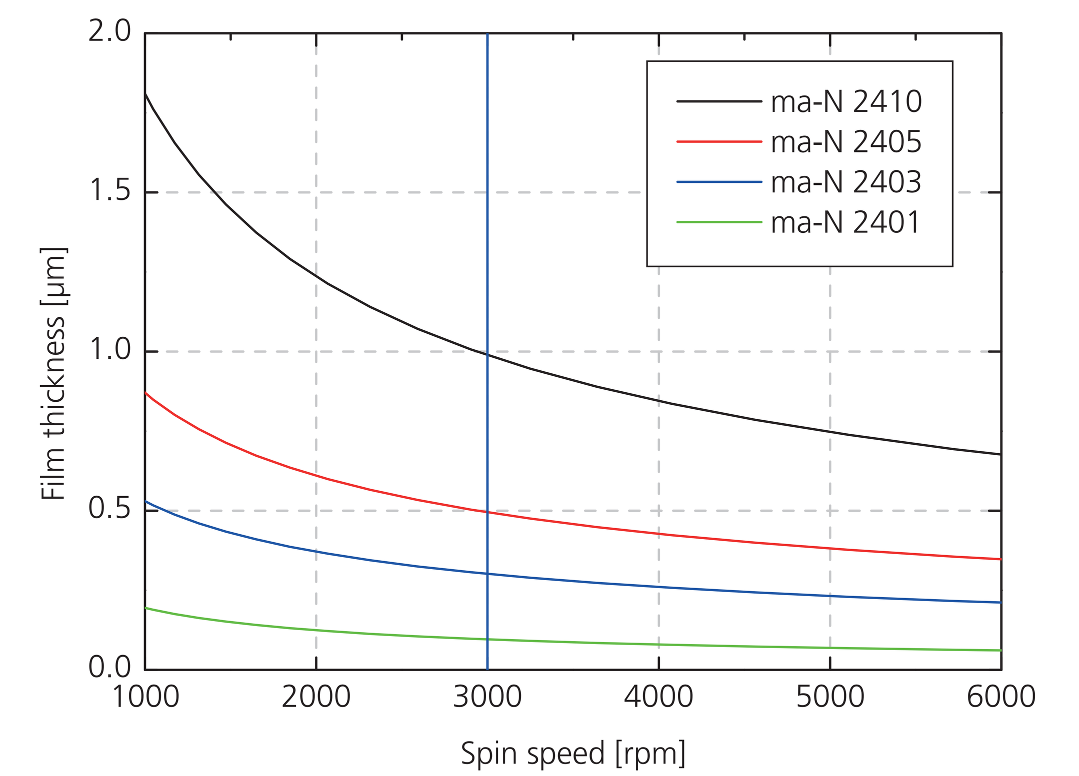
300 nm thick, chess pattern, e-beam
(Courtesy of IPHT Jena - Germany)



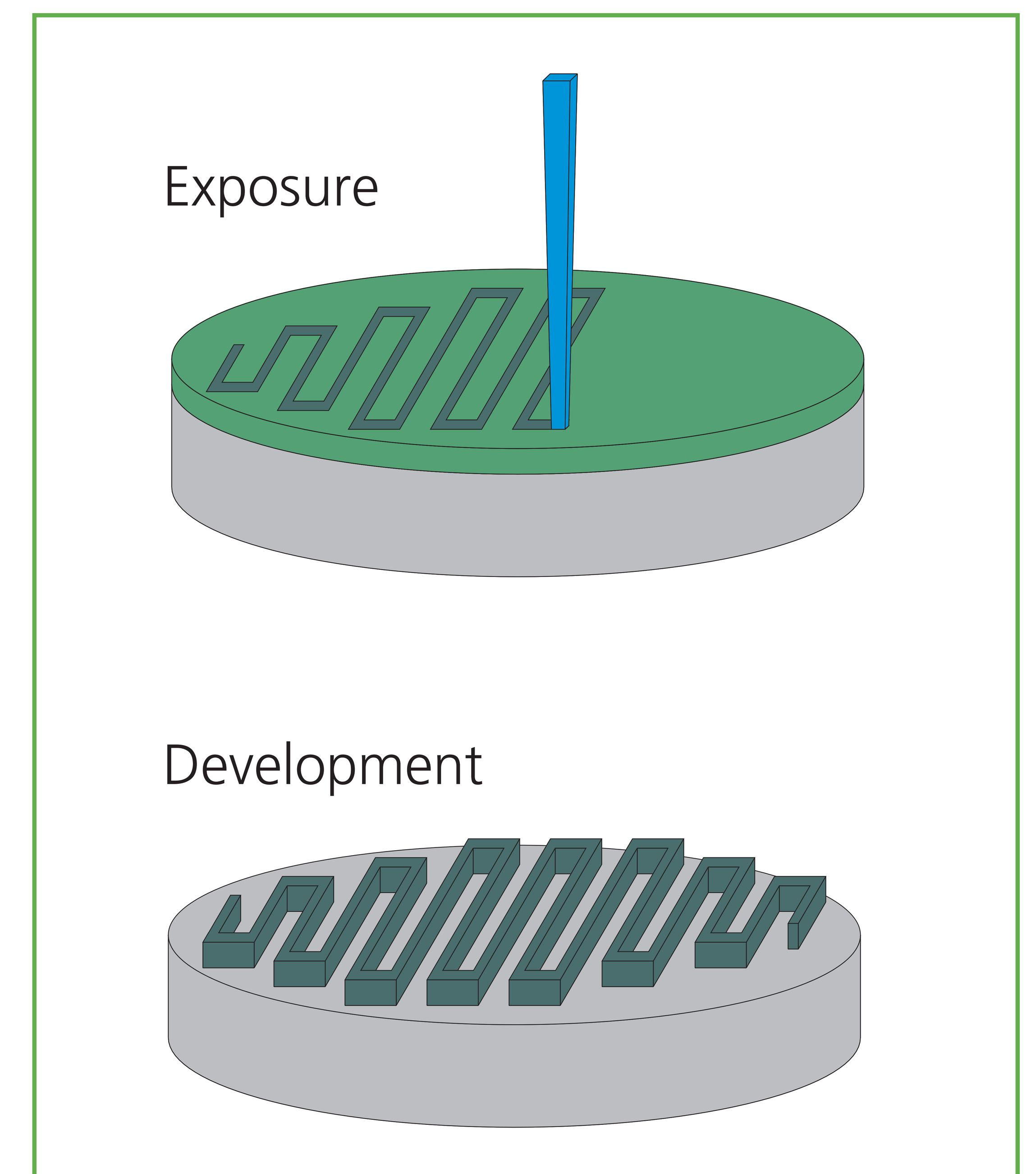
100 nm thick, 50 nm L/S, e-beam
(Courtesy of Fraunhofer HHI/Berlin - Germany)

Unique features

- ✓ **E-beam sensitivity:**
  - 120 - 250 µC/cm² @ 20 keV
  - 100 - 350 µC/cm² @ 50 keV
- ✓ **Deep UV sensitivity:**
  - 210 - 420 mJ/cm² @ 248/254 nm
- ✓ Aqueous alkaline development
- ✓ No post exposure bake
- ✓ Easy to remove
- ✓ Good thermal stability of the resist patterns
- ✓ High wet and dry etch resistance
- ✓ Good pattern transfer fidelity
- ✓ Resolution capability: 50 nm

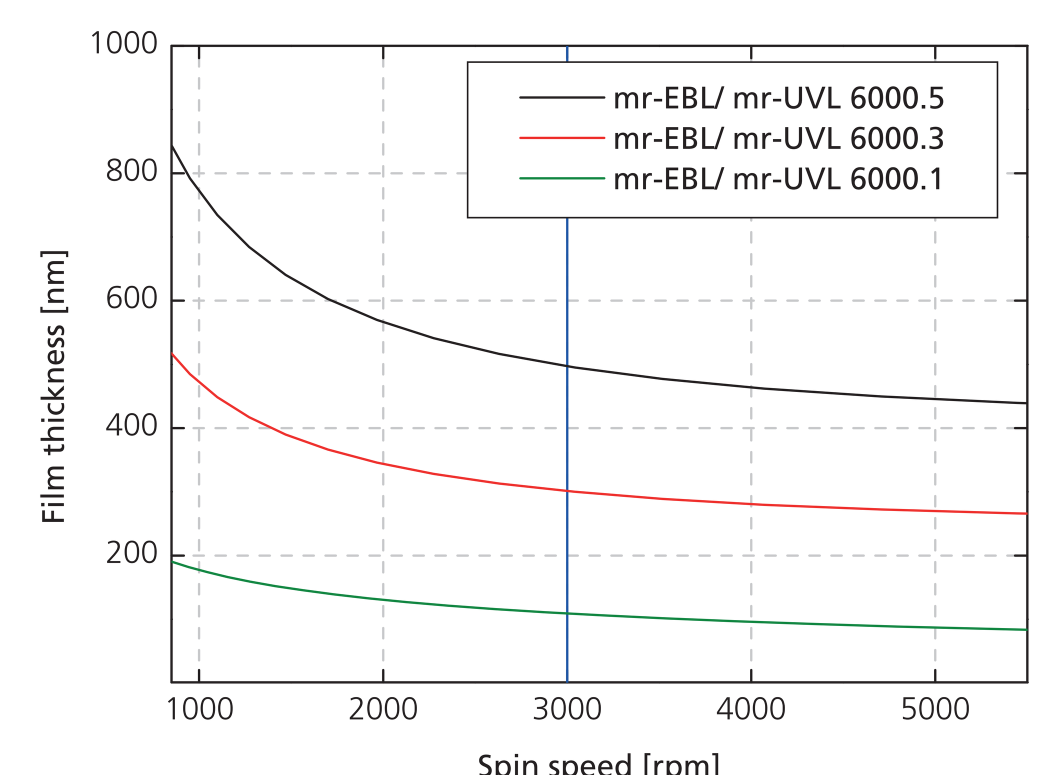


Process Flow

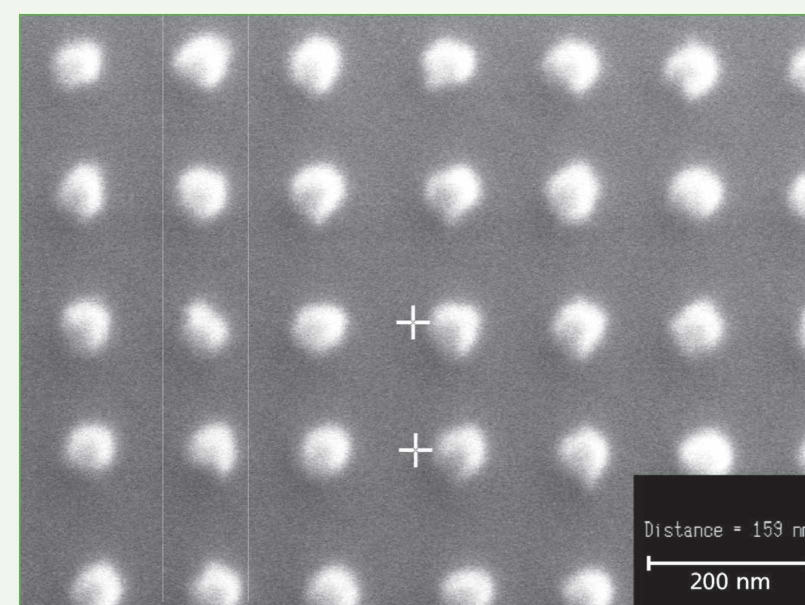


Applications

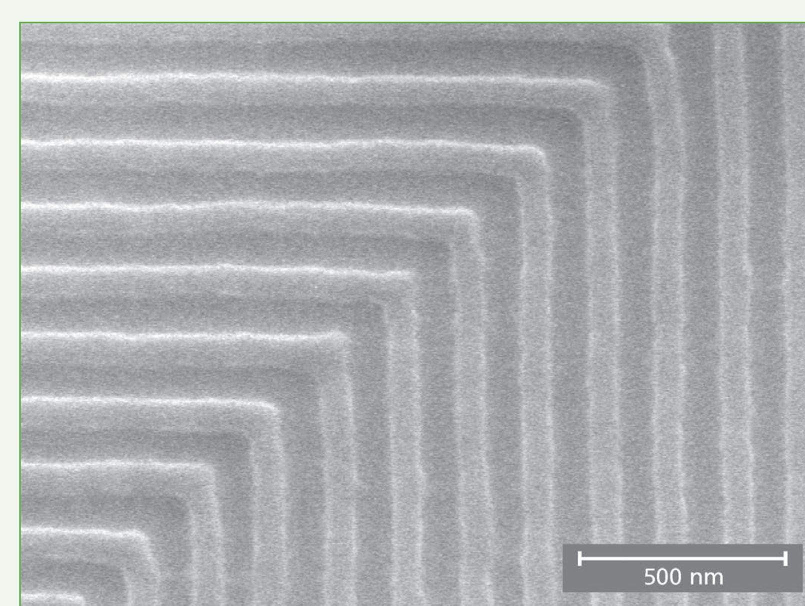
- Use in micro- and nanoelectronics
- Manufacturing of semiconductor devices
- Mask for etching, e.g. of Si, SiO_2, Si_3N_4 or metals
- Generation of sub 100 nm pattern
- Generation of stamps with nanopatterns



mr-EBL 6000 – High E-beam sensitivity



100 nm thick, 80 nm dots, e-beam



100 nm thick, 80 nm L/S, e-beam
(Courtesy of Fraunhofer HHI/Berlin - Germany)

Unique features

- ✓ **E-beam sensitivity:**
  - 2 - 5 µC/cm² @ 10 keV
  - 4 - 6 µC/cm² @ 20 keV
  - 20 - 40 µC/cm² @ 50 keV
- ✓ Post exposure bake (PEB) necessary
- ✓ Development in organic solvents
- ✓ Excellent thermal stability of the resist patterns
- ✓ High dry and wet etch resistance
- ✓ Good pattern transfer fidelity
- ✓ Resolution capability: 80 nm