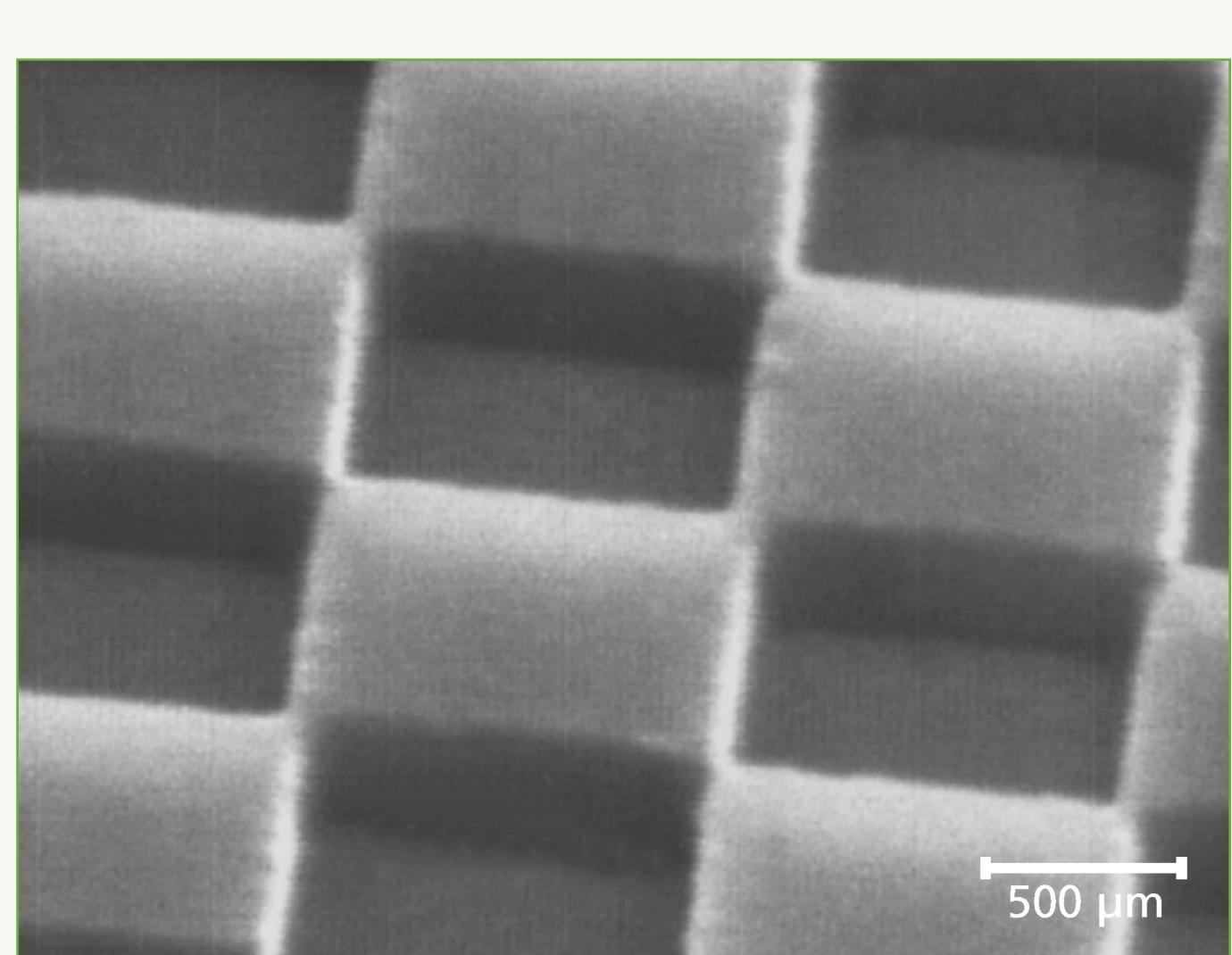


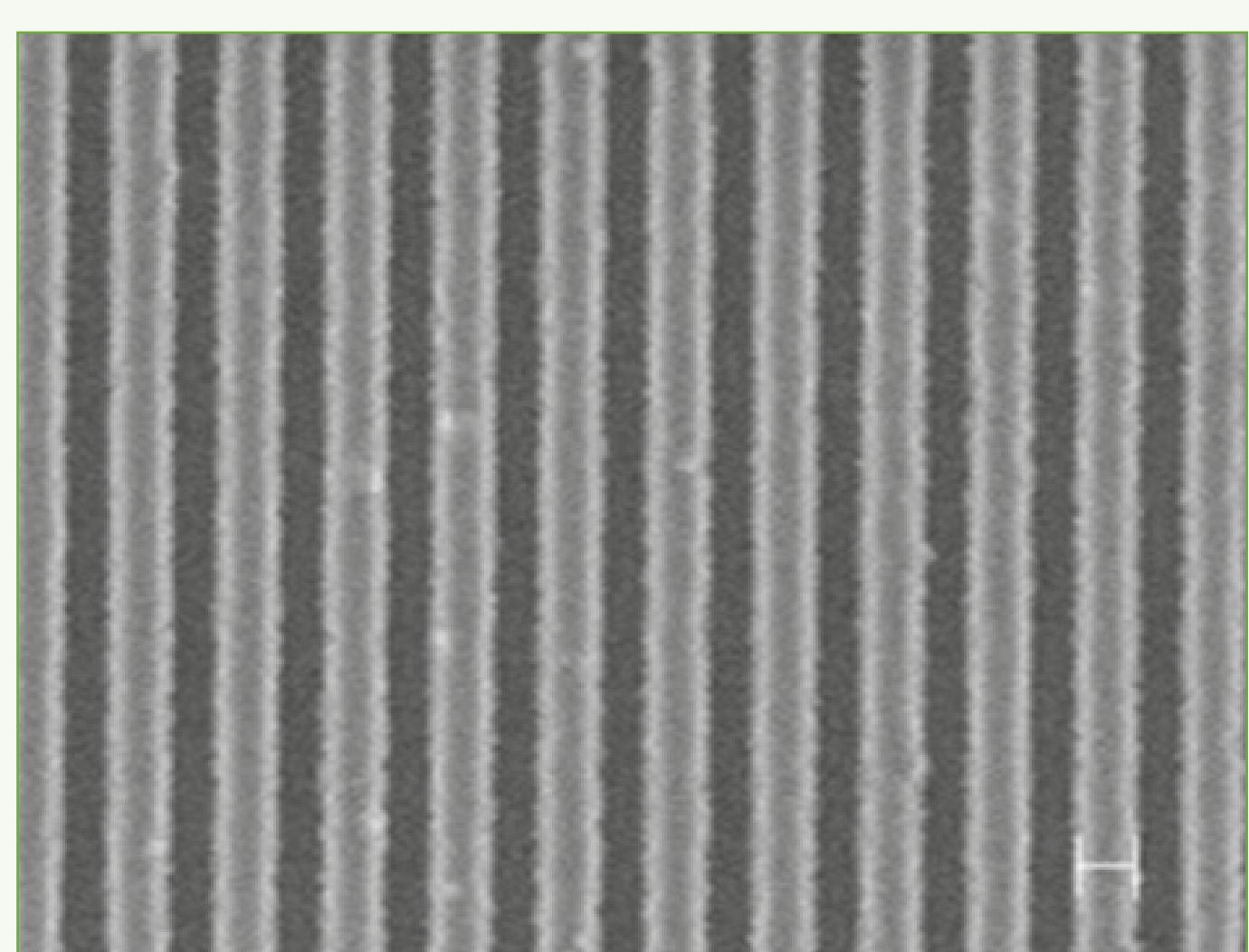
ma-N 2400 and mr-EBL 6000 - Negative Tone Photoresists

For thin Film E-beam or Deep UV Lithography

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



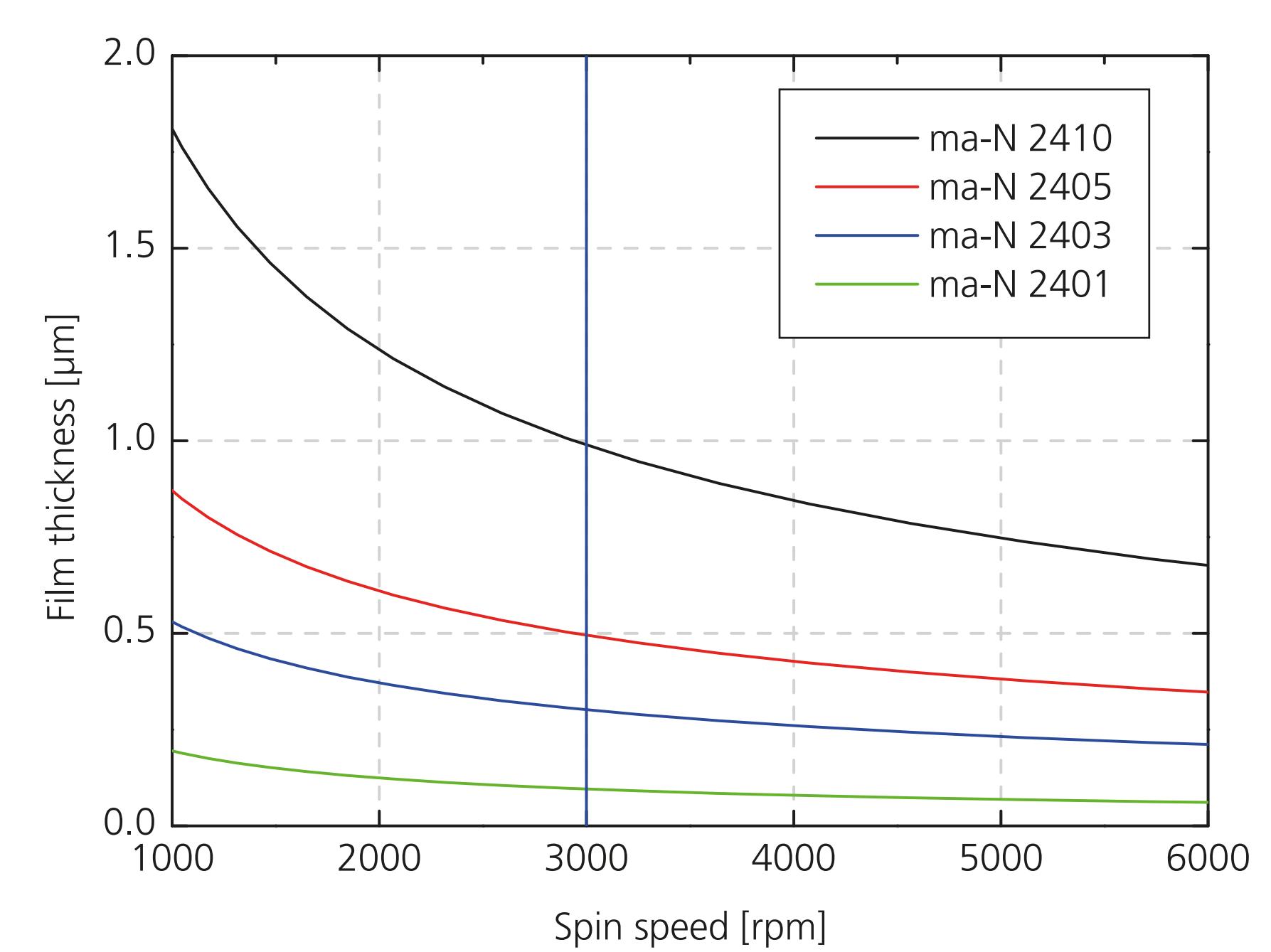
300 nm thick, chess pattern, e-beam
 (Courtesy of IPHT Jena - Germany)



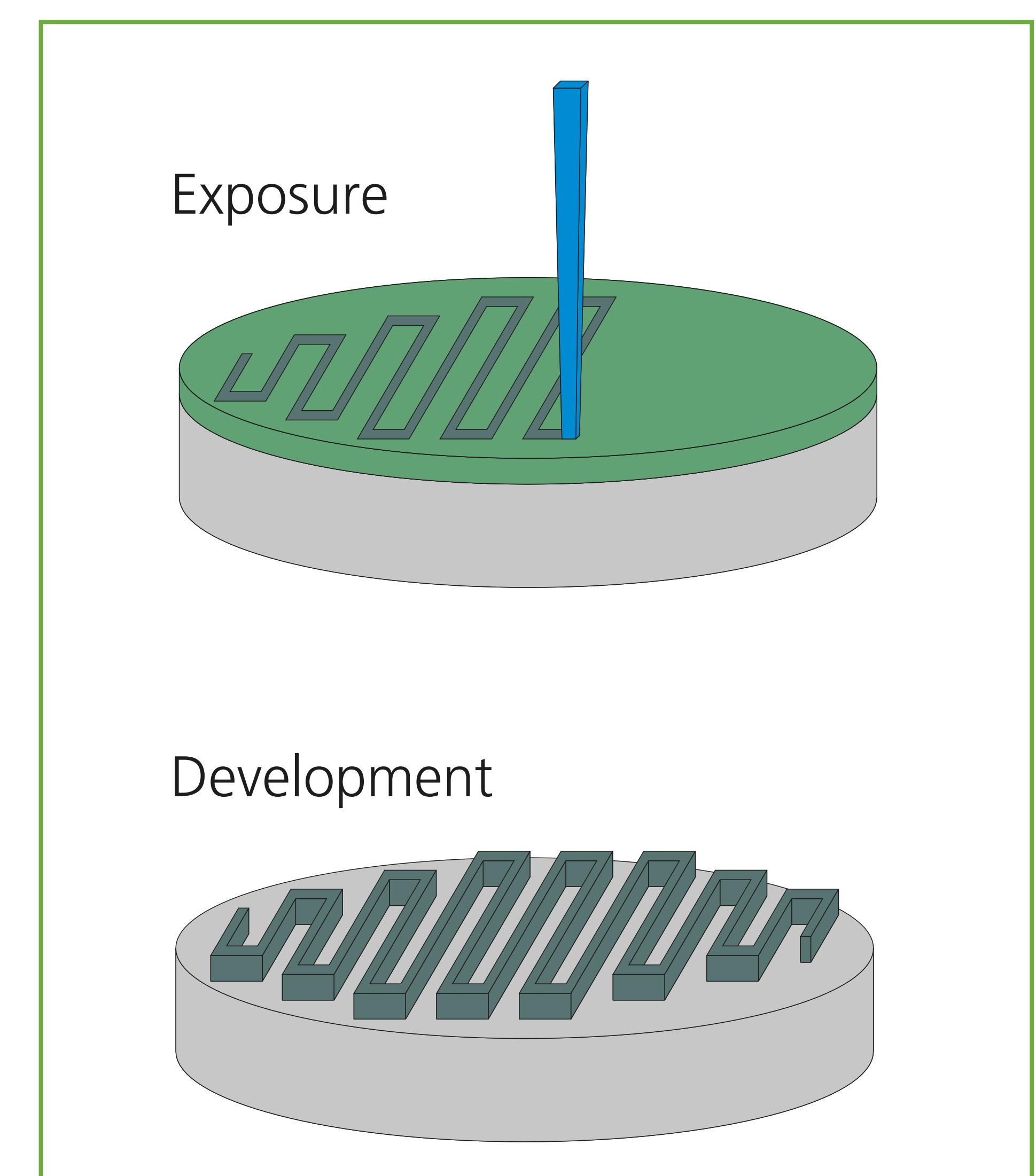
200 nm period patterns, 100 nm thickness,
 DeepUV@266 nm
 (Courtesy of EULITHA/ Zurich - Switzerland)

Unique features

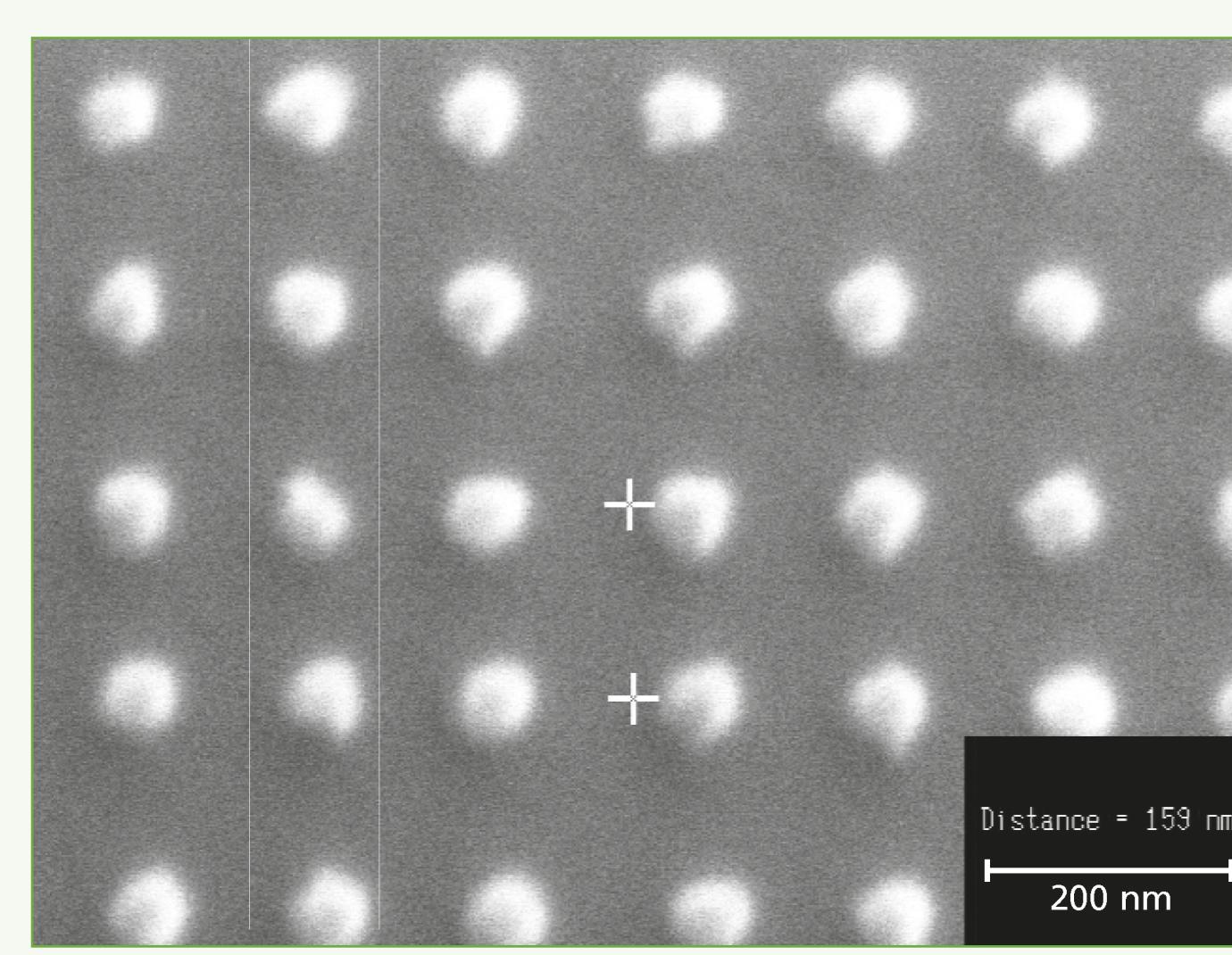
- ✓ **E-beam sensitivity:**
 - $120 - 250 \mu\text{C}/\text{cm}^2 @ 20 \text{ keV}$
 - $100 - 350 \mu\text{C}/\text{cm}^2 @ 50 \text{ keV}$
- ✓ **Deep UV sensitivity:**
 - $20 - 420 \text{ mJ}/\text{cm}^2 @ 248/254/266\text{nm}$
- ✓ Aqueous alkaline development
- ✓ No post exposure bake
- ✓ Easy to remove
- ✓ Good thermal stability of the resist patterns
- ✓ High wet and dry etch resistance
- ✓ Good pattern transfer fidelity
- ✓ Resolution capability: 50 nm



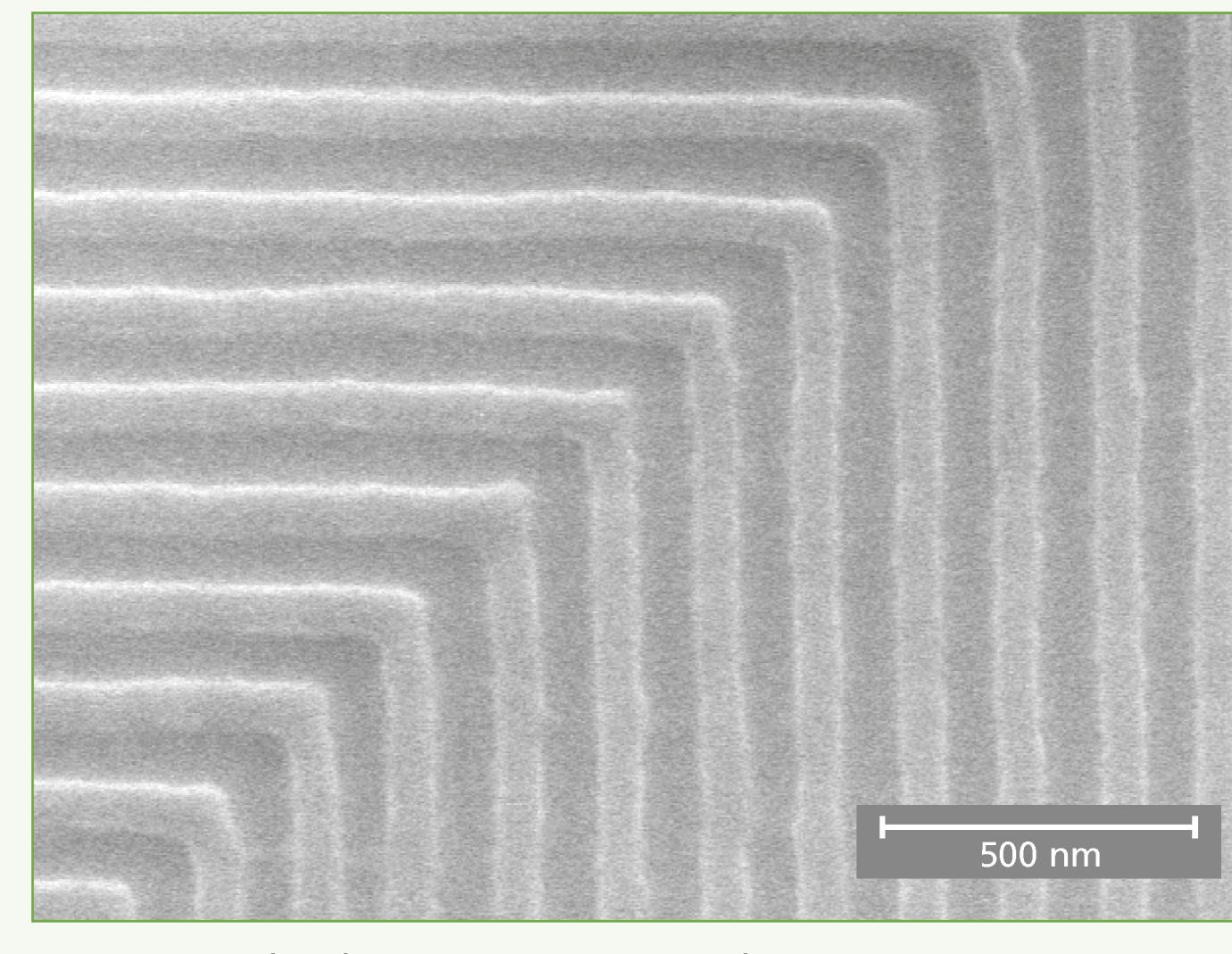
Process Flow



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:**
 - $2 - 5 \mu\text{C}/\text{cm}^2 @ 10 \text{ keV}$
 - $4 - 6 \mu\text{C}/\text{cm}^2 @ 20 \text{ keV}$
 - $20 - 40 \mu\text{C}/\text{cm}^2 @ 50 \text{ keV}$
- ✓ 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

Applications

- Use in micro- and nanoelectronics
- Manufacturing of semiconductor devices
- Mask for etching, e.g. of $\text{Si}, \text{SiO}_2, \text{Si}_3\text{N}_4$ or metals
- Generation of sub 100 nm pattern
- Generation of stamps with nanopatterns

