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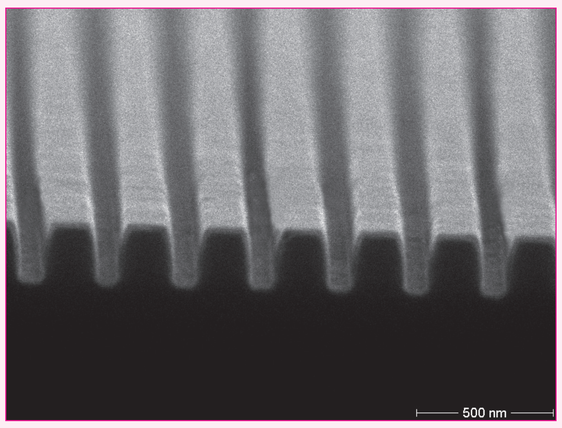
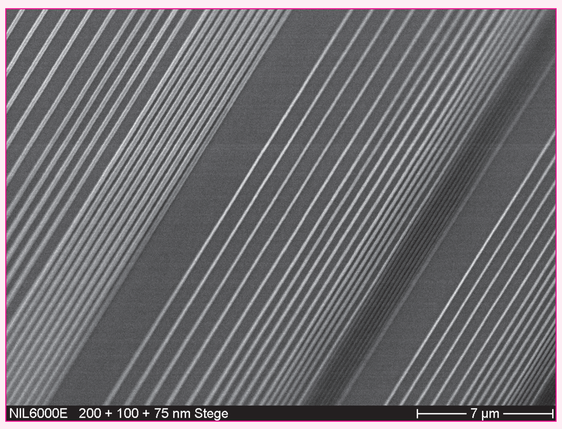
mr-NIL 6000E — High performance thermosetting NIL resist

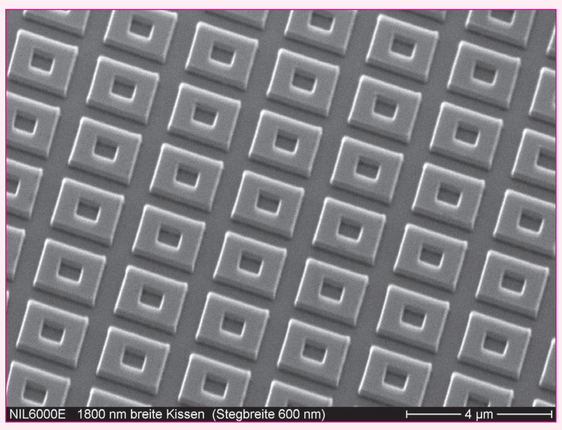
Thermoset Resist for Heat Assisted UV-Nanoimprint Lithography



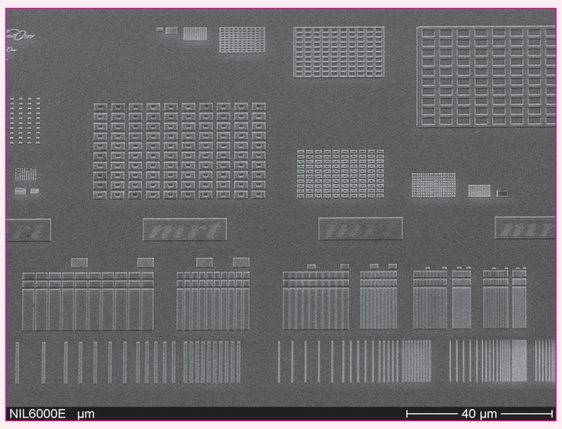
100 nm trenches, 300 nm pitch,
depth 200 nm



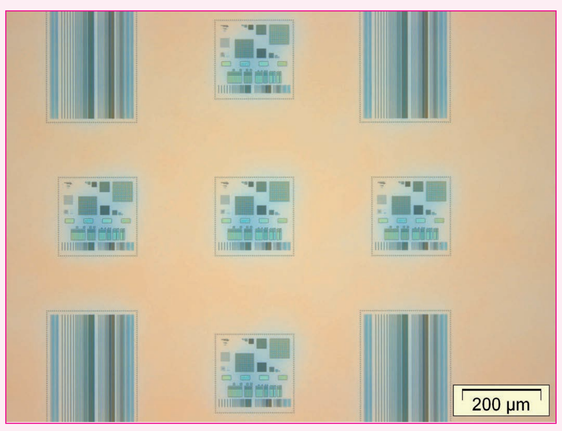
200 nm, 100 nm and 75 nm lines,
depth 200 nm



1800 nm squares, 600 nm line width,
depth 200 nm



Overview over patterns with different size
(75 nm to 2 µm)



Uniform filling of patterns with different size
(75 nm to 2 µm)

Solid resist film after spin coating → Low particle attraction of thin film

Isothermal imprint process → Rendering fast imprint cycles

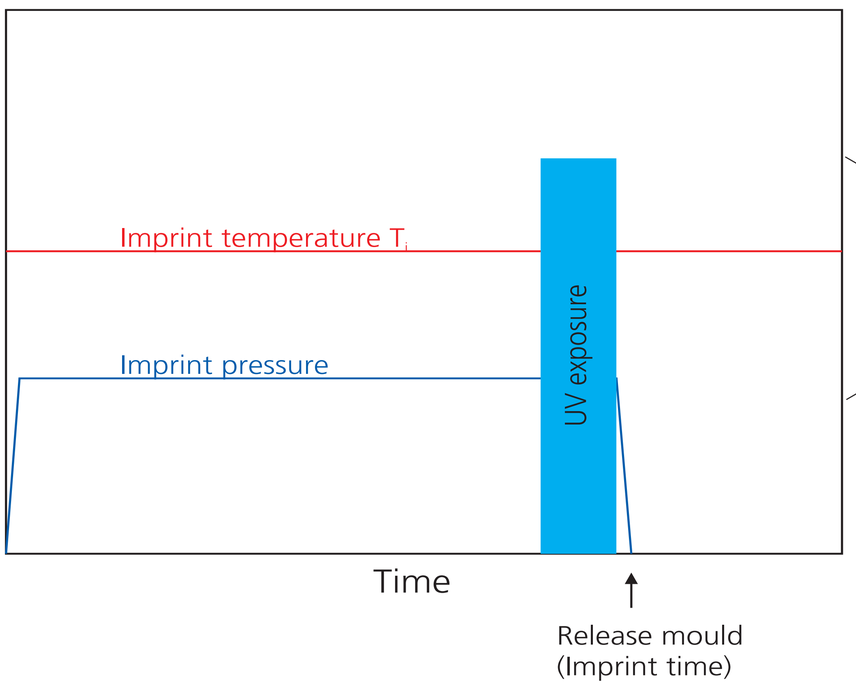
Unique features

- Excellent film quality on various substrate materials, e.g. Si, SiO_2, Al, Al_2O_3
- Designed for combined thermal and UV nanoimprint Lithography
  - T_g 1 °C before curing
  - Imprinting, curing by UV flood exposure during imprinting, and mould release at the same temperature
  - Imprint temperature of 65 °C
- Very low residual layer thickness < 10 nm
- Excellent pattern transfer fidelity
- High plasma etch resistance
- Ready-to-use solutions
- Safe solvents

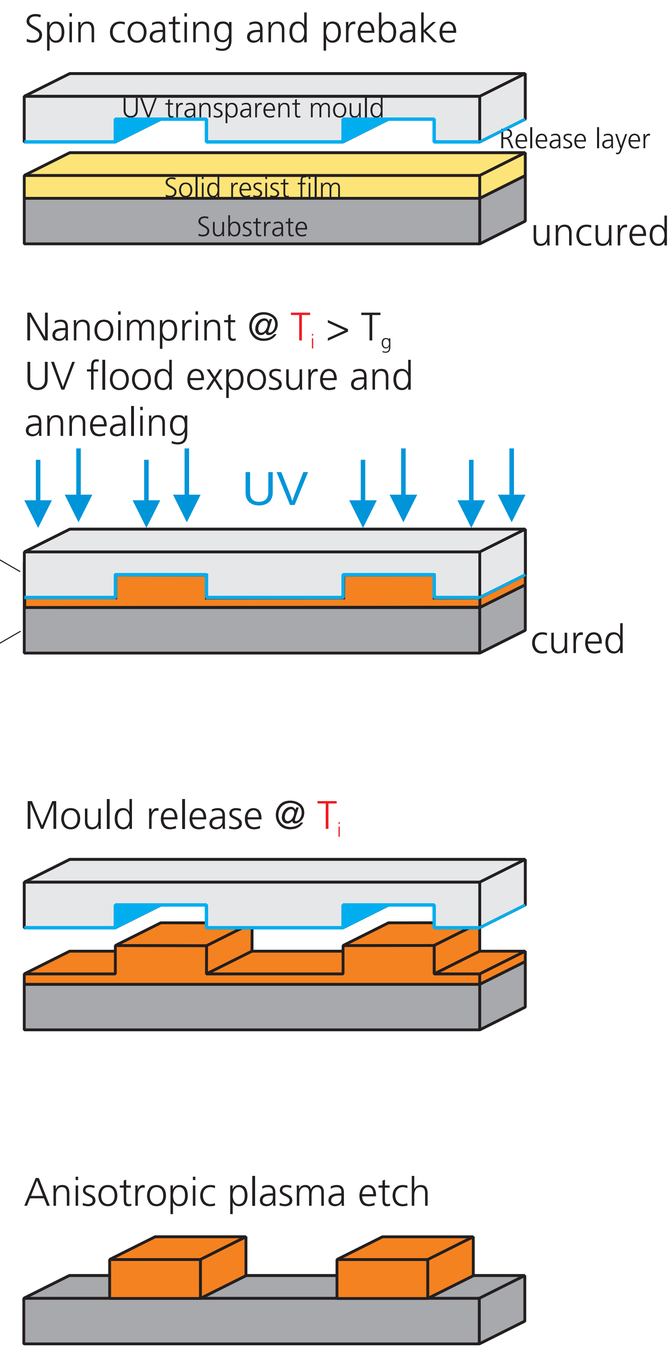
Applications

- Fabrication of nanopatterns for nano-optical devices, photonic crystals, high-brightness LEDs
- Etch mask for pattern transfer processes
- Dry and wet etching
- Single and multilayer systems
- Combined nanoimprint and photo lithography

Isothermal imprint Process



Process



Type[1)]	Thickness[2)]
mr-NIL 6000.1E	100 nm
mr-NIL 6000.2E	200 nm
mr-NIL 6000.3E	300 nm

[1)] Customized film thickness up to 2 µm available on request
[2)] spin coating @ 3000 rpm, 30 s