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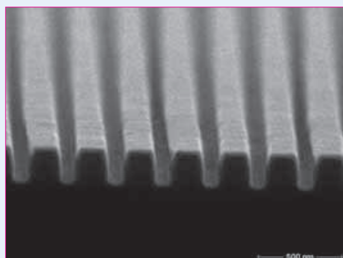
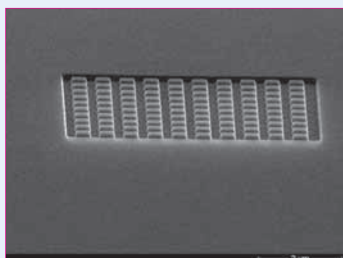
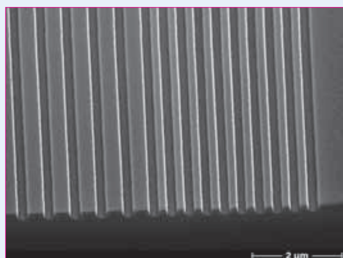
micro resist technology

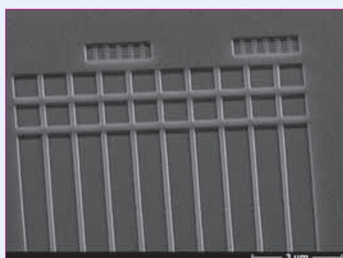
Photochemically Curing Resist for Thermal Nanoimprint Lithography

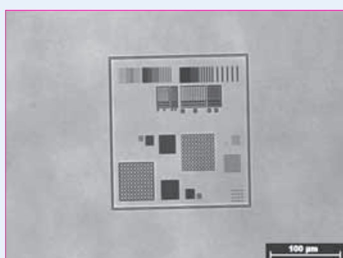
mr-NIL 6000 — High performance resist for pattern transfer and permanent applications


100 nm trenches, 300 nm pitch


200 nm dots


200 nm trenches


200 nm lines


Uniform filling of patterns with different size (100 nm to 2 µm)

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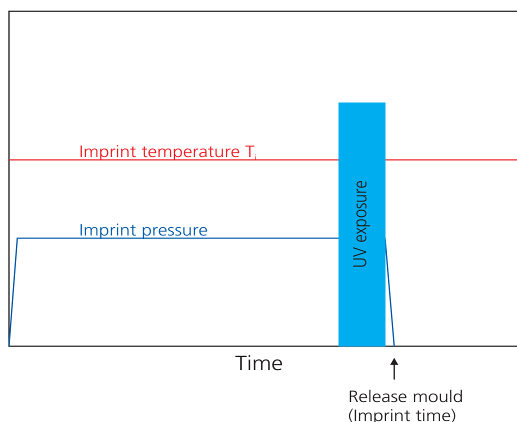
- Solid resist film after spin coating
- Imprinting at moderate temperature
- Isothermal imprint process

Unique features

- Excellent film quality
- T_g 40 °C before curing
- Imprinting, UV flood exposure, annealing and mould release ***at the same temperature***
- Smallest feature size at least 50 nm (depending on mould resolution)
- Very low residual layer thickness < 10 nm
- Excellent pattern transfer fidelity
- Plasma etch resistance comparable to conventional novolak-based photoresists
- Ready-to-use solutions
- Safe solvents



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

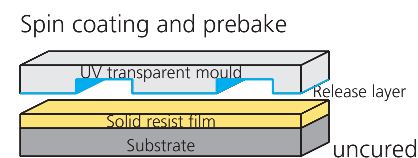
[1] spin coating @ 3000 rpm, 30 s

Applications

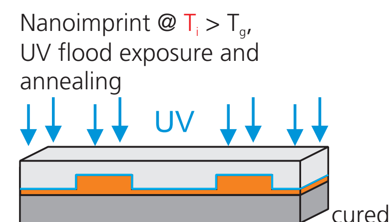
- Coating of various substrate materials, e.g. Si, SiO_2, Al
- Mask for ***pattern transfer*** processes
- Dry and wet etching
- Single and multilayer systems
- Permanent structures e.g. in microfluidics, optics

Process

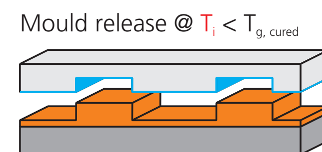
Spin coating and prebake



Nanoimprint @ $T_i > T_g$, UV flood exposure and annealing



Mould release @ $T_i < T_{g,\ cured}$



Anisotropic plasma etch