MRT – Resist & Polymer

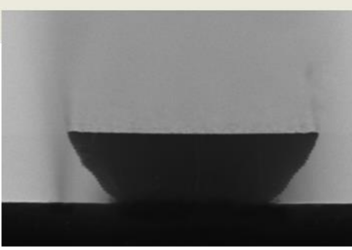
Negative Photoresists

UV resists for single layer lift-off
ma-N 400
ma-N 1400

DUV/ e-beam resists
ma-N 2400
mr-EBL 6000

Direct Laser Writing
mr-DWL @ 405 nm

Waveguide application
EpoCore / EpoClad

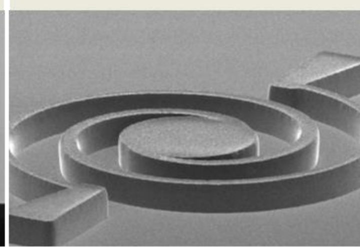


Positive Photoresists

Standard UV-resists
ma-P 1200

High viscosity UV-resists
ma-P 1275/
ma-P 1275HV

Greyscale UV-resists
ma-P 1275G



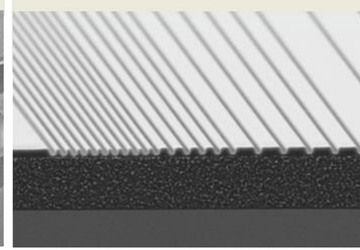
NIL Materials

Established in 1999

Thermal NIL
mr-I 7000R/ 8000R
mr-I T85
mr-I 9000M
SIPOL

Thermal / UV NIL
mr-NIL 6000E

UV-based NIL
mr-NIL210
mr-UVCur series
mr-XNIL series



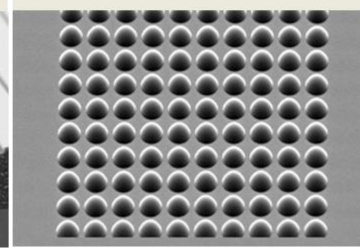
Hybrid Polymers

Established in 2002

Optical application
OrmoComp®
OrmoClear®FX
InkOrmo

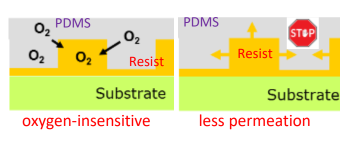
Waveguide application
OrmoCore
OrmoClad

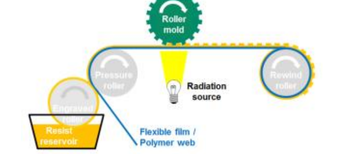
Transparent stamps
OrmoStamp®

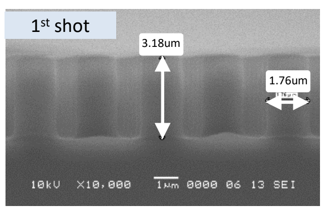


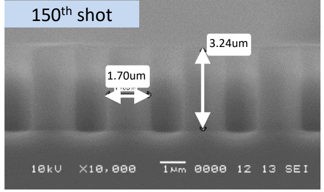
NIL Materials

NIL210 (PDMS compatible)





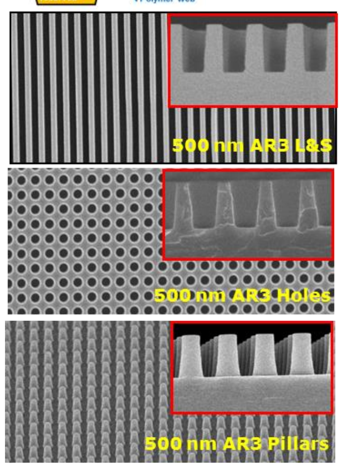




Resist : mr-NIL210 on sapphire /PDMS stamp
Imprint : 1000 mJ cm^{-2} @365 nm

Cross-sectional SEM images show high reproducibility through 150 shots

UVCur26SF (Roll to Roll)

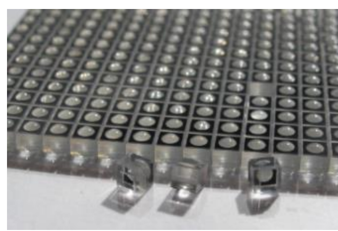


R2R-UV-NIL imprint results
500 nm resolution AR:3 L&S pattern defect free replicated @ throughput of 10m/min

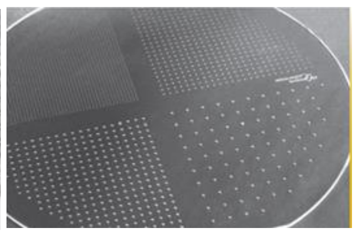
Hybrid Polymers

Ormo-Series

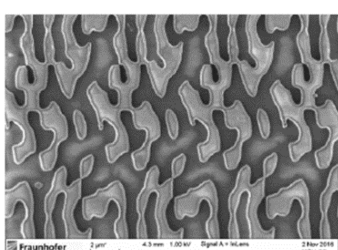
- Excellent transparency
- High chemical and physical stability
- Excellent replication fidelity
- Excellent mechanical properties
- High thermal stability



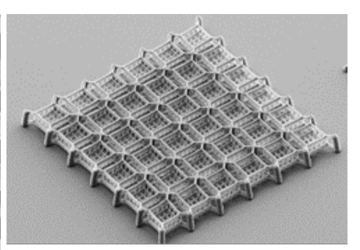
OrmoComp® microlenses on glass for sensing application



OrmoStamp® Replica Stamp



OrmoComp® Diffractive optics



OrmoComp® Microstructure scaffolds for biological applications

HTL Co. Japan Ltd.
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Tel: 042-523-2871 e-mail: sales@htlco.co.jp URL: http://www.htlco.co.jp

Simprint Nanotechnologies Ltd

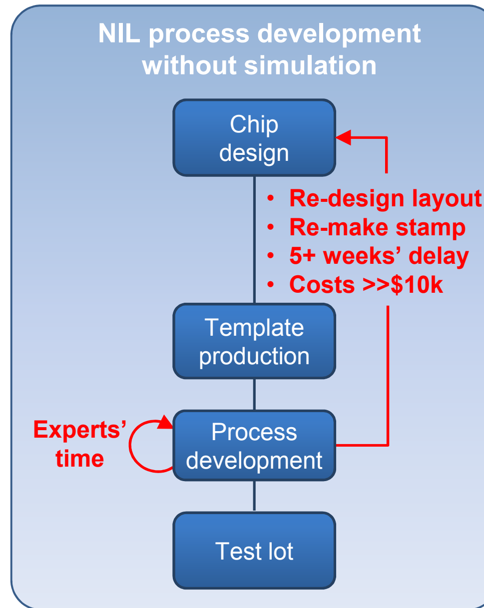
Nanoimprint lithography simulation software

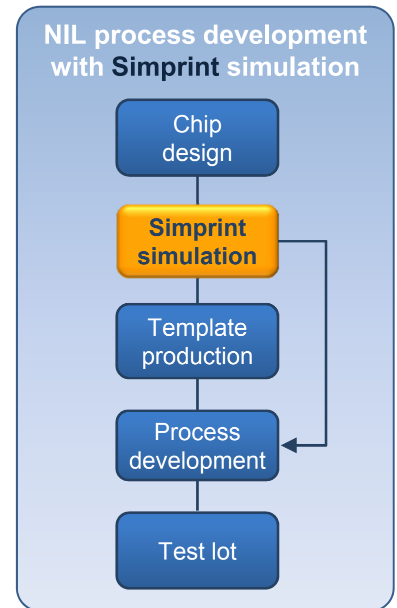
simprint NANOTECHNOLOGIES

Developing processes for nanoimprint lithography can be expensive in both materials and time. Simulating the imprint process with Simprint software helps to shorten this development phase by letting you refine crucial process parameters such as loading profile, resist droplet dispensing patterns, and template mesa edge geometry, *before* committing to template fabrication.

We offer software products for most types of NIL, including:

- Droplet-dispensed imprint (commonly used in chip-scale imprint for memory applications)
- Thermal NIL (with resist library)
- UV-NIL (chip-to-wafer-scale)





Process parameters

- Specify process parameters including loading profile, template curvature, dwell times, template material…

Template

Wafer

Layout design

Import GDS template layout files and droplet dispensing coordinates

Resist/resin model

- Choose from a menu of widely used thermal and UV-curing resists, including micro resist mr-I 7000E and mr-I 8000E series materials, whose temperature-viscosity behaviour is modelled.
- For custom resists, you can enter viscosity, surface tension and contact angle parameters directly.

Simulation Engine

- Balances spatial resolution with speed to meet modelling needs.
- Simulation speeds are at least 1000 times faster than finite-element simulation techniques.
- Simprint *Core* does not require every feature to be represented individually in the simulation, enabling efficient chip- or wafer-scale simulation.

Physical predictions

Residual layer thickness

Section

Cross-section

Cavity filling evolution

Time

Droplet merging and extrusion at edge of an imprinted field

During bowing relaxation → **During dwell**

0.29986 0.29992 0.29998 0.30000 0.40100 0.50608 0.61541 0.72915 1.30000

Times in seconds

Simprint software is available for Windows and Linux with tailored license and maintenance packages.

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