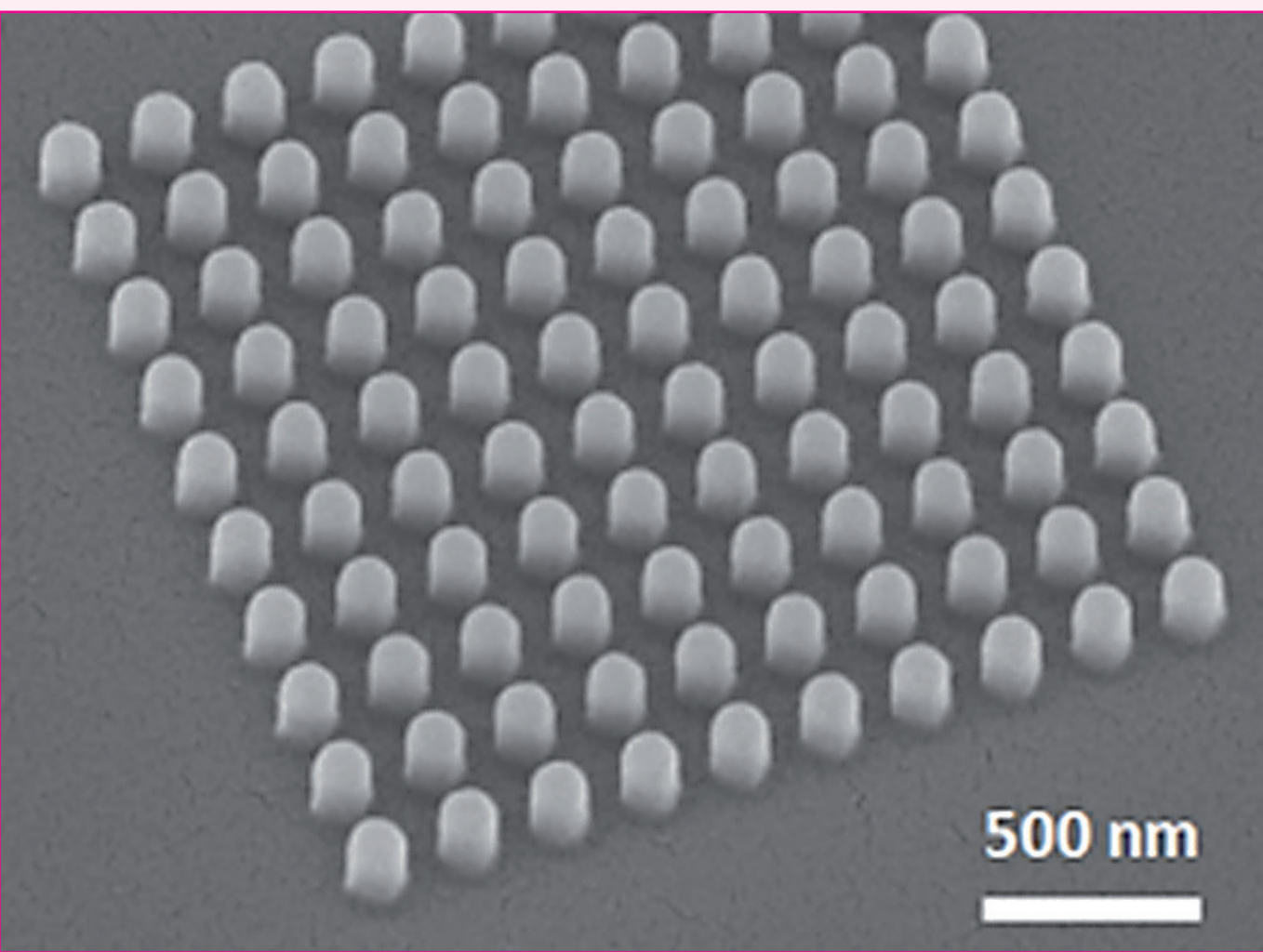
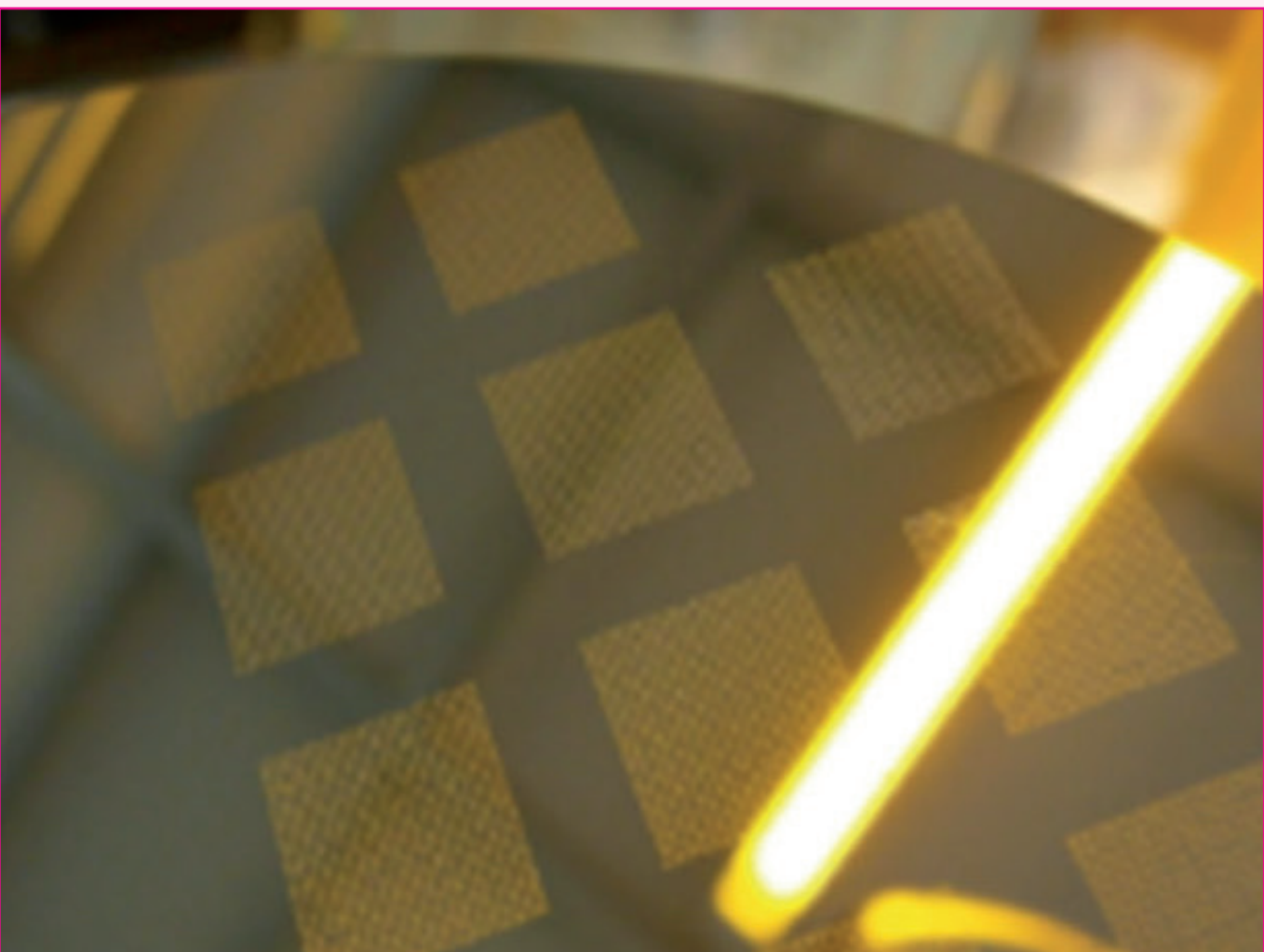


mr-UVCur26SF - A New Photo-Curable NIL Resist

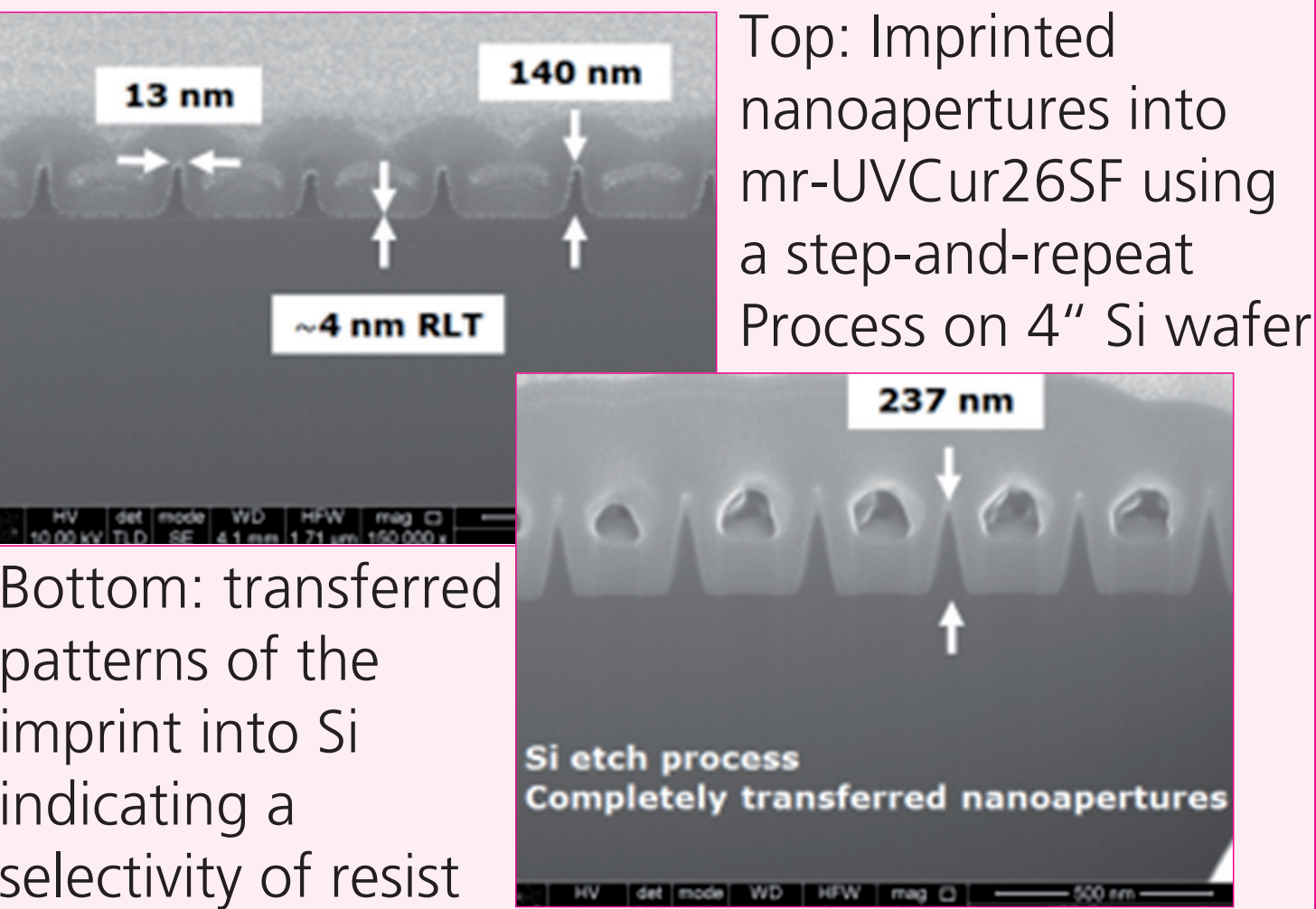
Applicable by Inkjet Dispensing and in Roll-to-Roll NIL Processes



mr-UVCur26SF imprint of a pillar array on 2" Si wafer, pillars 75 nm in diameter, 200 nm in height (Courtesy of HZB, Germany)



Discrete areas of mr-UVCur26SF droplets inkjet dispensed on a 6" Si wafer matching the template architecture for S&R repeat NIL (Courtesy of FhG IISB, Germany)



(Courtesy of FhG IISB, Germany)

Unique Features

- Organic, photo-curable nanoimprint resist for inkjet dispensing
- Excellent imprint characteristics
- Compatibility to various mold materials: Ni, Si, OrmoStamp®
- High stability of the cured patterns
- Excellent dry etch resistance for pattern transfer

Inkjet Dispensing

- Low viscosity (15 mPas)
- Liquid and solvent-free formulation
- Broad compatibility with commercial inkjet tools
- Proved droplet volume stability over a period of 300 s

Commercial inkjet printheads featuring different nozzle numbers applied for dispensing of mr-UVCur26SF

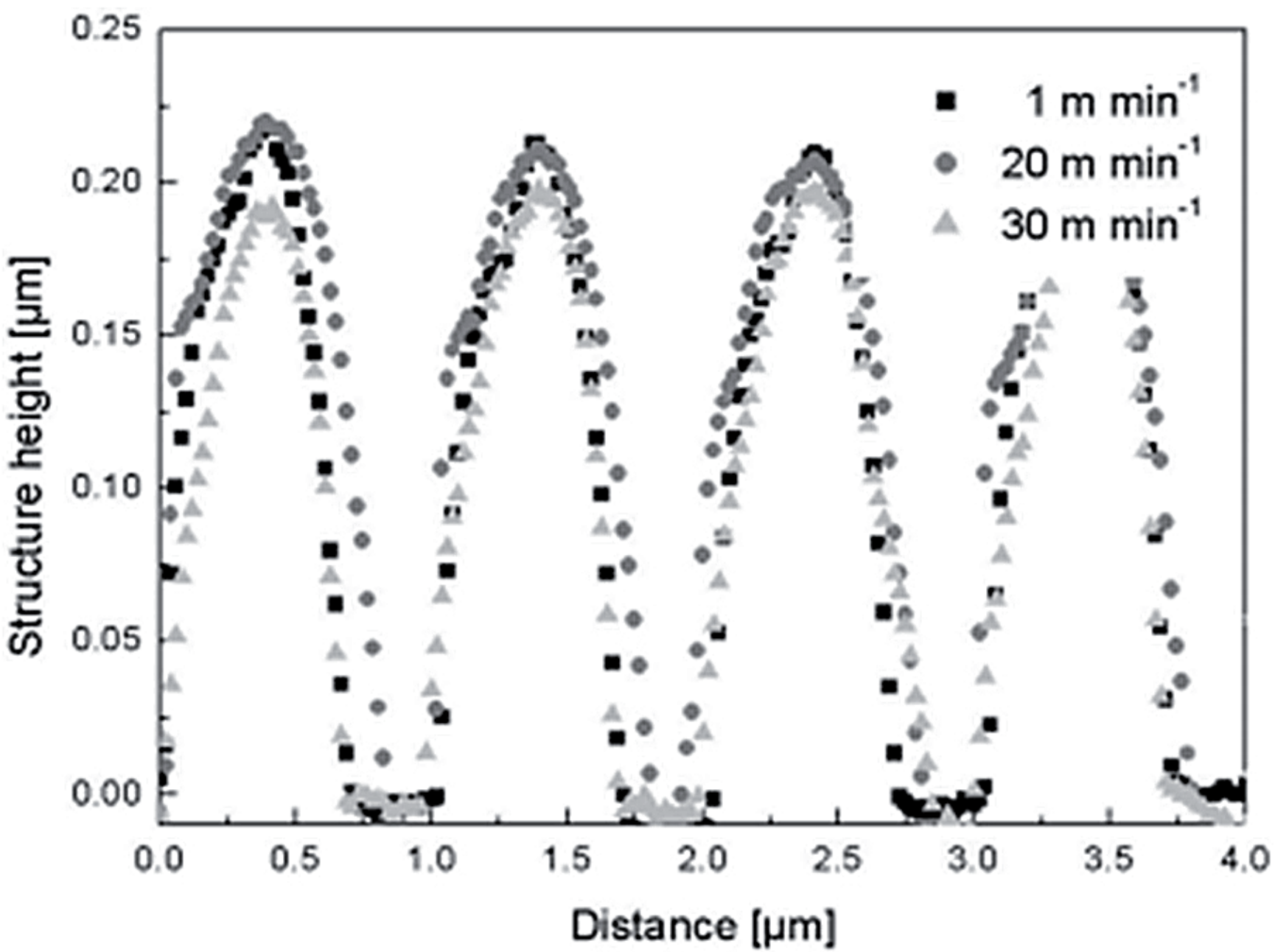
Inkjet printhead	Manufacturer	Nozzle no.	Temperature
MJ-ABP-01-50	MicroFab	1	25 °C
Spectra SL-128	FujiFilm Dimatix	128	25 °C
Spectra SM-128	FujiFilm Dimatix	128	25 °C
Sapphire QS-256/30	FujiFilm Dimatix	256	25 °C
Polaris PQ-512/15	FujiFilm Dimatix	512	25 °C
KM1024	KonicaMinolta	2 x 512	25 °C - 40 °C

Applications

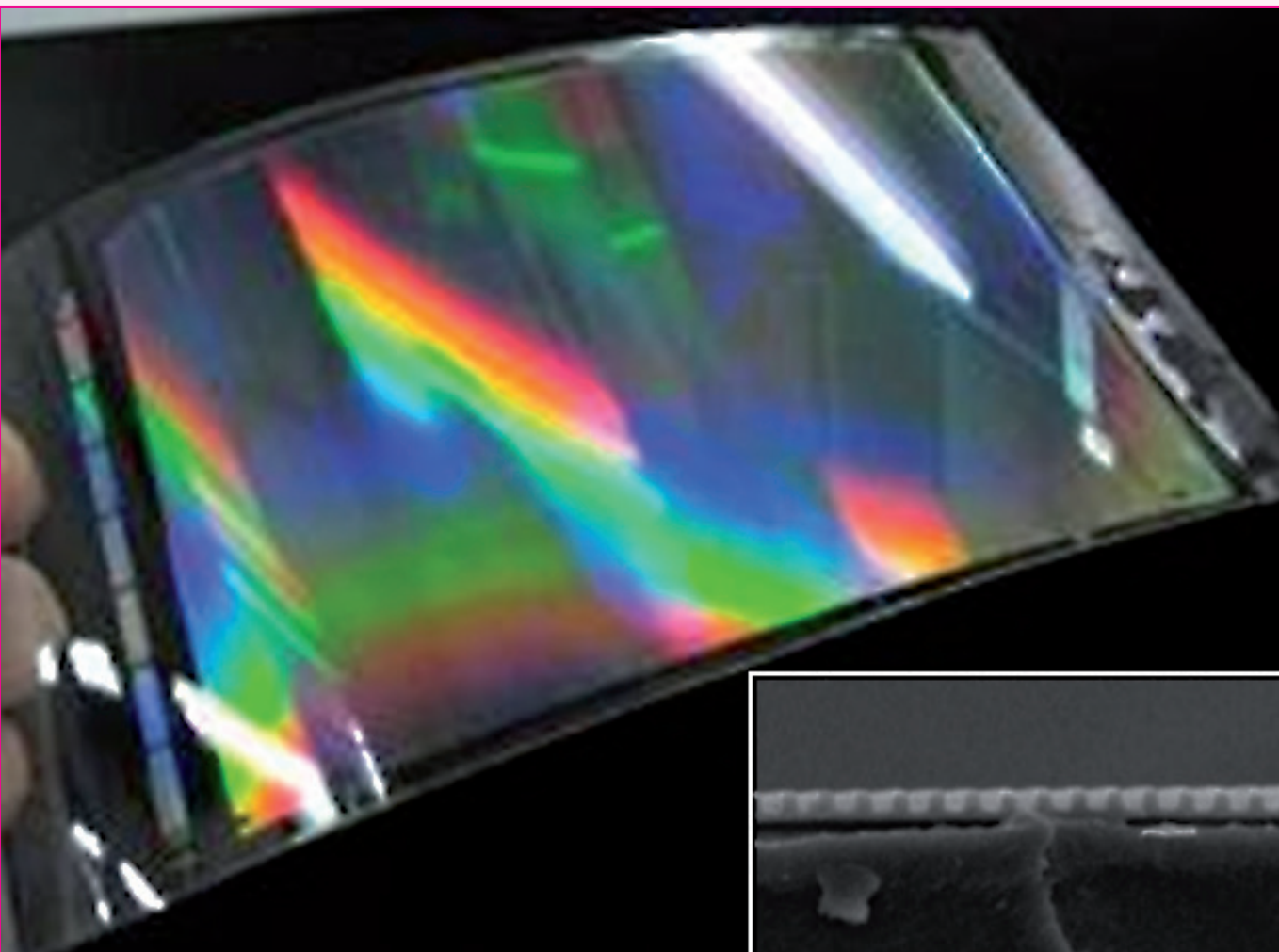
- Step&Repeat NIL process
- Large-area nanostructuring of flexible substrates
- Continuous roll-to-roll (R2R) Photo-NIL processes
- High volume manufacturing of
 - Antireflective coatings
 - (Super)Hydrophobic patterns on flexible substrates
 - Wire-grid polarizers

Roll-to-Roll NIL

- Good adhesion to plastic foil substrates
- Ultra-high photocuring rate enabling high roller speeds and high throughput
- R2R web speeds up to 30 m min⁻¹ demonstrated
- Constantly high pattern fidelity at various throughput rates



Antireflective coating on PC with mr-UVCur26SF: moth-eye pattern imprinted on PC foil in a R2R-NIL process (Courtesy of IMRE, Singapore)



R2R-NIL on PC foil: AR1 L&S pattern, 500 nm pitch, inkjet dispensed mr-UVCur26SF, pristine Ni roller molds, 405 nm LED radiation, throughput speed 10 m min⁻¹ (machine limit). Inset: SEM image of the imprint (Courtesy of IMRE, Singapore).



R2R-NIL with mr-UVCur26SF: SEM images after variation of the web speed, substrate PET foils, room temperature gravure coating, SAM fluorinated Ni roller molds, Hg bulb radiation for curing (Courtesy of Joanneum Research Materials, Austria).