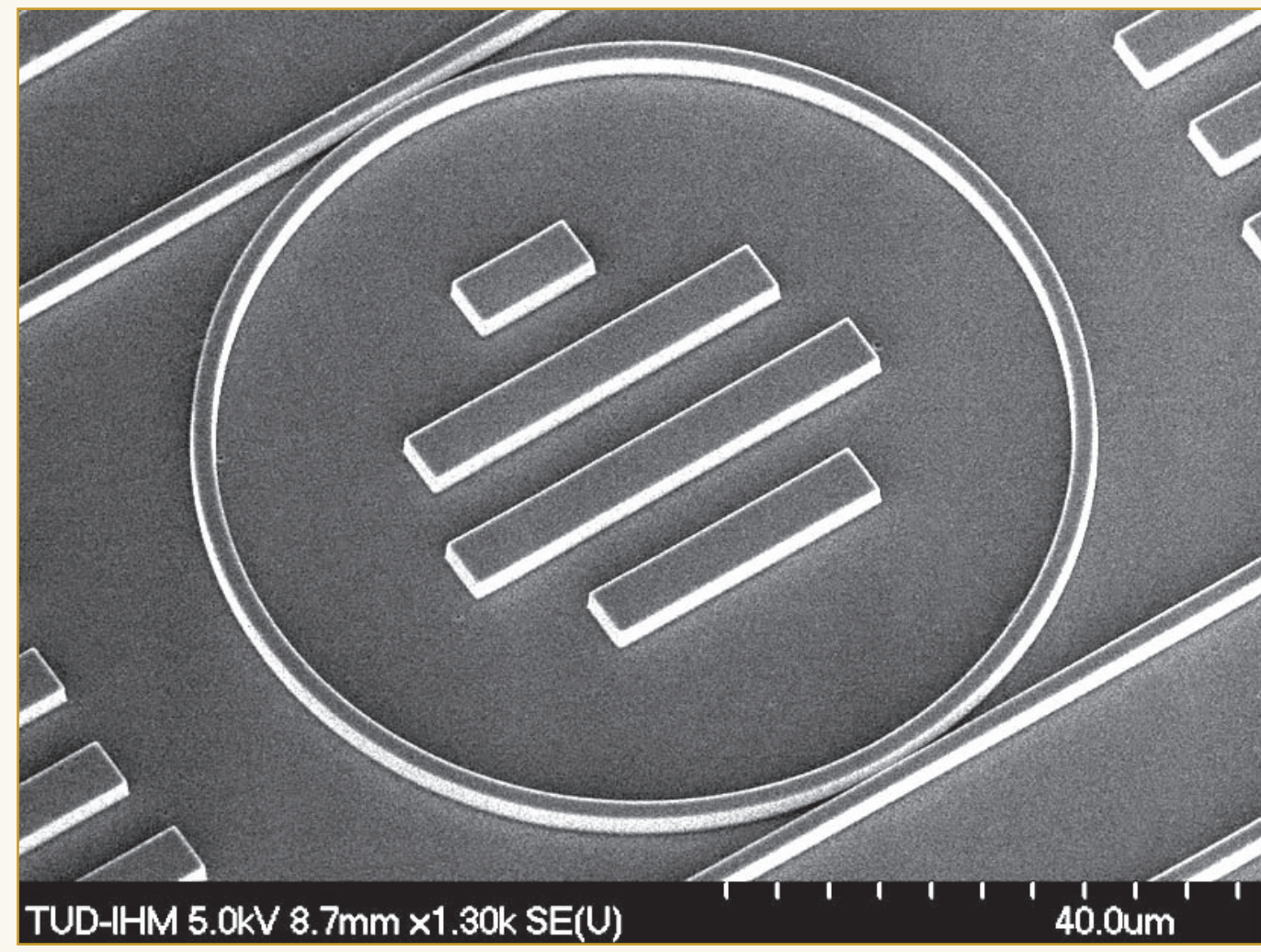
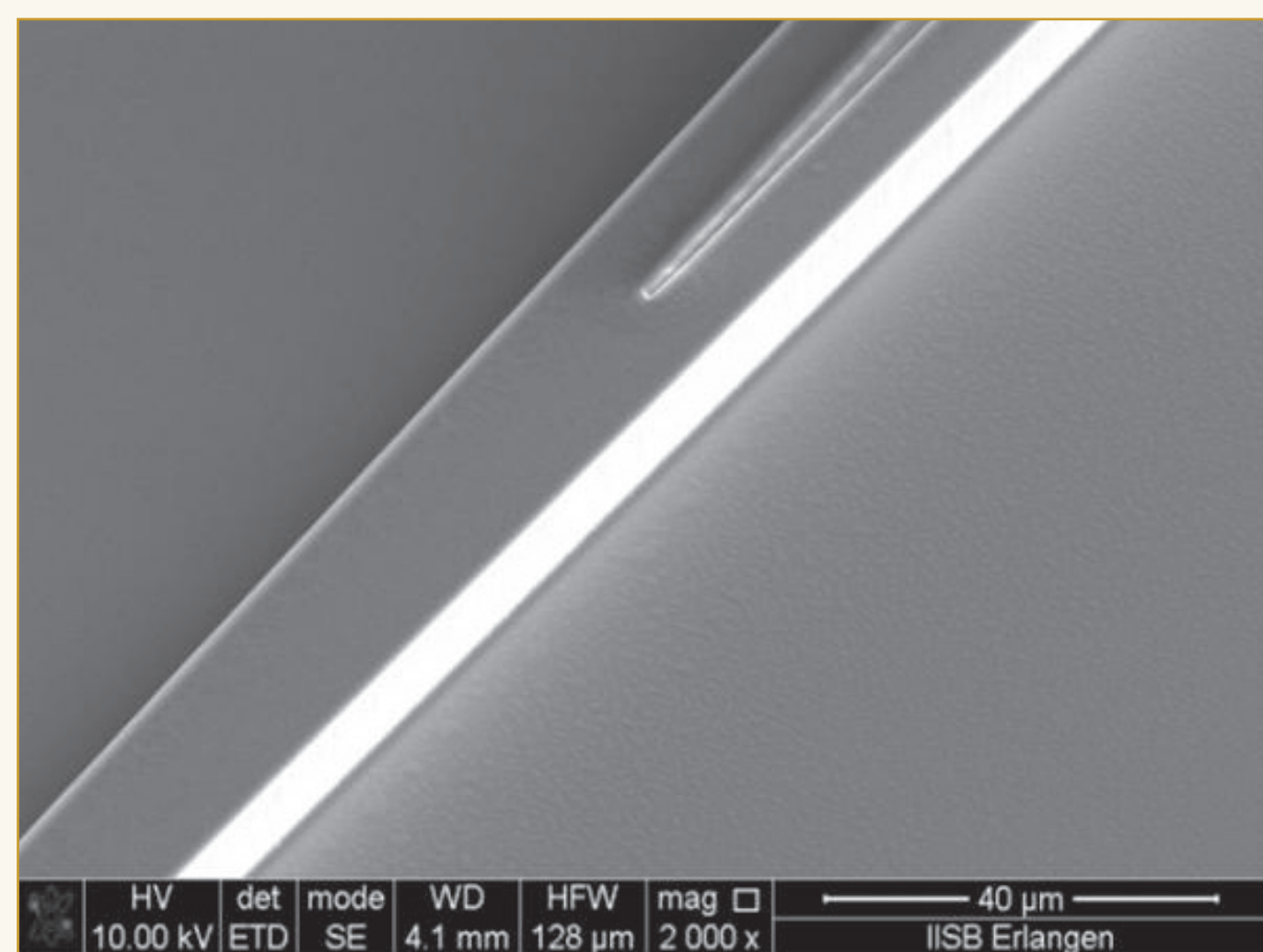


OrmoCore and OrmoClad

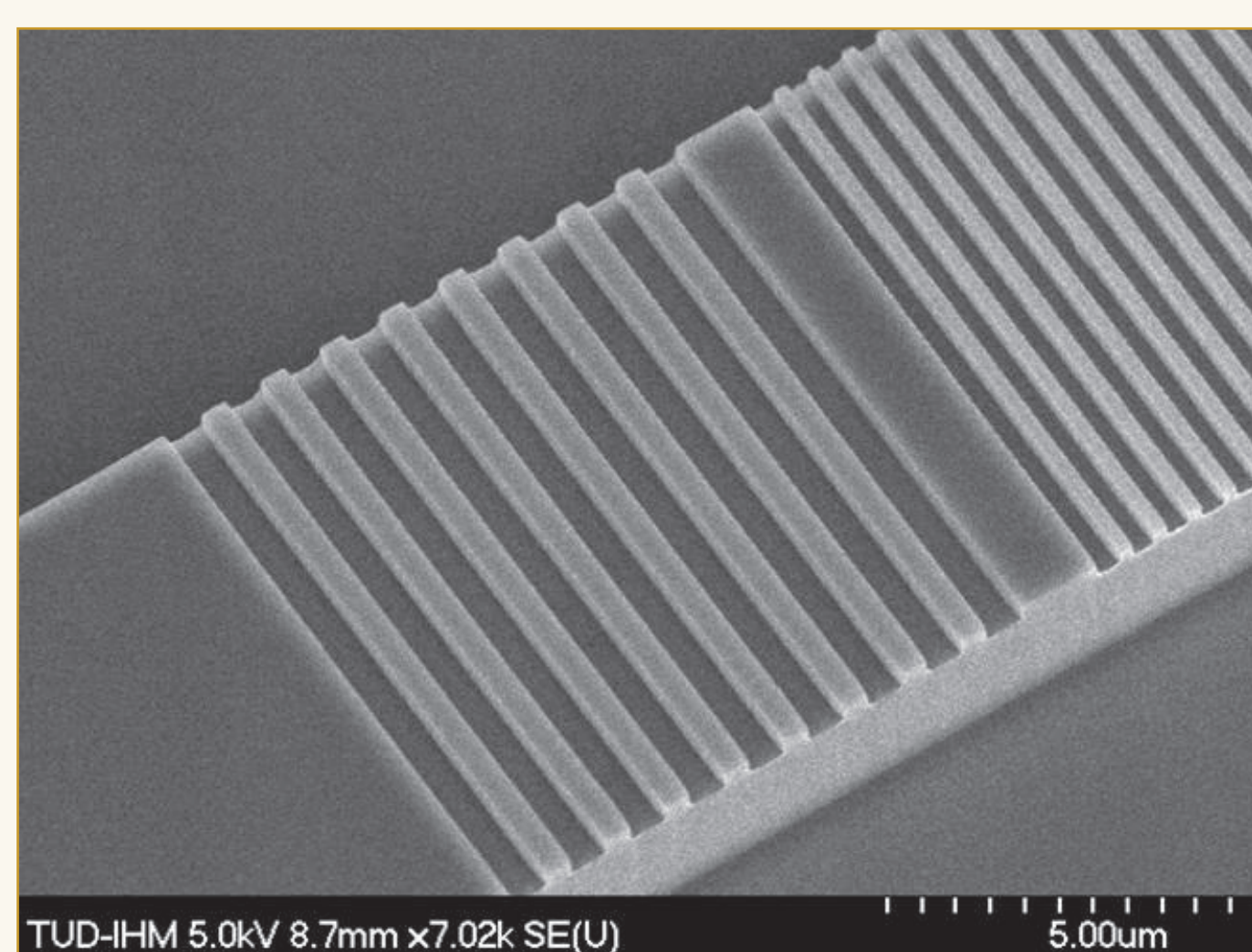
UV-curable Hybrid Polymers for Optical Waveguide Fabrication



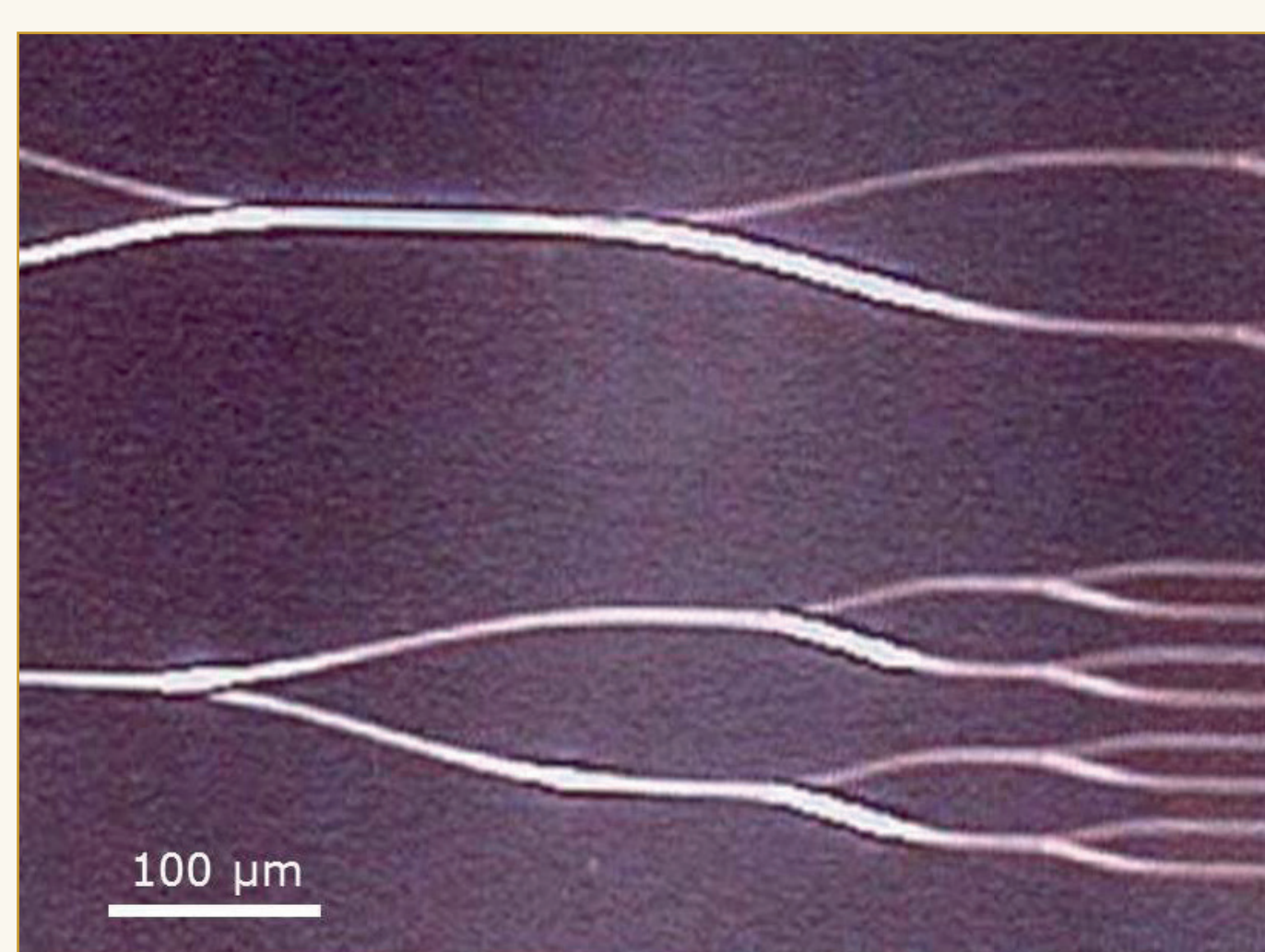
Replicated OrmoCore microring resonator (courtesy of TU Dresden, Germany)



OrmoCore Y-coupler element, fabricated via UV imprint (Courtesy of FhG IISB, Germany)



Patterned OrmoCore waveguide, fabricated via UV imprint (Courtesy of TU Dresden, Germany)



OrmoClad/OrmoCore with 8 μm waveguide coupling structure on lower cladding

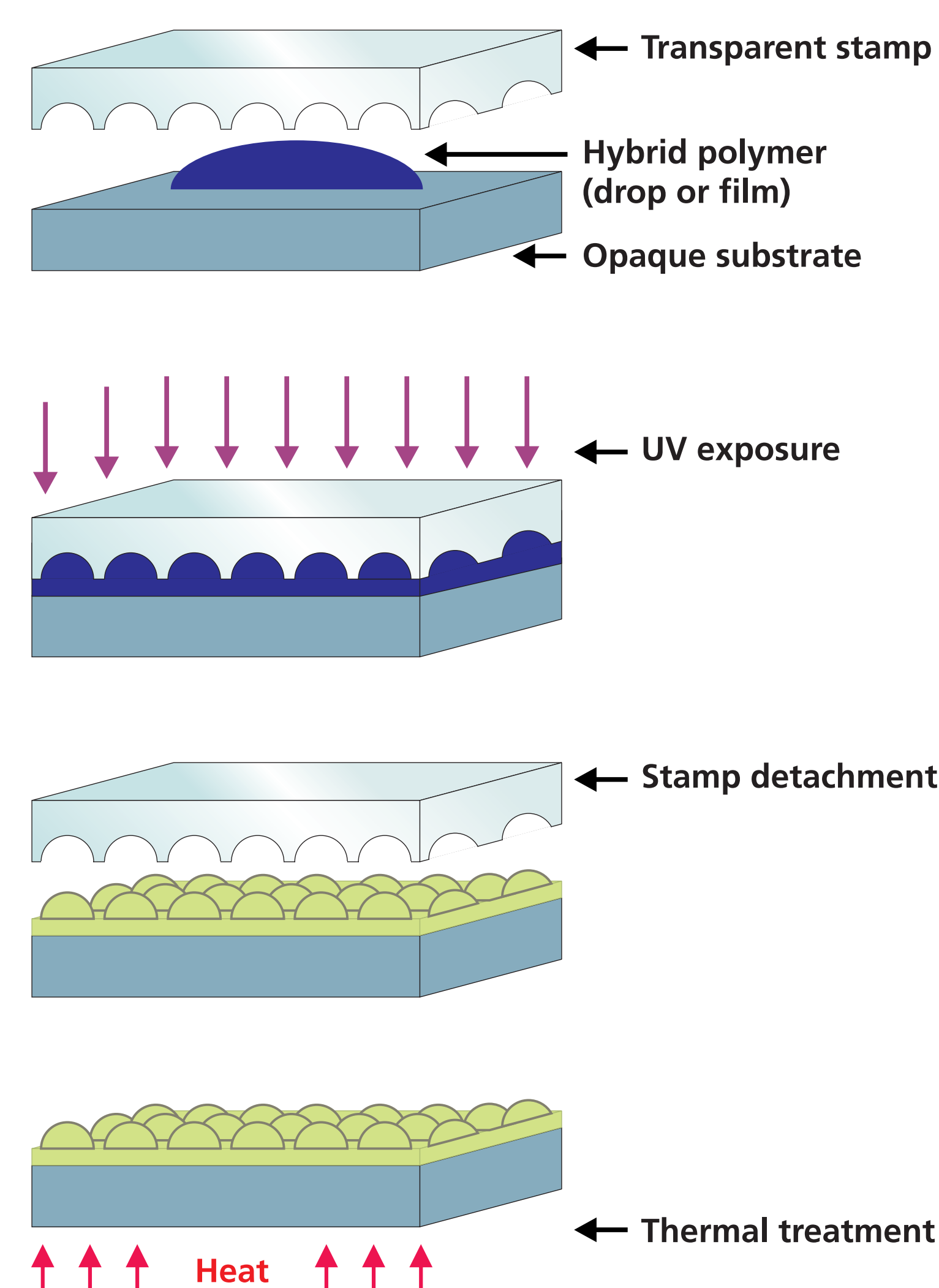
Unique features

- Compatible to UV imprint, UV moulding and UV lithography
- Low optical loss at datacom wavelengths
- Tunable refractive index (core/clad ratios)
- Excellent thermal stability of cured patterns up to 270 °C (short term)
- High mechanical and chemical stability of cured patterns
- Ready-to-use solutions, solvent-free formulations

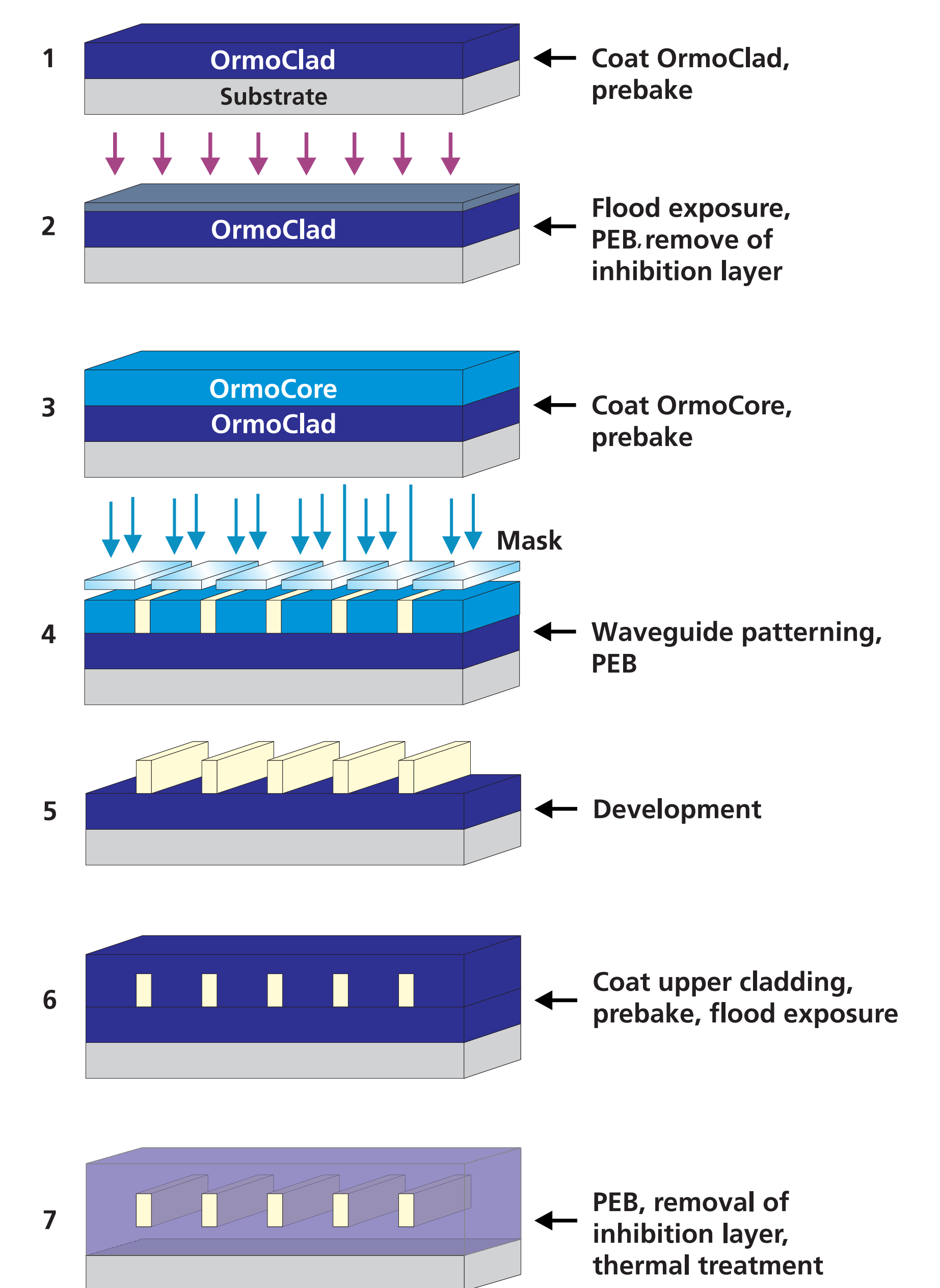
Applications

- Single-mode waveguides
- Multi-mode waveguides
- Beam splitters
- Thermo-optical switches
- Microring resonators
- Optical interconnects

Process flow - UV imprint



Process flow - UV lithography



Properties OrmoCore & OrmoClad

Parameter	OrmoCore	OrmoClad
Viscosity [Pa·s]	2.9 ± 0.4	2.5 ± 1.0
Spectral sensitivity [nm]	300 – 390	300 – 390
Volume shrinkage [%]	2 – 5	2 – 5
CTE (20-150 °C) [ppm/K]	150	180
dn/dT (589 nm) [10 ⁻⁴ /K]	-2.2	-2.7
Young's modulus [GPa]	~ 1	~ 0.5
Hardness (by indentation) [MPa]	~ 53	~ 24
Film thickness upon spin coating [μm]	3000 rpm 6000 – 1000	30 20 - 90
Optical loss* [dB/cm] @ 633 nm	< 0.1	≤ 0.1
	1310 nm	0.23
	1550 nm	0.5 – 0.6

* determined in the uncured material by UV-vis measurements

Refractive index tuning

