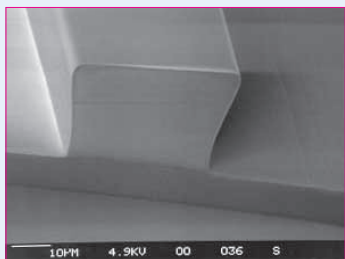
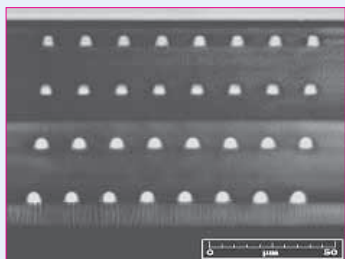


Ormocore and Ormoclad

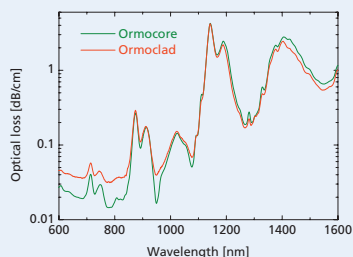
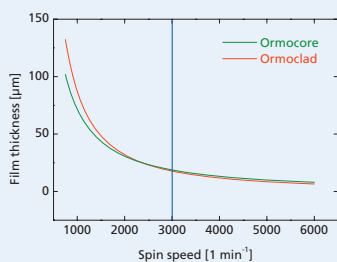
ORMOCER® System for Planar Optical Waveguides



Undercladding/ core of a multimode wave guide on silicon - ACREO/ Sweden



Multilayer optical fan out
 FHG - IOF/ Jena - Germany



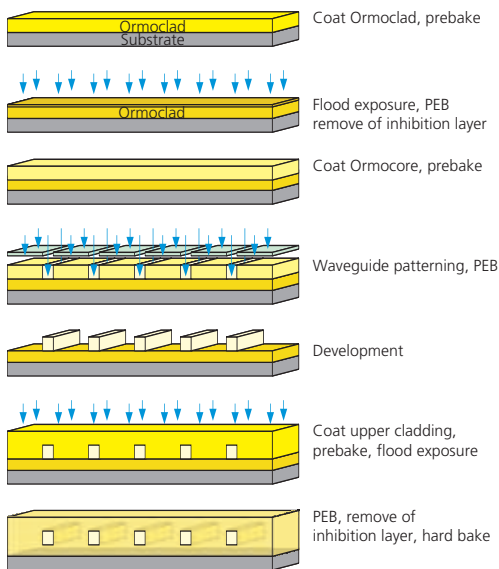
Unique features

- Photo patterning inorganic-organic hybrid polymers
- UV patterning (lithography/ moulding)
- Exposure: i-line, broadband
- Tunable refractive index (core/ clad)
- Low optical loss at datacom wavelengths
- Thermally stable up to 270 °C
- 6 months shelf life

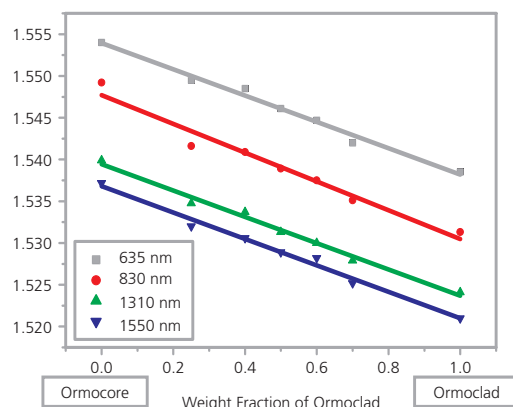
Applications

- For manufacture of
- Multimode wave guides
- Singlemode wave guides
- Beam splitters
- Thermo-optical switches

Process flow for optical wave guides



Refractive index tuning



Optical loss (α)

Ormocore	Ormoclad
< 0.1 dB cm ⁻¹ @ 633 nm	≤ 0.1 dB cm ⁻¹ @ 633 nm
0.23 dB cm ⁻¹ @ 1310 nm	0.26 dB cm ⁻¹ @ 1310 nm
0.5 - 0.6 dB cm ⁻¹ @ 1550 nm	0.48 dB cm ⁻¹ @ 1550 nm

Technical data

Properties of the cured materials	Ormocore	Ormoclad
Thermal stability	Weight loss < 5 % up to 270 °C (5 K min ⁻¹)	
Film quality	Good planarisation properties	
Thermal behaviour	duromeric	
Water absorption	< 0.5 %	
CTE (20 - 100 °C)	100 - 130 ppm K ⁻¹	
Rms roughness	2 - 4 nm	
Shrinkage (during curing)	2 - 5 Vol.-%	
Refractive index @ 635 nm	1.553	1.534