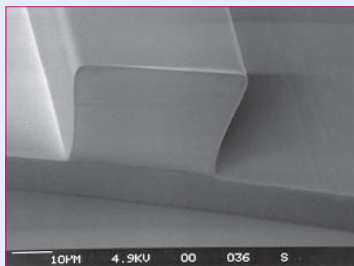
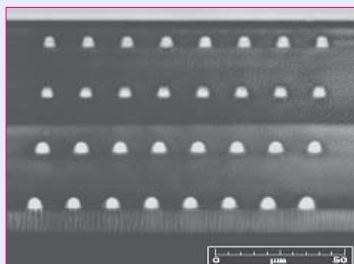


Core and Cladding systems for waveguiding

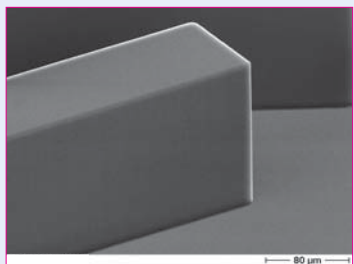
Comparison of the material systems Ormocore and Ormoclad & EpoCore and EpoClad



Undercladding of Ormoclad and 30 µm Ormocore of a multimode wave guide on silicon - ACREO/ Schweden



Multilayer optical fan out consisting of 5 µm Ormocore on Ormoclad FHG - IOF/ Jena



Waveguide with smooth surface and vertical sidewalls



No microcracks on critical spots

Ormocore and Ormoclad	EpoCore and EpoClad
lowest loss, main application in tele (1310 nm, 1500 nm) and data communication (600 – 900 nm)	low loss, main application in opto-electronical devices of the printed circuits boards industry (850 nm)
Properties	
UV curing, inorganic-organic hybrid polymer, solvent free, high-viscosity, silicon-containing	UV curing, solvent containing, high-viscosity, epoxy based
Optical loss	
< 0,06 dB/ cm @ 630 nm < 0,2 dB/ cm @ 1310 nm < 0,6 dB/ cm @ 1550 nm	= 0.2 dB/ cm @ 830 nm
Processing	
liquid, high-viscosity, sticky layer after pre-bake, proximity exposure or contact exposure with anti-adhesion layer on mask, no post exposure bake, hardbake recommended	solid, non-sticky layer after prebake, proximity or contact exposure, post exposure bake, hardbake optional
Thermal stability	
270 °C	230 °C
Shrinkage	
3 – 5 %	< 3 %
Refractive index	
<p> $n(\lambda) = 10^{-3} n_0 + 10^7 n_1 / \lambda^2 + 10^7 n_2 / \lambda^4$ Ormocore Ormoclad $n_0 = 1540$ $n_0 = 1518$ $n_1 = 71.2$ $n_1 = 71.6$ $n_2 = 26.5$ $n_2 = 19.0$ </p>	<p> $n(\lambda) = 10^{-3} n_0 + 10^7 n_1 / \lambda^2 + 10^7 n_2 / \lambda^4$ EpoCore EpoClad $n_0 = 1573$ $n_0 = 1566$ $n_1 = 104,9$ $n_1 = 97,9$ $n_2 = 0$ $n_2 = 0$ </p>

ORMOCER®s - Ormocore and Ormoclad

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