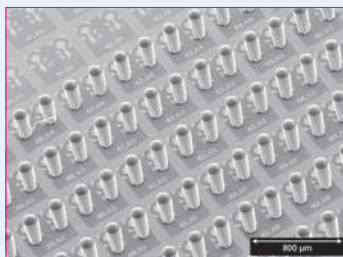
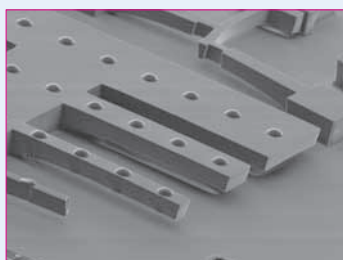


ORMOCER®s — Ormocore & Ormocomp for Microoptics

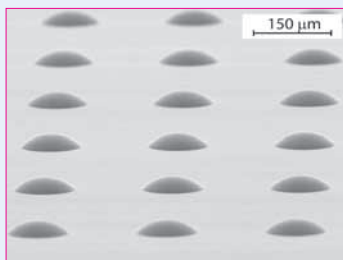
Materials and Technology for Innovative Microoptical Applications



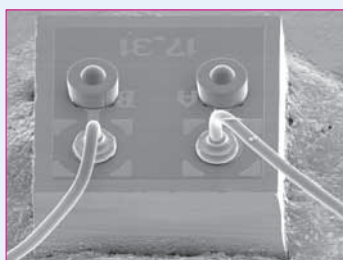
SEM of replicated sol-gel refractive microlenses on a VCSEL wafer substrate (Courtesy of Avalon)



Replicated ORMOCER® cantilever beams with microlenses. Length: 1mm, height: 50 µm, gap under the beams: 30µm (CSEM)



SEM of replicated microlenses in sol-gel material (CSEM)



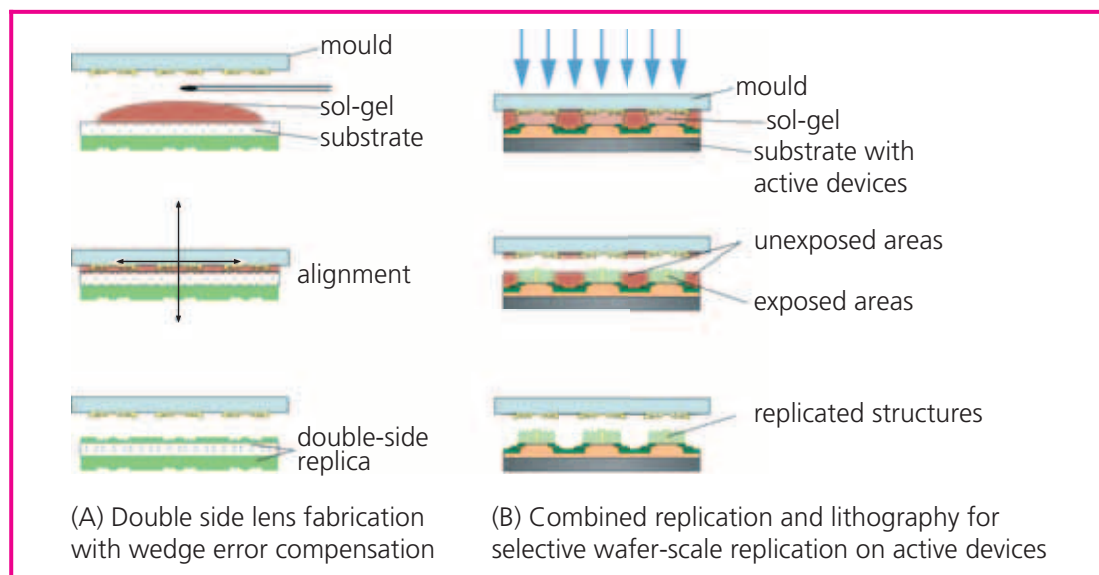
Packaged replicated sol-gel lens on a VCSEL chip (CSEM/Avalon)

Material

- UV patterning
- Thermally stable up to 270 °C
- Fast curing
- Solvent free

Technology

- Very high resolution to sub 200 nm linewidth
- Binary and continuous profile
- Positioning and mechanical alignment features in one mold
- Single elements or wafer scale



Physical properties

Ormocore	Ormocomp
n @ 635 nm: 1.553	n @ 635 nm: 1.518
n @ 800 nm: 1.543	n @ 800 nm: 1.513
Exposure dose: 300 - 1000 mJ cm ⁻² at 350 nm - UV 300 source recommended	
CTE: 100 - 130 ppm K ⁻¹	
Shrinkage 3 - 5 %	Shrinkage 5 - 7 %
Highly transparent up to 400 nm and at datacom wavelengths	Highly transparent up to 400 nm
Thermal behavior: stable up to 270 °C	

Applications

- Microoptical components and microsystems, optical sensors and measurement systems, telecom and datacom, displays and optical sensors and instruments