

OPTICAL MATERIALS for microlens arrays

Materials for automotive applications

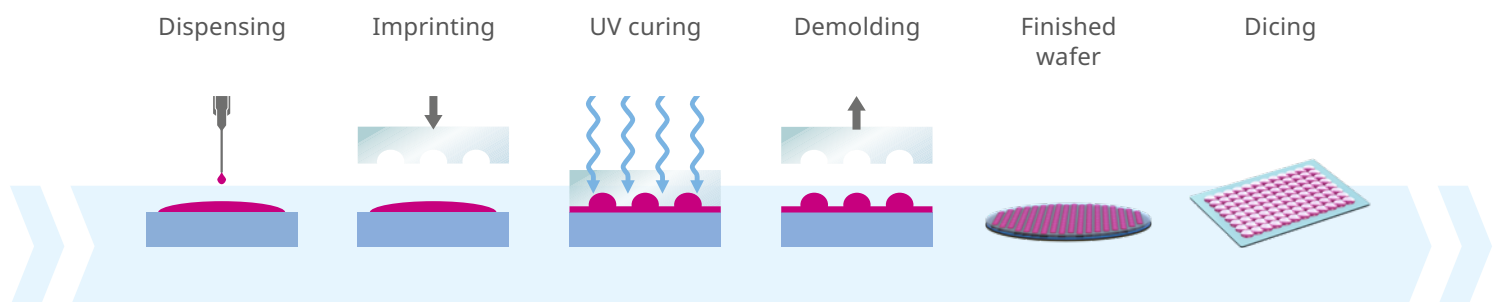
Microlens arrays (MLA) are used in automotive headlamps and projection systems to enable controlled light projections while reducing the dimensions of optical systems. DELO's materials feature high transmission,

exceptional optical and mechanical reliability, as well as strong adhesion. For headlamp systems, being larger than projection systems, more flexible materials are used to withstand internal stress.

Imprint process

The imprint process, also known as nanoimprint lithography (NIL), allows for efficient and high-quality replication of optical elements directly at wafer-level. With the ability to fabricate 2.5D structures in a single process step, wafer-

level imprinting is a versatile and cost-effective mass-manufacturing process especially suited for miniaturized optics with high functionality and dense packaging.



(Adhesives / polymers are represented in magenta in all illustrations)



Discuss your project and your requirements
with our experts:

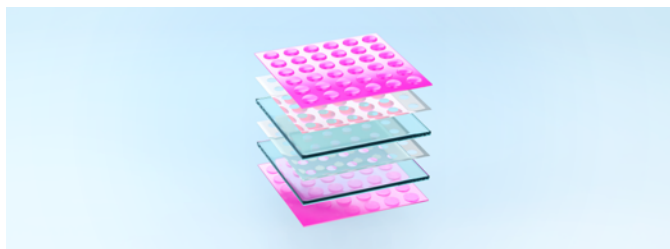
photonics@DELO.de

Applications

Automotive headlamps



Projection systems



Material requirements

- › High transmission within the range of visible light
- › Exceptional optical reliability during simultaneous heat and UV exposure
- › High optical and dimensional stability
- › High mechanical stability
- › High adhesion to substrate, e. g. glass, chromium
- › Suitable for large-area MLAs

Material solutions

- › ■ DELO KATIOBOND OM614: allrounder
- › ■ DELO KATIOBOND OM6600: fast curing
- › ■ DELO KATIOBOND OM6113: flexible, large area imprint
- › ■ DELO KATIOBOND OM6115: high yellowing resistance

Refractive index
@ 589 nm, solid

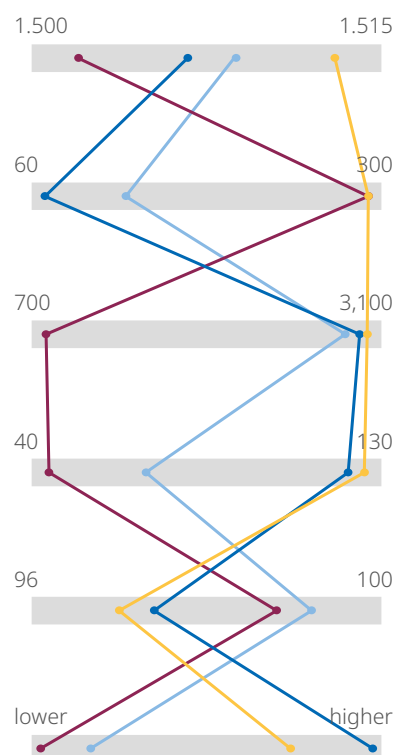
Light curing time
for imprint [s]

Young's modulus
[MPa]

Glass transition
temperature
DMTA [°C]

Yellowing resistance,
transmission after
1,000 h @ +125 °C [%]

Scratch resistance



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