

NILcure product line

Imprint resins for UV-NIL - perfect for any application

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The NILcure resin portfolio comprises in-house developed resins for UV imprint lithography. The resins of this versatile product line can be tailored to your application regarding their mechanical, chemical and optical properties.

NILcure characteristics

- Suitable for gravure printing, slot-die coating and inkjet printing
- Excellent adhesion to plastics, silicon, glass, metals and other substrates
- Exceptional anti-sticking properties
- Imprinting of high aspect ratio micro- and nanostructures
- Self-replicability: imprints usable as secondary stamps

Application examples

- Capillary flow control: wicking, microfluidic devices
- Superhydrophobicity: water and dirt repellency
- Scratch resistant surfaces with micro- and nano features
- Withstanding harsh artificial weathering tests and real-world applications
- Biobased, recyclable and compostable microfluidic chips



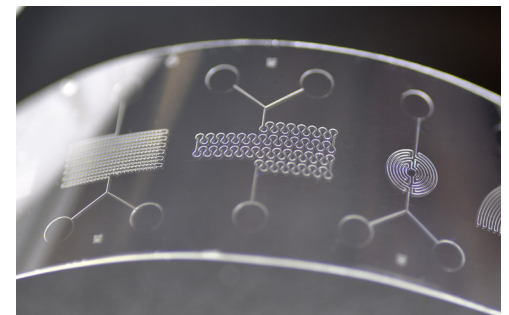
NILcure resin for drag reducing riblet foils



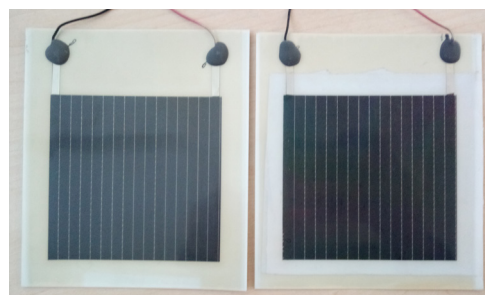
NILcure resin for high refraction and high dispersion decorative foils



NILcure resin for optical light guiding structures



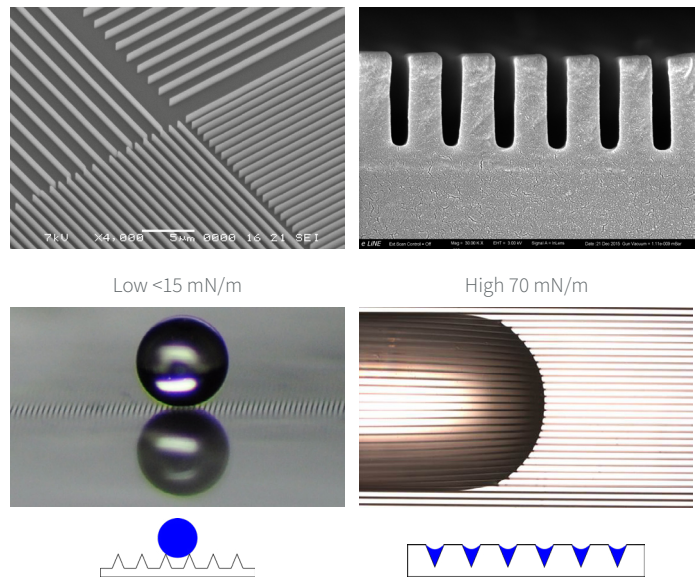
NILcure resin for microfluidic lab-on-a-chip applications



NILcure resin for antireflective, dirt-repellent solar cell coatings

Basic resin properties

- Customized polymer matrix and additives
- Biobased UV curable resin product line
- Low cytotoxicity
- Low leakage of components
- Water soluble resins for lift-off processes (VOC free)
- Residual free imprinting (avoiding etching process)
- Self-replicability
- Resistant against UV radiation and weathering



Tunable properties

- Surface energy – from superhydrophobic to hydrophilic
- Mechanical properties – from stiff to elastic
- Optical properties – low / high refraction and dispersion
- Wide viscosity range of uncured resins

Property tuneable	from	to
Young's Modulus Elongation	5 MPa 100 %	5 GPa 5 %
Surface energy	15 mN/m	70 mN/m
Refractive Index @589nm	1.4	1.8
Viscosity	10 mPas	10 Pas

Table 1: Resin properties can be adjusted independently

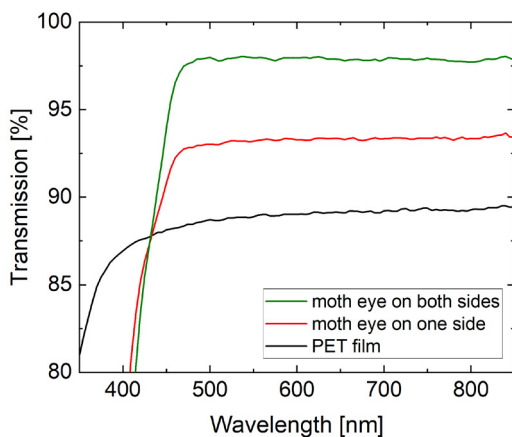


Figure 1: Transmission of pure PET film compared to one-sided and double-sided structuring with moth-eye structures

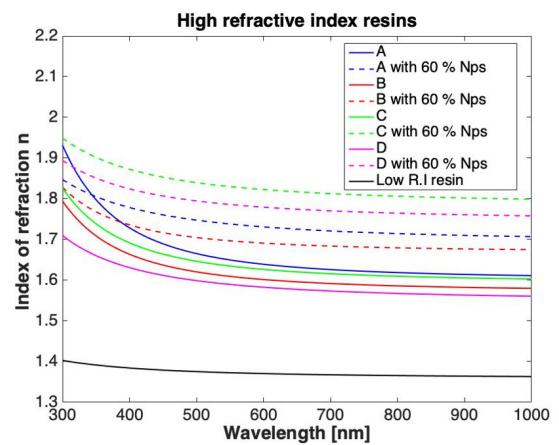


Figure 2: Refractive index ranges for different high refractive NILcure resins with and without addition of nanoparticles and one comparison to a resin with a low refractive index