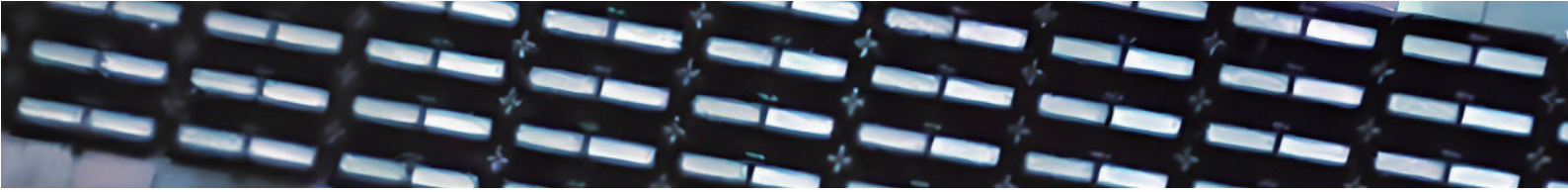
FOCUSLIGHT

Never stop exploring

LASER OPTICS COMPONENTS

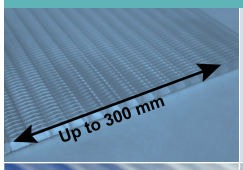
30 Years of Beam Shaping Excellence

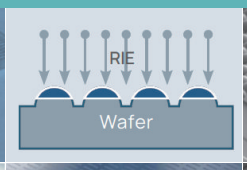


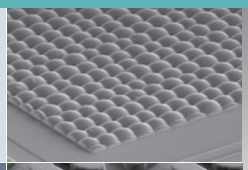
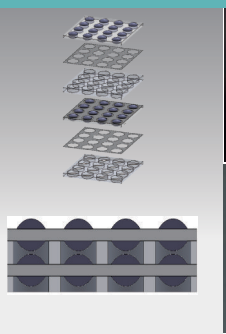
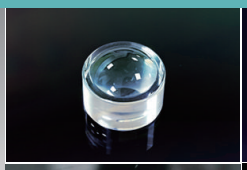
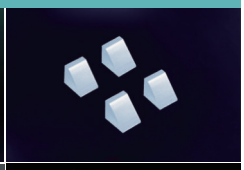
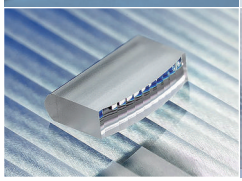
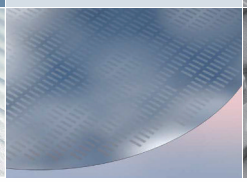
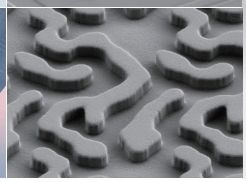
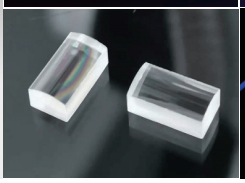
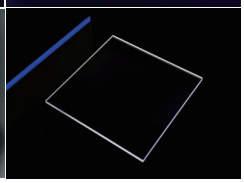
Focuslight -- One-stop-shop provider of micro-optics best matching your needs

With over 30 years of expertise in optical design, simulation, and volume production, Focuslight employs advanced, innovative technologies to deliver diverse beam-shaping solutions. Our high-precision micro-optics, manufactured with five major process technologies, enable a wide range of applications with exceptional performance and quality, making us your reliable, long-term partner for optical components and modules.

Wafer Level Simultaneous Structuring	Wafer Level Photolithography-RIE (reactive ion etching)	Wafer-Level Optics (WLO) Precision Imprinting	Wafer-Level Stacking (WLS)	Precision Glass Molding	Cold Processing
FE: Dortmund, Germany BE: Asia	FE: Neuchâtel, Switzerland BE: Asia	Shaoguan, China Singapore	Singapore	Dongguan, China	Dongguan, China





With inorganic materials:
Glass, Fused Silica, Silicon, CaF2

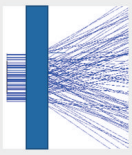
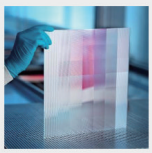
With polymer on glass

With inorganic materials:
Glass, Fused Silica, Silicon, CaF2

High LIDT Optical Coating: Anti-reflection, high-reflection, beam splitter, band filter, and various customization (UV, VIS, IR)

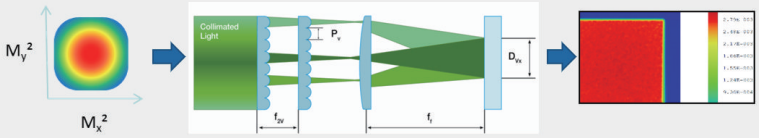
Beam Shaping – The Right Photon at the Right Place and Time!

Micro Optics Design and Simulation

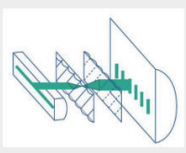
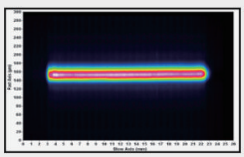
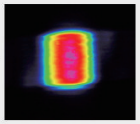
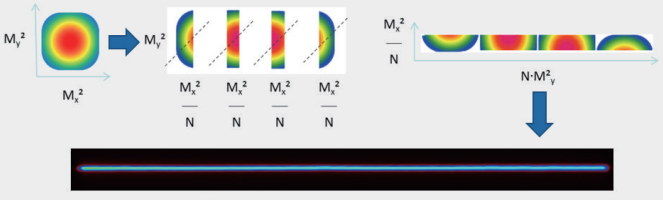

Acylindrical free-form micro-optics / arrays / diffusers / DOE splitters / beam shaping systems

Homogenization



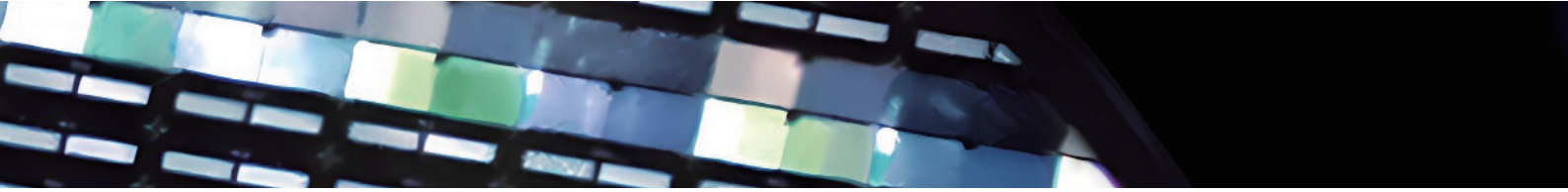
Uniform and homogeneous illumination in any desired shape

Beam Transformation

Asymmetrical → Symmetrical beam

Symmetrical beam → High density line beam

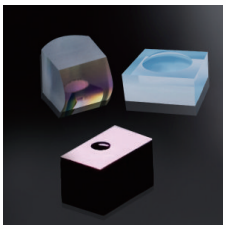


Single Lenses

Fast Axis Collimators (FAC)

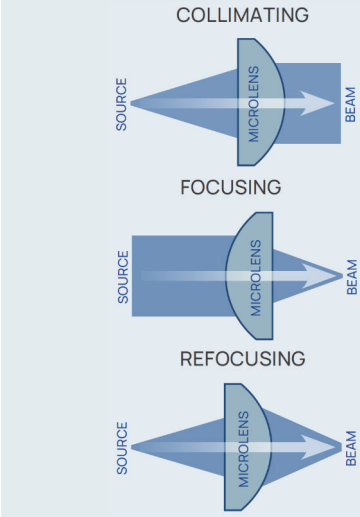
Specifications	Value
Material	High quality optical glass, fused silica
Effective Focal Length	0.11 – 7.7 mm, customizable
Back Focal Length	0.034 – 5.000 mm, customizable
AR Coating	770 – 1070 nm, 790 – 990 nm, 400 – 480 nm

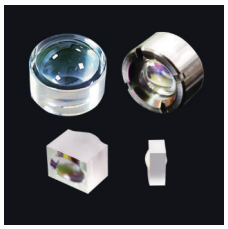
Front view of fast axis collimation: Before and After



Fiber Couplers and Collimators

Specifications	Value
Material	Fused silica, silicon
Beam Diameter / Output	50 to 400 µm, or customizable
Fiber / Waveguide types	SMF, MMF, LD, PIC, Si-Photonics
Lens Type	Circular, cylindrical
Lens Profile	Spherical, aspherical, DOEs
AR Coating	VIS, NIR





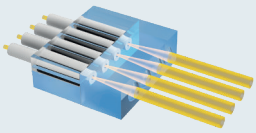
Focusing Lens / FAC-SAC Monolitic Collimation Lens

Specifications	Value
Material	Moldable materials (e.g. D-ZK3 or D-LAK6)
Outer Diameter Range	1.5 – 45 ± 0.003 mm
Transmission Decenter	30" – 90"
PV	0.2 – 1.0 µm
Coating	VIS, NIR

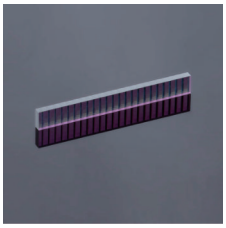
Linear Lens Arrays

Fiber Coupler and Collimator Arrays

Specifications	Value
Material	Fused silica, silicon
Lens Dimension	Diameter 0.02 – 1.5 mm, center thickness 0.25 – 3.0 mm, aspherical lens units
Pitch	127 / 250 / 500 / 750 µm and customized, 1D / 2D arrays
Coating	Low loss ARC and metallization

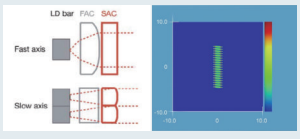


Fiber array collimation in optical communications

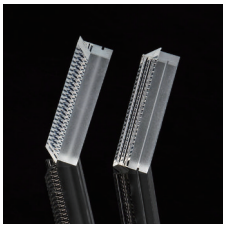


Slow Axis Collimator Arrays

Specifications	Value
Material	Optical glass, fused silica
Pitch	0.4 / 0.5 / 1.0 mm
Structure	Single sided (SAC arrays) or double sided (Telescope arrays)
AR Coating	VIS, NIR

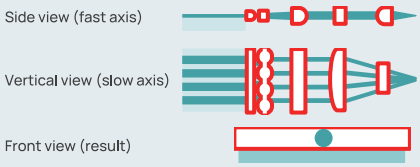


Collimation of laser bars



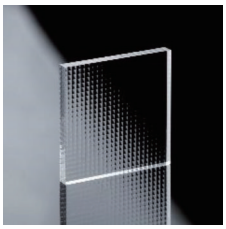
Beam Transformation System (BTS)

Specifications	Value
Material	Optical glass, fused silica
Effective Focal Length	0.11 – 7.7 mm, customizable
Back Focal Length	0.034 / 0.052 / 0.090 mm
Pitch	0.2 / 0.225 / 0.4 / 0.5 mm, customizable
AR Coating	420 – 465, 790 – 990, 600 – 700, 1000 – 1600 nm



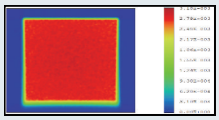
Fiber coupling of laser bars with BTS

Area Lens Arrays

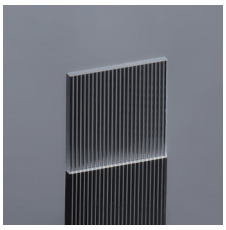


Homogenizers

Specifications	Value
Material	High refractive index optical glass, fused silica, silicon, CaF2, polymer on glass (PoG)
Lens Type	Cylindrical, circular, hexagonal, square
Lens Arrangement	Linear, quad, hexagonal and customizable
Coating	AR, HR, chrome, black chrome

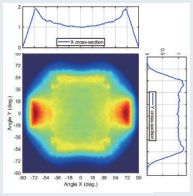


Typical homogeneity > 95% used in pan-semi applications

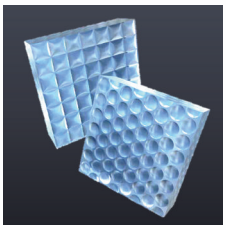


Diffusers

Specifications	Value
Material	Optical glass
FOV	Up to 160° in one direction
Working Temperature	-40 °C – 150 °C
Intensity Distribution	Top-hat, cos-2, bat-wing (› 90% homogeneity)
Suitable Laser Source	EEL, VCSEL, DPSSL, Fiber laser etc.

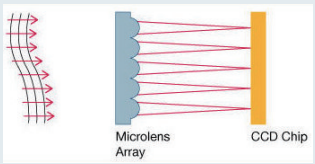


Typical bat-wing distribution with FOV 160° x 120° used in flash LiDAR

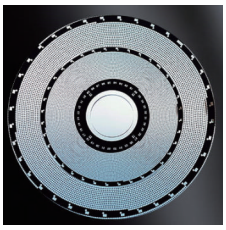


Shack-Hartmann Arrays

Specifications	Value
Material	Fused silica, silicon
Lens Diameter	30 µm to 2.0 mm
F-number (F#)	Typ. F/5 to F/100
Effective Focal Length	Typ. 1 to 100 mm
Wavefront Error (Surface profile deviation)	10 to 50 nm (Typical)
Array Size	Customizable
AR Coating	UV, VIS, NIR

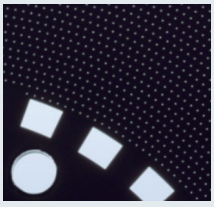


Wavefront sensing with Shack-Hartmann arrays

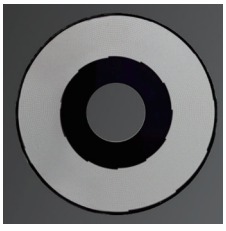


Pinhole Arrays

Specifications	Value
Disc Diameter	≤ 160 mm
Material	Fused silica
Pinhole/Lens Pattern	Custom
AR Coating	UV, VIS, NIR
Cr Coating	Customizable per request

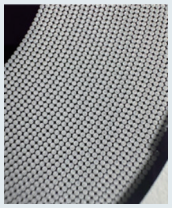


Arrays of precision pinholes essential to specific applications (e.g., confocal microscope)

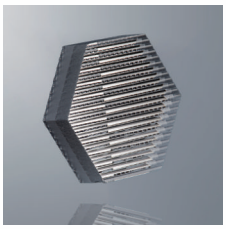


Microlens Array Discs

Specifications	Value
Disc Diameter	80-120 mm typically, up to 160 mm
Material	Fused silica
Lens surface	Custom
Lens pattern	Spiral
Single aperture	500-700 µm

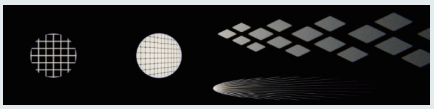


Array of microlenses arranged in a certain pattern to improve the efficiency of light delivery in confocal microscopes.

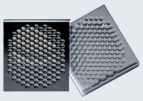


Micro Lens Arrays

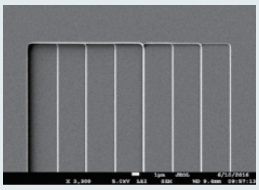
Specifications	Value
Material	Polymer on glass (PoG)
Lens Type	Convex, concave, arbitrary (freeform), with or without apertures
Lens Pitch / Diameter	10 µm to 2 mm
Lens SAG	2 to 450 µm
Alignment Accuracy	≤ 5 µm lens to lens, lens to aperture (same side / opposite sides)



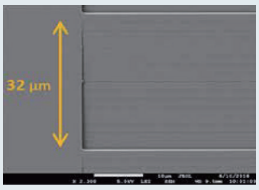
Pattern generation with MLAs with apertures



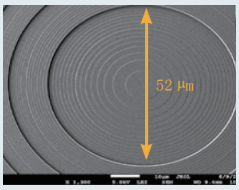
Diffractive Optical Elements (DOE)



▪ 8-LEVEL GRATING



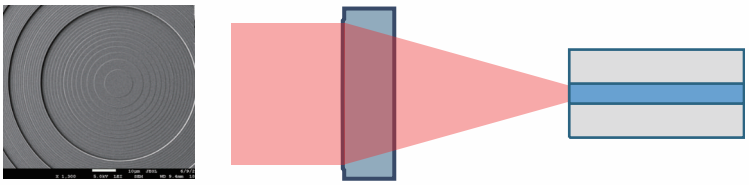
▪ 16-LEVEL GRATING



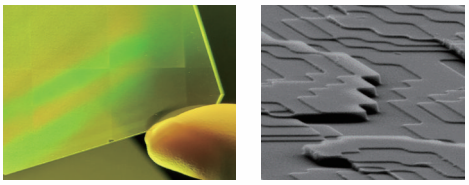
▪ 16-LEVEL DOE LENSES
▪ STEPPER TECHNOLOGY
▪ DOUBLE-SIDE AR COATING

Up to 98% Diffraction Efficiency

Specifications	Value
Material	Fused silica, silicon
Composition	Binary and up to 16 levels
Wavelength Range	190 nm – 5 µm
Minimum Feature Size	500 nm – 1 µm
Overlay Accuracy	< 70 nm



Fiber coupling through “very flat” DOE

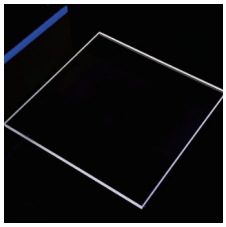


Beam shaping DOE for UV excimer laser

Plano Optics

Micro Prisms

Specifications	Value
Lens Size	2 – 0.3 mm
Angular Accuracy	30”
Flatness	1/10λ @ ϕ 50 mm
Roughness	0.2 – 0.6 nm
Surface Quality	MIL 20/10 / ISO 3x0.1, L0.02



Windows

Specifications	Value
Size	2 x 2 mm – 1200 x 300 mm
Flatness	1/10λ @ ϕ 150 mm
Roughness	0.2 – 0.6 nm
Surface Quality	MIL 20/10 / ISO 3x0.1, L0.02

Precision Coating + Advanced Characterization

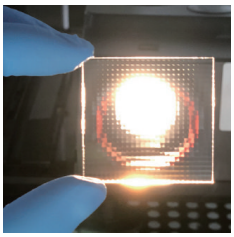
Focuslight offers advanced optical coating services, providing high-quality coatings across a broad wavelength range from deep ultraviolet (DUV) to infrared (IR). With precise design and ISO-compliant production, we ensure exceptional performance and long-term reliability of the coatings used in various industries, such as optical communications, medical and health, and automotive-grade applications.

Wide Coating Range from UV 248 nm to IR 3000 nm

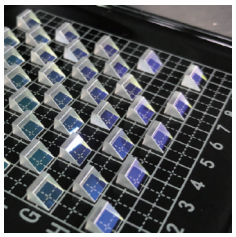
- Anti-reflection
- Bandpass
- Polarizer
- High reflection
- Splitter

Advanced Coating Characterization

- Nano coating defect diagnosis
- Coating layer stress analysis
- Coating layer absorption and LIDT analysis



Anti-reflection coating on lens arrays

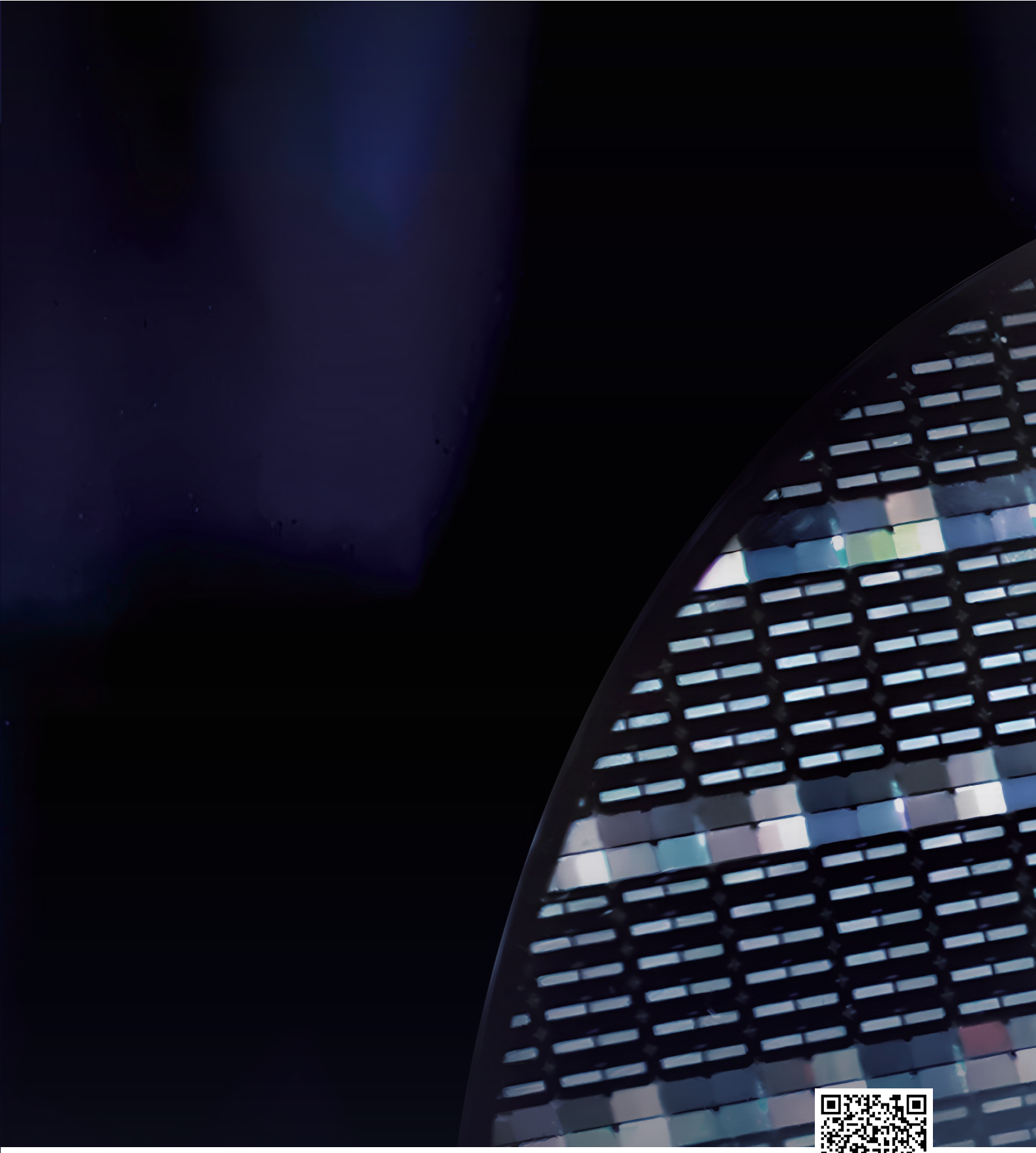


High reflection coating on micro prisms

LIDT Measurement Capability and Service *

Specifications	Value
Wavelength	355 / 532 /1064 nm
Laser Mode	Pulsed
Frequency	10 Hz
Pulse Width	10 ns
Pulse Number	200

* Test report available within 3 days after sample reception



www.focuslight.com

COMPANY INTRODUCTION

Founded in 2007 and headquartered in Xi'an, China, Focuslight Technologies Inc. is a fast-growing public company (Shanghai: 688167) that specializes in developing and manufacturing high-power diode laser components and materials, laser optics, as well as photonics module and system solutions focusing on optical communication, automotive, pan-semiconductor, and medical and health applications. Focuslight has expanded its global footprint through strategic acquisitions including LIMO GmbH in 2017 and SUSS MicroOptics SA in 2024 (now as Focuslight Switzerland SA). With the acquisition of assets from ams OSRAM in 2024, Focuslight extends its business to be a global photonics foundry by providing global photonics industry process development and manufacturing service under the brand of Heptagon. Learn more at www.focuslight.com and www.hptg.com.

Focuslight Technologies Inc.

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