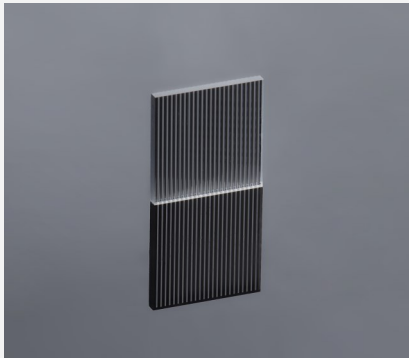


# Wide Angle Diffusers



## Features and Advantages

High quality homogenizers for spanning a defined angle from collimated light. A top hat or  $\cos^{-2}$  profile with steep slopes and high homogeneity can be created along one dimension in angular space. Combining two diffusers creates a homogeneous rectangular distribution. Especially designed for high laser input powers, using low absorption glass or fused silica for optimized LIDT.

The new diffusers provide line or rectangular shape, steep slopes, high optical efficiency, wide angles, repeatability, no zero order, no hot spots, no degradation under UV.

## Product Specifications

Product Code		ZLA003014 <sup>(1)</sup>	ZLA003130	ZLA003345 <sup>(1,3)</sup>	ZLA003346 <sup>(1,3)</sup>	ZLA003131	ZLA003632
Specification Data	Unit	Value					
Design Angle (FW/e <sup>2</sup> )	°	20	25	45	60	125	160
Angular Output Profile <sup>(2)</sup>		Top Hat	Top Hat	Cos <sup>-2</sup>	Cos <sup>-2</sup>	Top Hat	Cos <sup>-2</sup>
Material		S-TiH53	Fused Silica	Fused Silica	Fused Silica	S-TiH53	High-Index IR
Length (L)	mm	4.5 ± 0.05	5 ± 0.1	2.9 ± 0.1	2.6 ± 0.1	5.0 ± 0.1	5.0 ± 0.1
Width (W)	mm	7.75 ± 0.05	5 ± 0.1	2.6 ± 0.1	2.9 ± 0.1	5.0 ± 0.1	5.0 ± 0.1
Thickness (T)	mm	0.5 ± 0.05	0.5 ± 0.05	0.5 ± 0.05	0.5 ± 0.05	0.5 ± 0.05	0.5 ± 0.05
Clear Aperture (AI x Aw)	mm <sup>2</sup>	4.3 x 7.55	4.5 x 4.5	2.64 x 2.34	2.34 x 2.64	4.5 x 4.5	4.5 x 4.5
Refractive Index		1.81	1.45	1.45	1.45	1.81	1.91
Design Wavelength	nm	1064	1064	940	940	1064	940
AR Coating	nm	1054 - 1074	Uncoated	790 - 990	790 - 990	Uncoated	Uncoated
Transmission <sup>(4)</sup>	%	99	90 <sup>(5)</sup>	98	98	82 <sup>(5)</sup>	70 <sup>(5)</sup>

<sup>(1)</sup> Example for customization – design, dimensions and coating on request

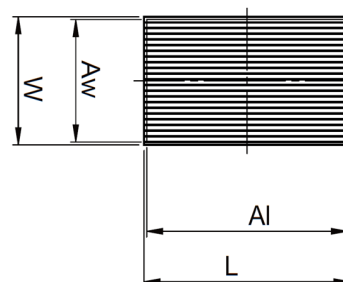
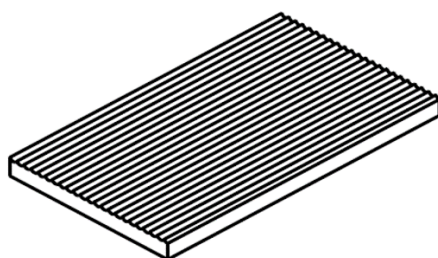
<sup>(2)</sup> M<sup>2</sup> > 10 and minimum beam size > 2.5mm FW/e<sup>2</sup> advised to ensure steep slopes and high homogeneity

<sup>(3)</sup> Optimized for VCSEL source

<sup>(4)</sup> Transmission at design wavelength and angle of incident 0-30°

<sup>(5)</sup> Uncoated transmission. Can be increased by coating.

## Product Drawing (mm)





# WIDE-ANGLE DIFFUSER (WAD)

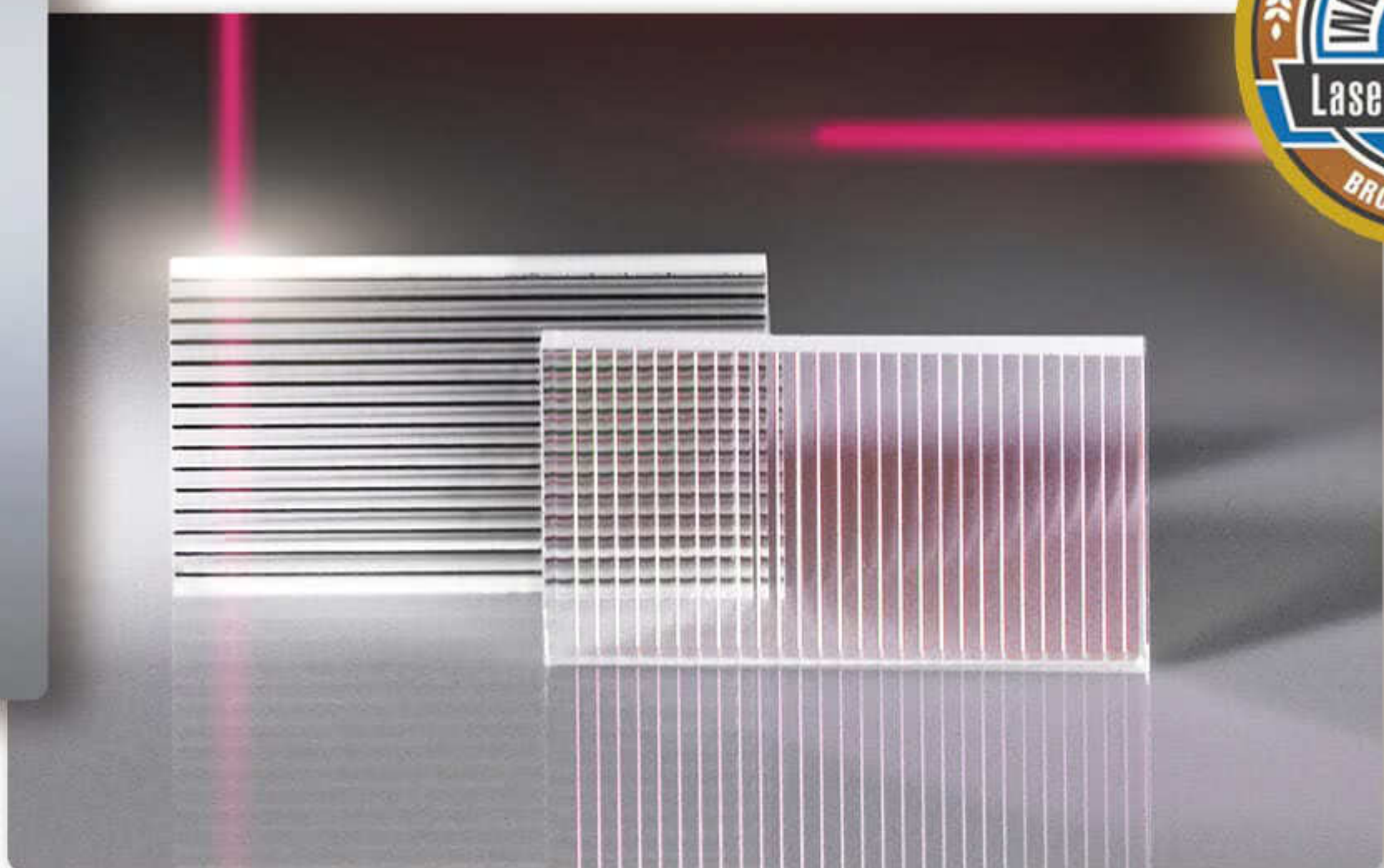
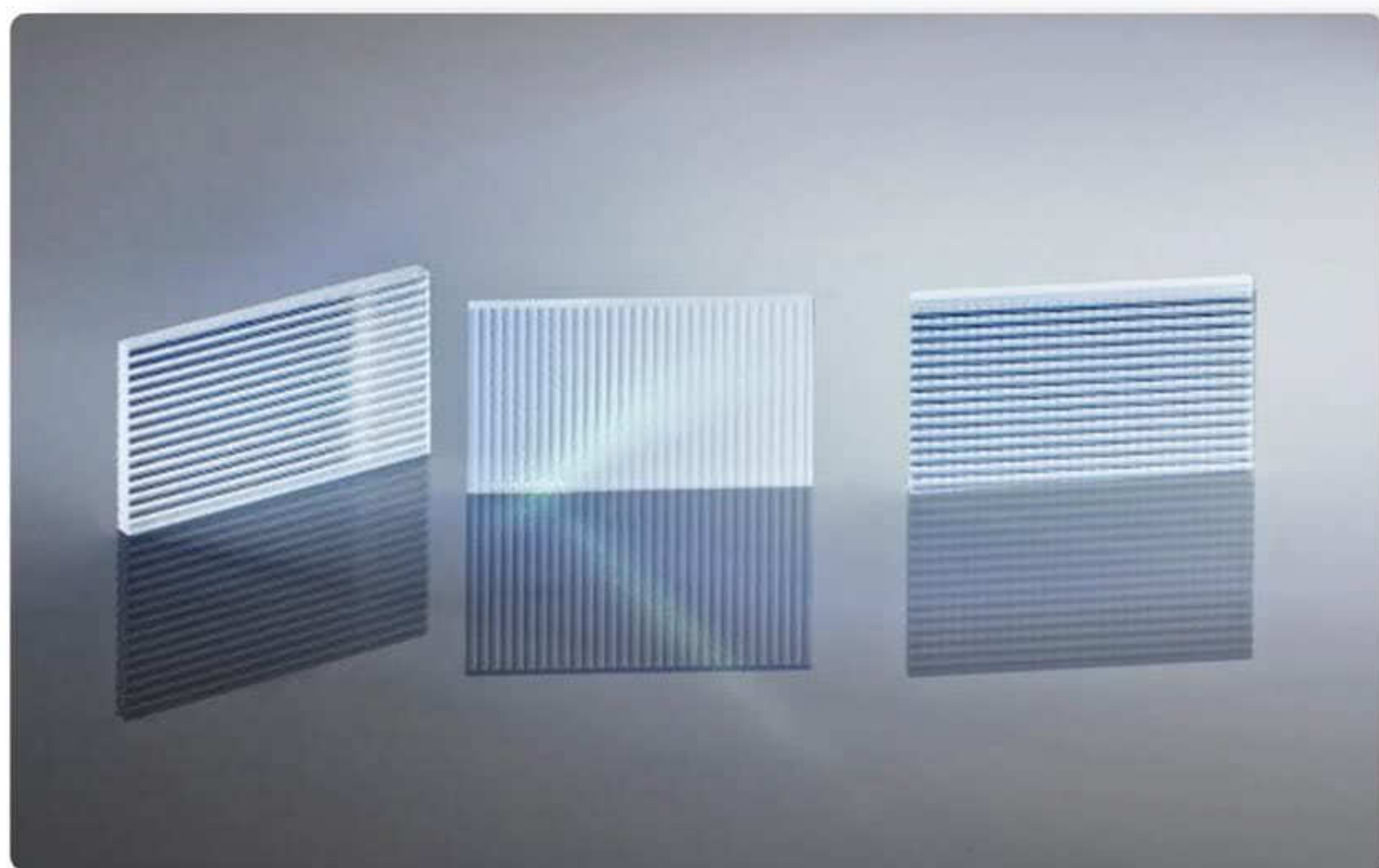
3D SENSING



LiDAR



DMS





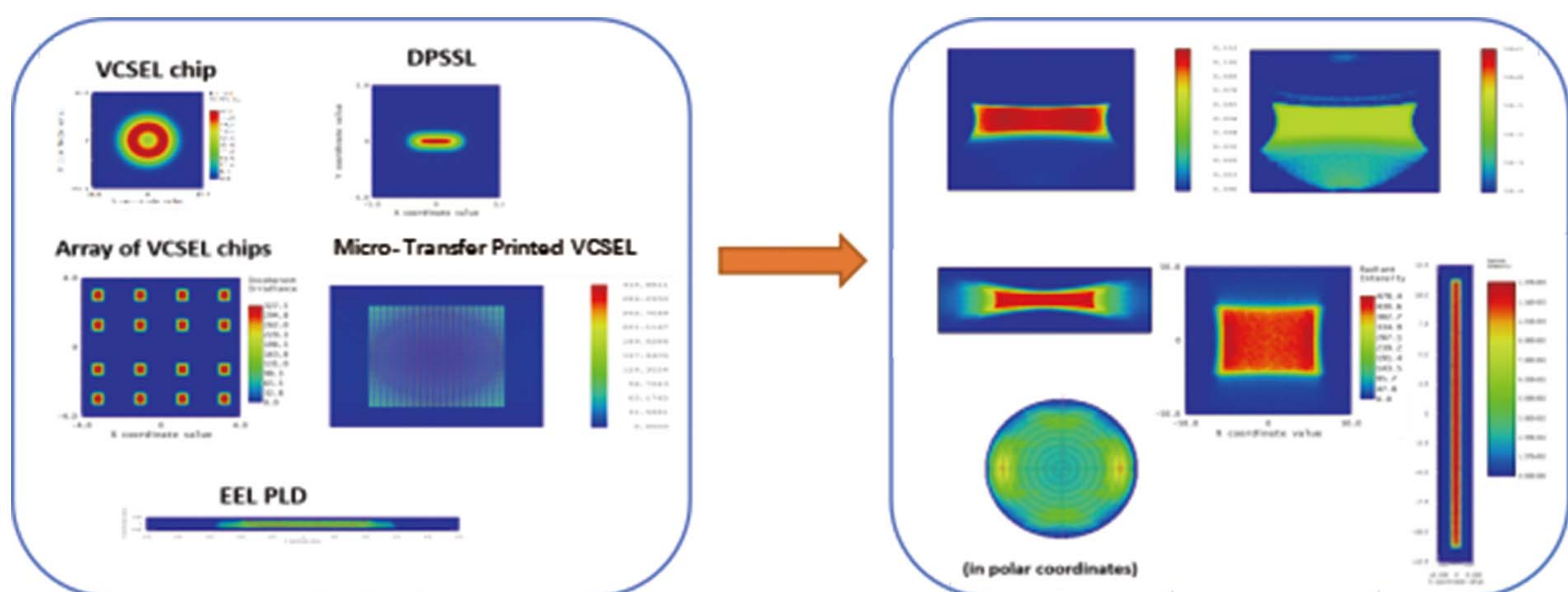
Focuslight designs and produces wide angle diffusers (WAD) with 1D/2D FOV up to 160° FW, which can provide a wide selection of profiles from flat-top, batwing, stepped profile, offset to customized homogeneous intensity distribution. With two diffusers, 2D field distributions are created, to enable one-shot illumination of the surrounding, optimized for LiDAR or machine vision. These wide angles are possible by using high refractive index glasses in combination with our unique wafer processing technology with complementary polishing, delivering smallest scattering, highest performance stability and maximum transmission.

### Refractive optical element (ROE) 1D micro lens array (MLA) diffusers

- Freedom on combinations of 1D diffusers for an 2D FOV: H x V angles (e.g. 60° x 45°, 120° x 20°, 150° x 150°, 120° x 100°)
- High transmission efficiency up to 99.8% (AR coated)
- NO zero-order, NO 'hot spot', eye safety
- Large FOV angles (e.g., 160°)
- High uniformity >90%
- Automotive-grade glass material

**Applicable to various light source:** collimated, less collimated, diverging, such as DPSSL, EEL, VCSEL, etc.

**Laser source + Diffusers = 2D FOV profile of radiant intensity**



## COMPANY INTRODUCTION

Founded in 2007 and headquartered in Xi'an, China, Focuslight Technologies Inc. is a fast-growing company that develops and manufactures high-power diode laser components and materials (photon generation), laser optics (photon control) as well as photonic application modules, assemblies, and sub-systems (photonics application solutions) with a focus on automotive, pan-semiconductor, and medical & health application solutions. Focuslight has over 400 patents worldwide and is ISO 14001, ISO 45001, ISO 9001:2015, and IATF 16949 certified. In December 2021, Focuslight announced the IPO on the Shanghai Stock Exchange (Ticker Symbol: 688167).