



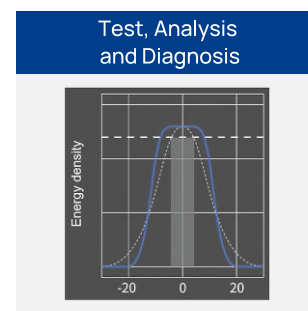
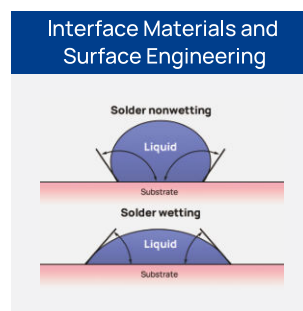
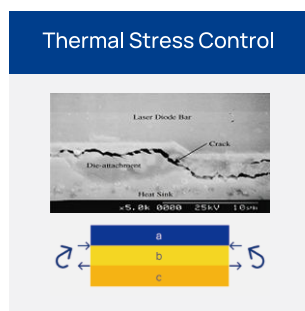
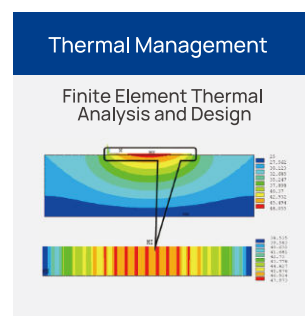
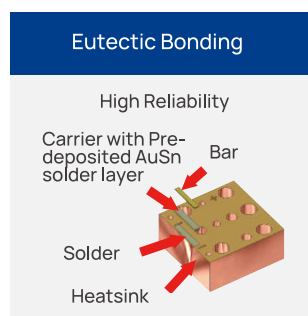
**FOCUSLIGHT**  
Never stop exploring

# **LASER SOURCES AND MATERIALS**

High Performance, Reliable, Scaled

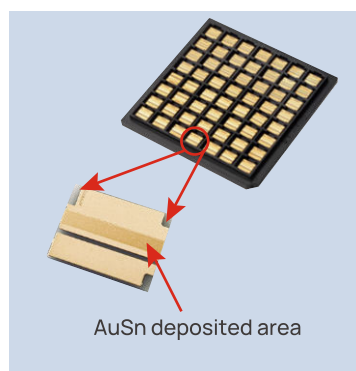
## Focuslight - Diode laser source leader and beam shaping expert with strong IP position

Since its establishment, Focuslight has been dedicated to the research and development of fundamental photonics components and related application solutions. Our core technologies enable us to provide strong supports to our partners' business and together drive the growth and prosperity of the photonics industry worldwide.



## Substrate Materials for Diode Lasers

Fabricated through pre-deposition of micron-level AuSn thin film in specific areas of substrate materials, these substrates are the key to the long-term reliability of high-power diode laser chips and components. Focuslight is one of the pioneers in AuSn thin film deposition and AuSn bonding with more than ten years of expertise.

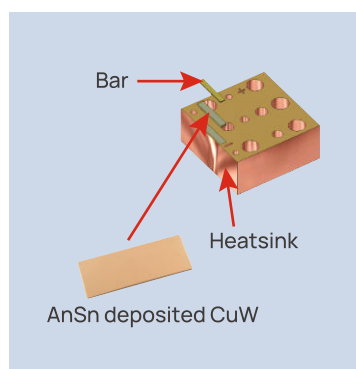


### AuSn Pre-deposited AlN Substrates

Specifications	Value
Mostly Used Dimensions	L: 4.0 - 10.0 mm, W: 2.0 - 5.0 mm, T: 0.2 - 2.0 mm Flexible customization available
AuSn Thickness	4.5 ± 1 μm
Melting Point	280 - 320 °C
Thermal Resistance	≤ 2 K/W

### Key Benefits

- Low thermal resistance
- High matching CTE
- High precision surface
- High precision wafer processing
- High thermal conductivity
- Low warpage



### AuSn Pre-deposited CuW Substrates

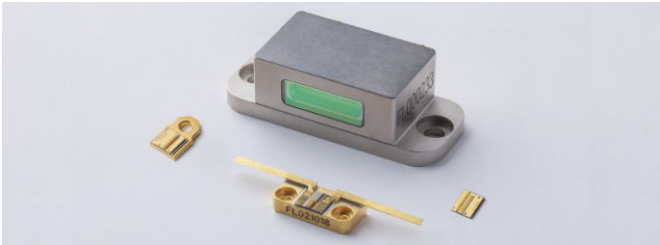
Specifications	Value
Mostly Used Dimensions	L: 4.0 - 10.0 mm, W: 2.0 - 5.0 mm, T: 0.2 - 2.0 mm Flexible customization available
AuSn Thickness	6.0 ± 1 μm
Melting Point	280 - 320 °C
AuSn Deposition Side	Single / double sided

### Typical Application Scenarios

- Laser diode chip bonding
- LED chip bonding
- Optical communication chip bonding
- IGBT component bonding
- Other metallization service

## Single Emitter and Single Bar Diode Lasers

Focuslight offers high-power single-emitter diode lasers with structures of COC (chips on carrier), NV02 with dust-proof design, the Focuslight patented F-mount, as well as our high-power single-bar diode lasers based on micro-channel cooling or conduction-cooling designs.



### Single Emitter Diode Lasers

Specifications	Value
Typical Power Output	10W 808nm CW 12W 915/940/976nm CW 5W 1470nm CW
Available Wavelengths	660/808/915/940/976/1470 nm
Fast Axis Collimation	1:1 or 1:2 optional, or customizable



### Single Bar Diode Lasers

Specifications	Value
Typical Power Output	60W 808nm CW 100W 940/976/980nm CW 80W 1060nm CW 30W 1470nm CW
Smile	< 2 $\mu$ m (typical); < 1 $\mu$ m (new LCS series)
Cooling	Water-cooled or conduction-cooled

### Typical Application Scenarios

- Illumination
- Medical treatment
- Range finding
- Side pumping / end pumping (e.g. Nd:YAG / Nd:YVO4 laser, Yb:YAG / Er:YAG laser)

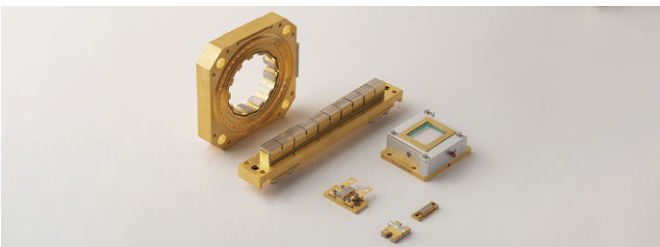
## Diode Laser Stacks

We offer high-power micro-channel water-cooled and conduction-cooled stacks with various structures differing in sizes, bar arrangement and electrical designs, covering wavelengths from 760 to 1060 nm and a wide power output range.



### Micro-Channel Water Cooled Diode Laser Stacks

Specifications	Value
Typical Power Output	100W/bar CW 808nm, 200W/bar CW 940nm
Smile	< 2 $\mu$ m (typical)
Number of Bars	Up to 60 bars per stack
Fast Axis Collimation	Optional



### G-Stacks and G-Stack-Based Arrays

Specifications	Value
Typical Power Output	200-500W/bar QCW, 808/940nm
Duty Cycle	< 1% or few percent
Operation Temperature	-45 ~ 60 °C
Fast Axis Collimation	Optional

### Typical Application Scenarios

- Hair removal
- Side pumping / end pumping (e.g. Tm laser, Nd:YAG / Nd:YVO4 laser, Yb:YAG laser)
- Laser annealing

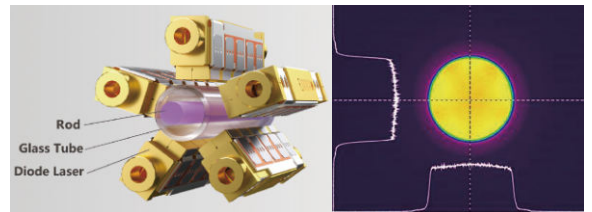
## Diode Laser Side Pumped Modules

Featuring our advanced high-power diode laser as core component, along with our unique designs of optics, water flow, and ASE (amplified spontaneous emission) effect control, our side pumped modules ensure high-power DPSSLs with outstanding performance, reliability and efficiency.



Side pumped modules:  
SP17 and SP18

Specifications	SP17	SP18
Typical Power Output	30 kW QCW	5 kW QCW
Rod Diameter	10 mm	4 mm
Number of Bars	150	25
Small Signal Gain (SSG)	> 55	> 30



Five phase pumping used in SP17/SP18 (left);  
Typical fluorescence imaging (right)

## Fiber-Coupled Diode Lasers

Our fiber-coupled diode laser modules, based on either multiple single laser emitters or laser bars with conduction-cooled or water-cooled designs, provide highly efficient, flexible and reliable solutions to various application scenarios like advanced manufacturing, medical, and scientific research.



**Emitter-based modules:**  
FCSE08, FCMSE58, FCMSE55 series

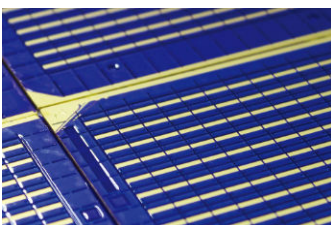
Specifications	Value
Power Output	Up to 30W 808/976/1064 nm
Fiber Core Diameter	105/200 $\mu$ m
Numerical Aperture	0.15/0.22
Optional Functions	Fiber detection, power detection, pilot beam



**Bar-based modules:**  
LM, FG, ND, MF series

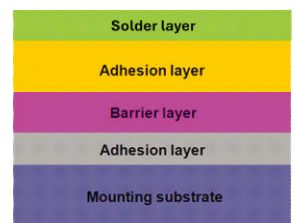
Specifications	Value
Power Output	Up to 500W 808/940/976 nm
Fiber Core Diameter	100/200/400 $\mu$ m
Numerical Aperture	0.22
Optional Functions	Fiber detection, negative temperature coefficient thermistor, power detection, pilot beam, feedback reflection, VBG

## Technical Services



### Thin Film Metallization Service

We apply PVD and optional electroplating to deposit highly uniform (< 3% variation), micron-level AnSn, Ti, Pt, Au, or Sn layers on substrates, strengthening solder joints for higher device reliability.



Metallization structure of a typical mounting substrate

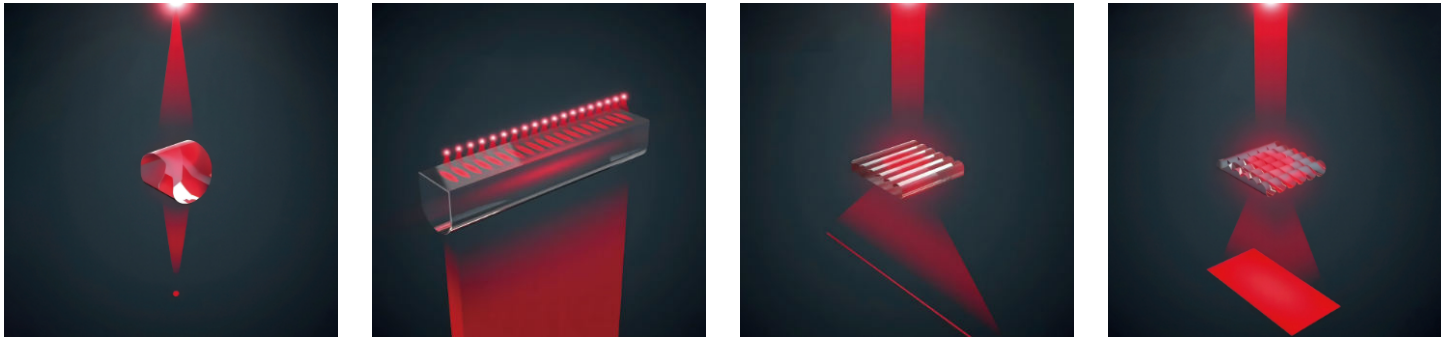


### Diode Laser Manufacturing Service

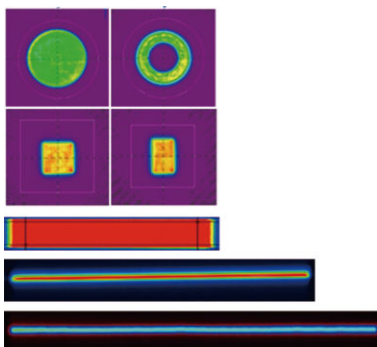
Focuslight offers diode laser manufacturing service where customers own the product and IP, and we focus on high-quality, scalable production. With our global facilities and in-house capabilities for optics, thermal materials, application solutions and automated operations, we deliver reliable, cost-efficient manufacturing for both high-volume and high-value markets.

## Direct Application of Diode Lasers with Advanced Beam Shaping Technologies

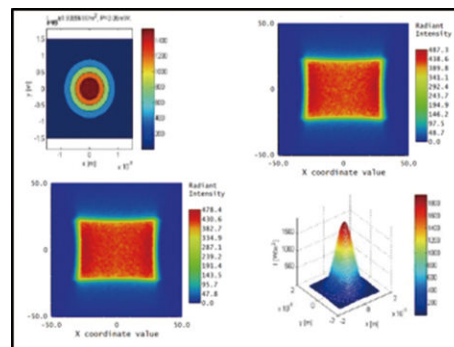
Taking advantage of beam shaping technologies, we can manipulate the output beam shapes, power densities, and intensity profiles that are most essential for laser-matter interactions. With low cost and high efficiency, the direct application of diode laser has become a clever option in specific scenarios.



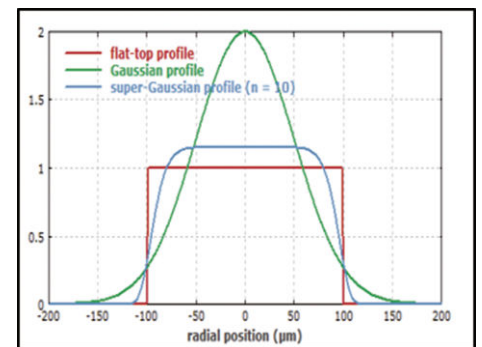
Optical solutions for zero dimension (dot), one dimension (line) and two dimension (area)



Beam Shapes



Power Densities



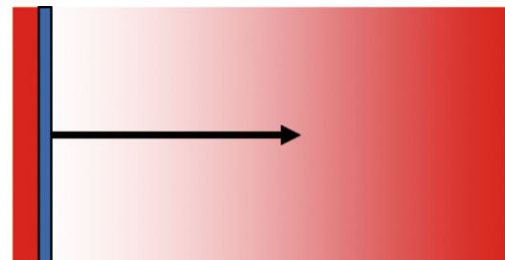
Intensity Profiles

## Revolution of Laser Applications: From Dot to Line and Area

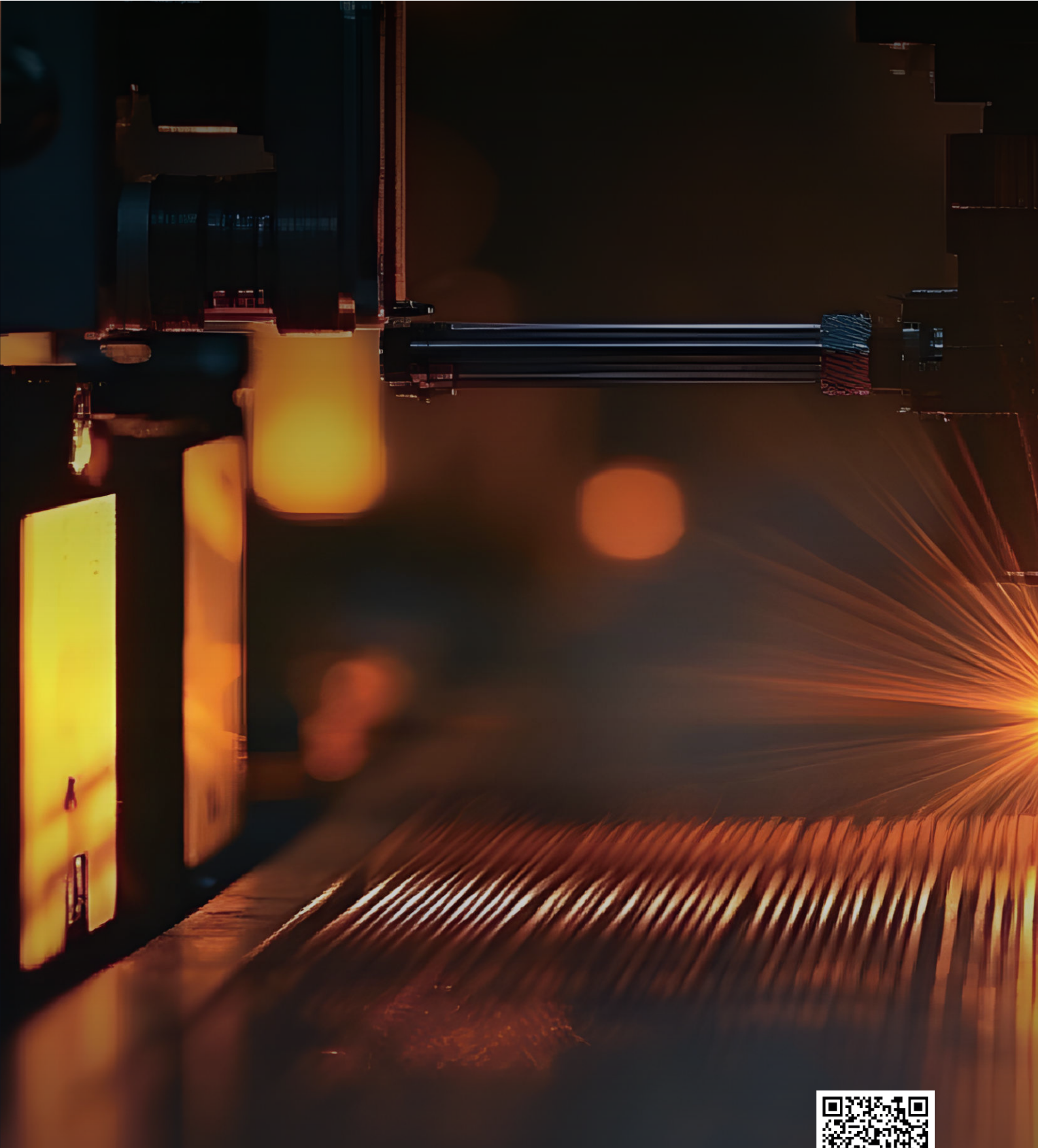
Pulsed or continuous laser sources, powered by beam-shaping micro-optics, can significantly enhance production efficiency compared to conventional point-shaped beams. By selecting the optimal beam shape, power density, and light intensity distribution, the best application performance and maximum value can be achieved.



Conventional point laser scanning:  
Beam must walk through both directions  
to cover the whole area



Advanced line laser scanning:  
Beam only needs to go through one direction  
to cover the whole area



[www.focuslight.com](http://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 laser sources and materials, micro-optics, as well as photonics module and system solutions focusing on optical communication, consumer electronics, pan-semiconductor, automotive, 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 relaunched the brand of Heptagon and extends its business to be a global photonics foundry by providing global photonics industry process development and manufacturing service. Learn more at [www.focuslight.com](http://www.focuslight.com) and [www.hptg.com](http://www.hptg.com).

**Focuslight Technologies Inc.**

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