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MICRO OPTICS DRIVING HIGH POWER DIODE LASER APPLICATIONS

FISBA is a pioneering supplier in the diode laser market, specializing in the development and production of precision micro optics

solutions for beam shaping. The need for outstanding collimation performance in diode lasers motivates to strive for excellence in creating solutions that cover every aspect of the development process, from requirements to design solution, testing, and validation to product delivery.

Crafting collimation design for diode laser beam shaping requires respecting miniaturized dimensional and other system requirements for delivering a stable beam to the application via free-beam or fiber-optics. A core competence is manufacturing collimation optics using precision optical glasses, integrated, and tested to the highest quality requirements in the industry by the operational excellence made available in the production teams.

Fiber Laser Pump Modules Collimated in Fast and Slow Axis with FAC and SAC Micro Optics

The drive towards higher power fiber lasers in advanced manufacturing applications is gaining momentum due to the increasing pump power available from high power diode lasers. A multitude of single edge-emitting high-power laser chips emit light that is coupled to fiber pump modules, using specific micro optics to collimate the fast and slow axis (FAC/SAC). To meet the growing demand for increased collimation performance, highly reproducible processes are used to produce higher quality miniaturized optics. FISBA offers a broad range of standard components, and also quick to customize to meet specific customer needs and ramp up production of these customized parts promptly. Continuous innovation and improvement in these components enable FISBA to offer the highest levels of optical performance, especially

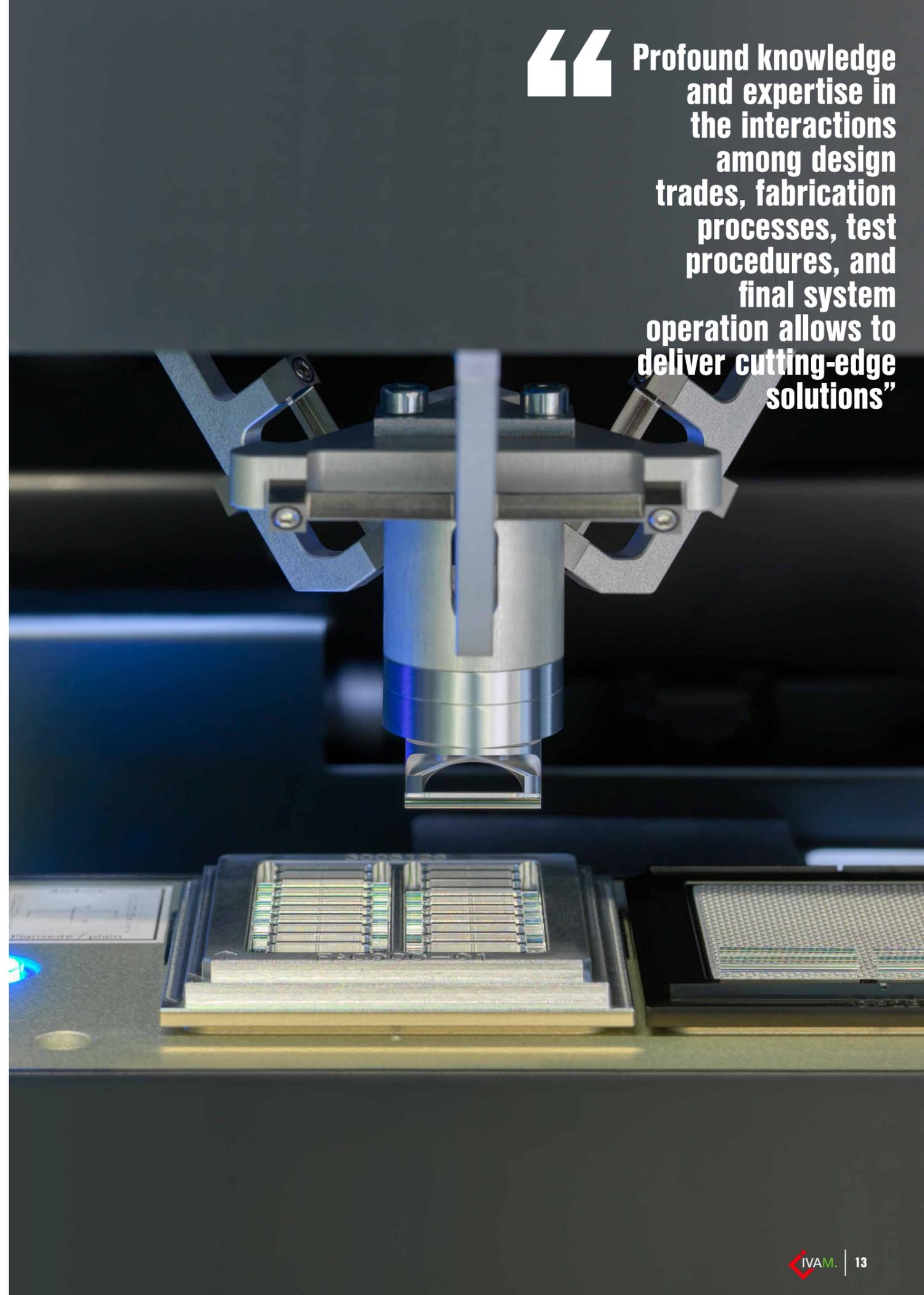
with coatings designed for the specific diode laser wavelength.

High Power Blue Laser Direct Diode Welding and 3D Advanced Manufacturing

There are growing demands for high-power industrial blue diode lasers in direct diode laser processing applications, such as laser welding and additive manufacturing of copper, gold, aluminum, and other materials. These diode lasers have unique physical features that make them ideal for material processing applications, which all rely on high-power edge-emitting diode lasers.

Optimal collimation performance with fast-axis collimation (FAC) and slow-axis collimation (SAC) combinations is crucial for achieving exceptional power-scaling in these applications. Aspherical correction for FACs is already an industry standard and FISBA provides the same feature for SACs improving system performance, especially for blue laser diodes, which

“ Profound knowledge and expertise in the interactions among design trades, fabrication processes, test procedures, and final system operation allows to deliver cutting-edge solutions”



typically have lower emitter width and higher SA divergence. Both FACs and SACs are designed and manufactured using optimized material selection and coatings. FISBA also offers pre-assembled micro optics, such as FACs on the bottom tabs, with high precision alignment.

Printing with Individually Addressable Single Mode Diode Laser Arrays Integrated with Micro Optics

CTP printing is a prepress digital printing technology that directly creates printing plates from digital files, eliminating the need for film-based processes. A technology in CTP printing is individually addressable single diode laser arrays integrated with micro optics.

These lasers selectively expose the printing plate to create the image that will be printed. The individually addressable lasers offer greater precision and control in the imaging process, allowing for precise energy delivery to each point on the plate. This results in sharper, more accurate images, and greater consistency between different plates. Micro optics integration further enhances precision by shaping and controlling the laser beams for focused and accurate exposure. The use of FISBA micro optics in CTP printing produces higher quality printed materials.

Cytometry Imaging Powell Lenses with Micro Laser Module Platforms

Cytometry imaging is a powerful tool used in a wide range of applications, including medical diagnostics, research, and drug development. By using Powell lenses and micro laser modules researchers can improve the accuracy and precision of their analyses leading to more reliable results.

Powell lenses can transform Gaussian laser beam profiles into top-hat profiles, providing precise and

homogeneous laser illumination. This is particularly important in cytometry imaging, where even and consistent illumination is crucial for accurate analysis. The use of Powell lenses can also improve resolution and reduce background noise, enabling researchers to identify and analyze individual cells or particles more easily.

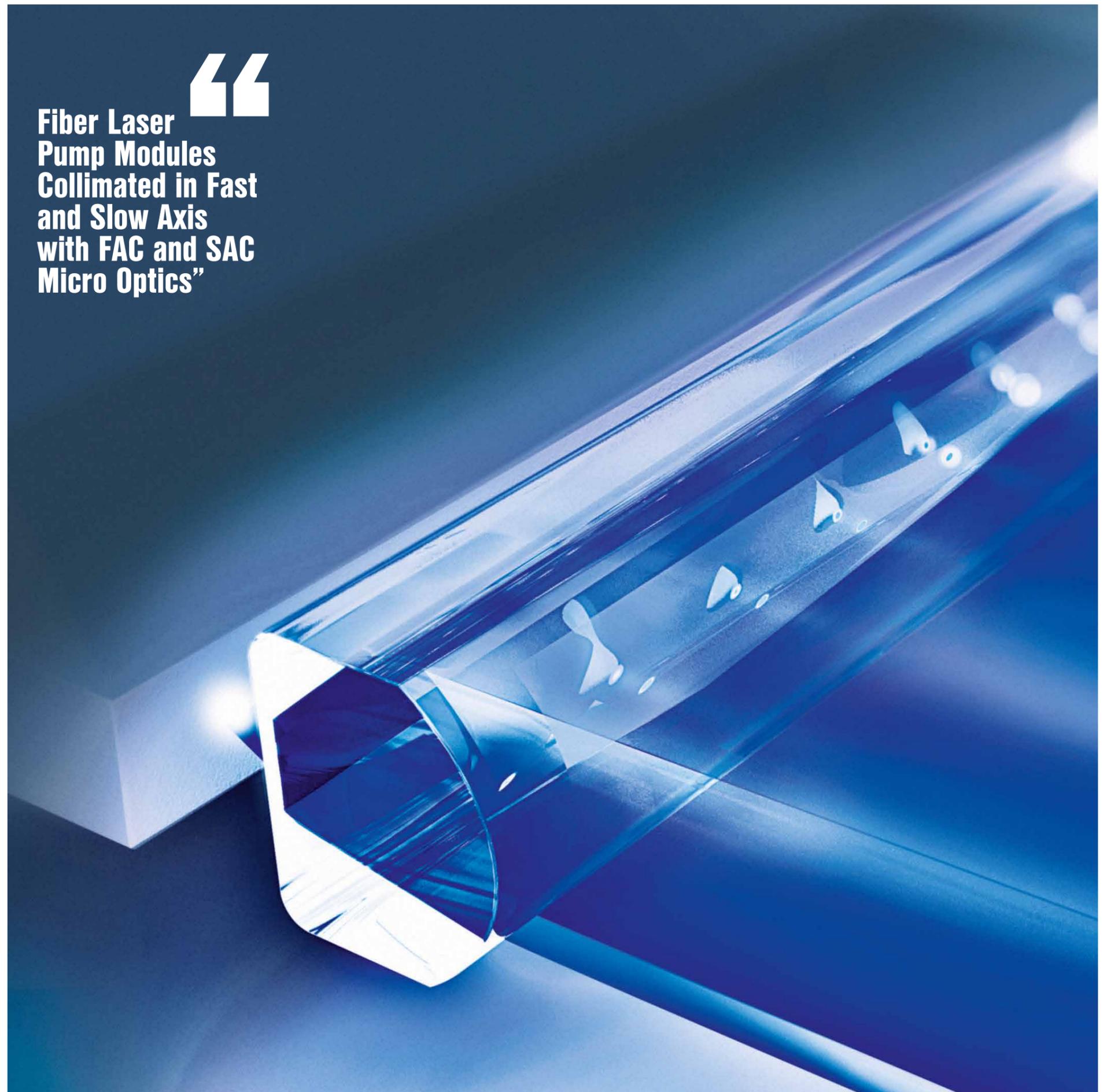
Micro laser modules are compact and highly integrated laser units that provide high-quality laser output in Gaussian beams. These modules can be easily integrated into imaging systems, making them ideal for use in cytometry imaging. By providing precise and high-quality laser output, micro laser modules can improve the accuracy and resolution of cytometry imaging, allowing researchers to identify and analyze individual cells or particles more accurately.

FISBA is developing custom-specific Powell lenses combined within their micro laser module platform to enhance the precision and accuracy of cytometry imaging. This combination of technologies can provide researchers with a powerful tool for analyzing individual cells or particles with high accuracy and precision, leading to better results in a wide range of applications.

FISBA's expertise in designing and manufacturing diode laser solutions with micro optical and opto mechanical systems makes them a global leader in the markets of Life Sciences, Industrial Applications and Aerospace & Defense. With the increasing demand for high power diode laser devices, it has become critical to get these devices to market with the right solution.

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