

Collimation Optics for Laser Diodes: Novelties and Assemblies

Miniaturized Photonic Packaging

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FISBA

About us

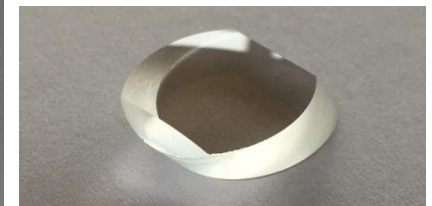
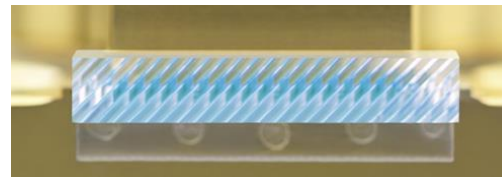
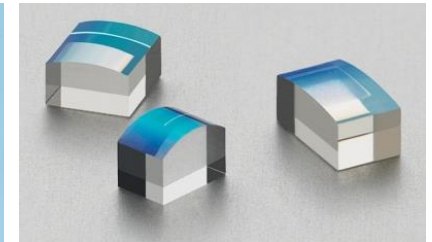
- Leading supplier of custom optical systems, micro optical systems and advanced optical components
- Head office in St. Gallen, Switzerland
- Locations in Berlin and Tucson (AZ, USA)
- Founded in 1957
- Export volume > 90%
- 350 employees
- Swiss privately owned company



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Advanced Optical Components (AOC) – Anything but standard!

- Fast axis collimator lenses (FAC)
- Slow axis collimator lenses (SAC)
- Precision molded lenses (PML)
- FISBA Beam Twister™ (FBT)
- Micro optic arrays
- Prisms
- Infrared optics
- Aspheres and free form optics
- Micro lenses (< 1mm)



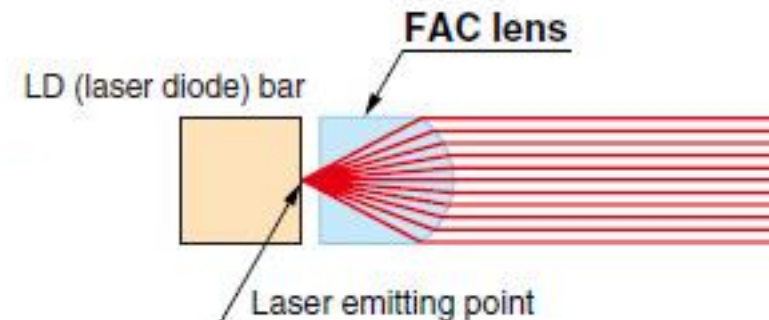
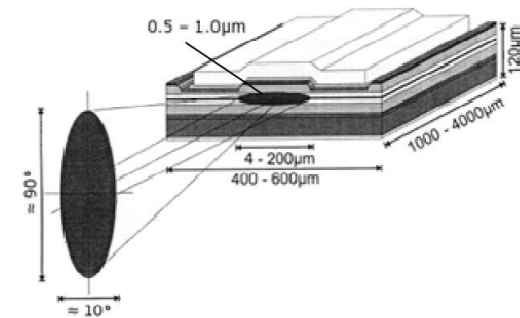
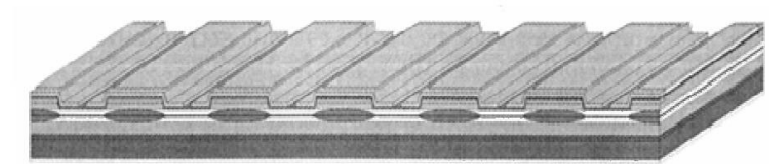
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Advanced Optical Components Fast Axis Collimation Lenses

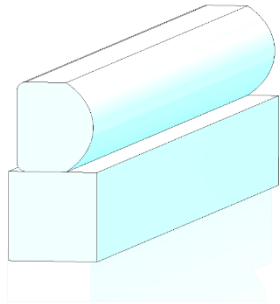
Edge-emitting laser diodes

- Semiconductor manufacturing process
- Very specific light emitting characteristics
- Tailored optics required to make light usable



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Advanced Optical Assemblies FAC with Bottom Tab

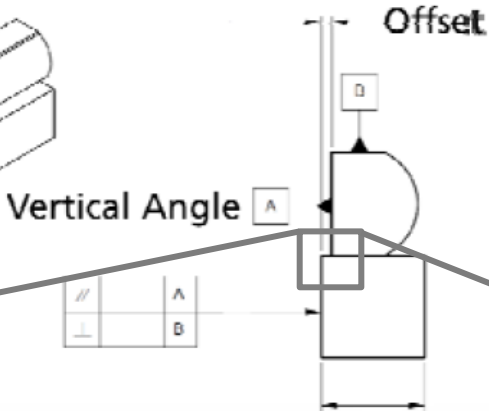
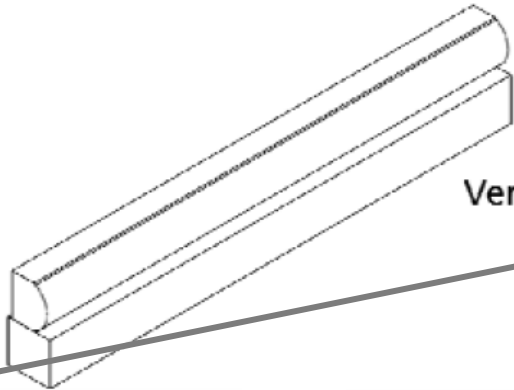


e.g. FAC300

$f = 300 \text{ } \mu\text{m}$

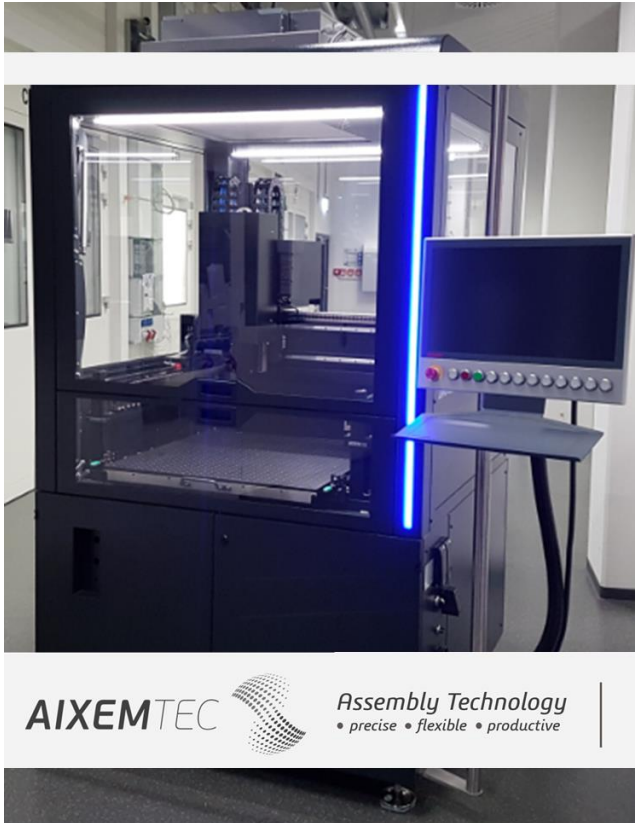
Thickness = 0.43 mm

Material S-TIH53



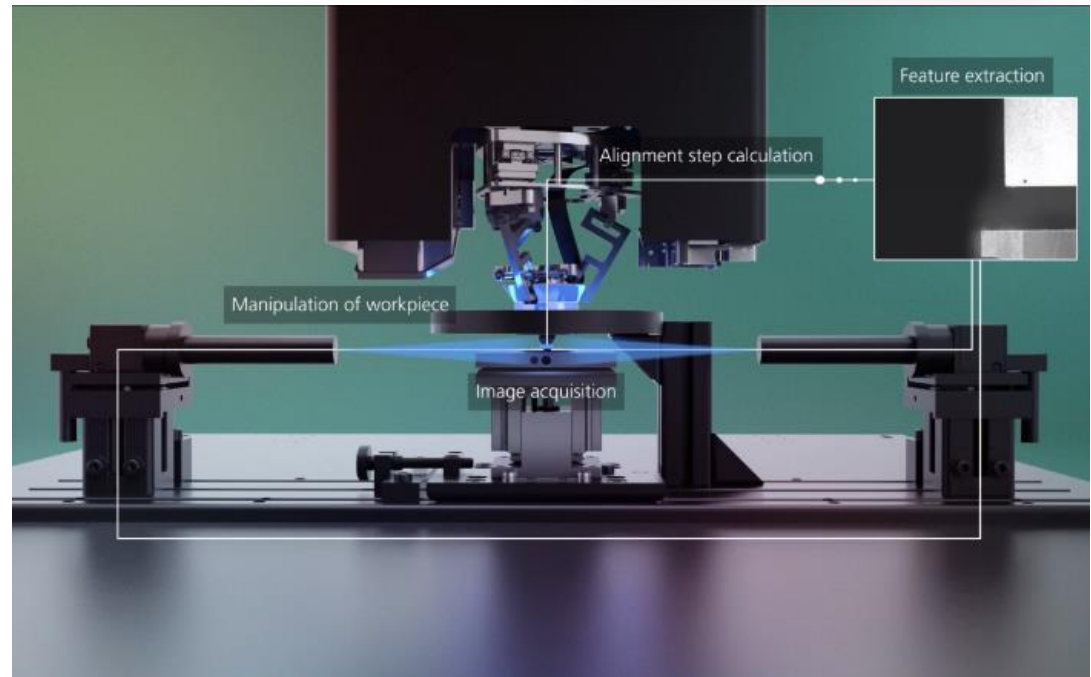
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Advanced Optical Assemblies FAC with Bottom Tab



Commander6

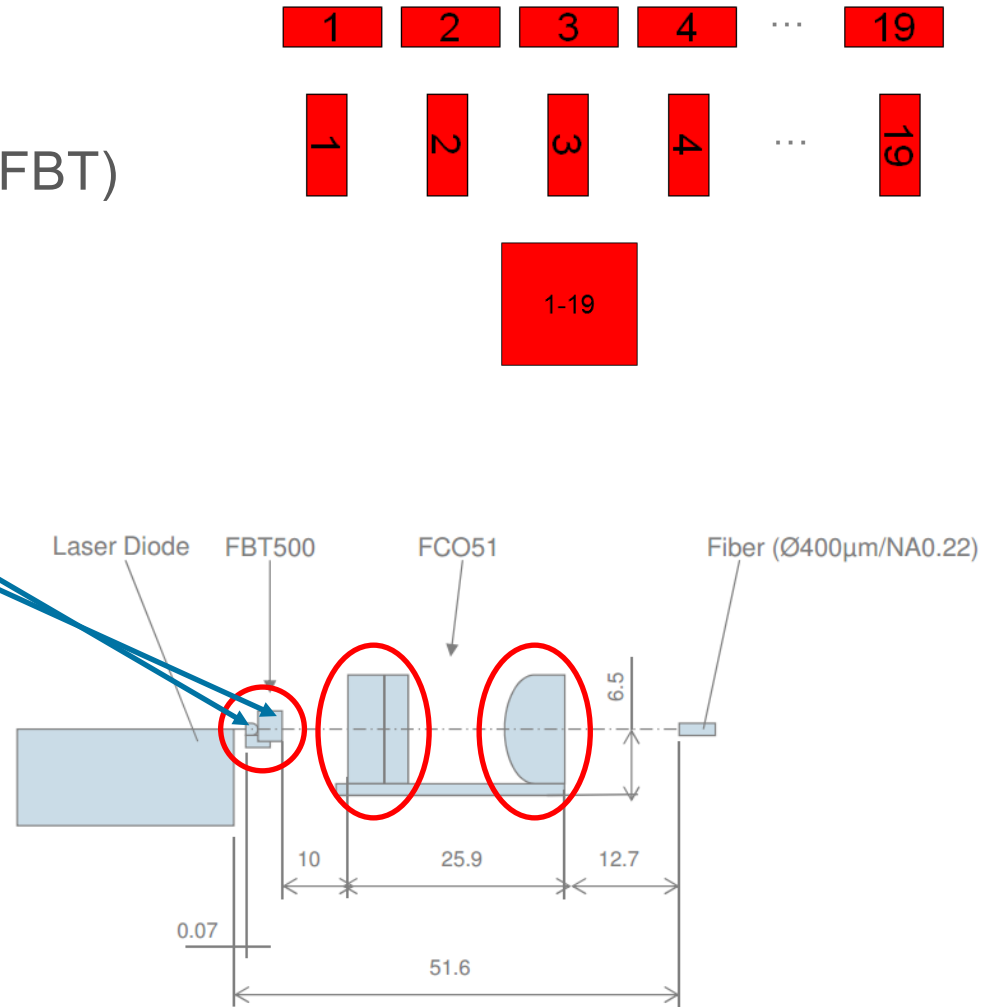
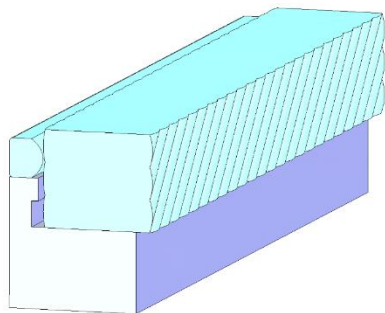
- Six degrees of freedom
- Step resolution 10 nm (x, y, z), 5 μ rad (Ψ , Θ , Φ)



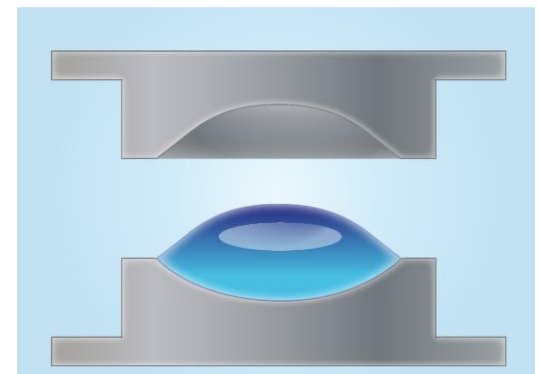
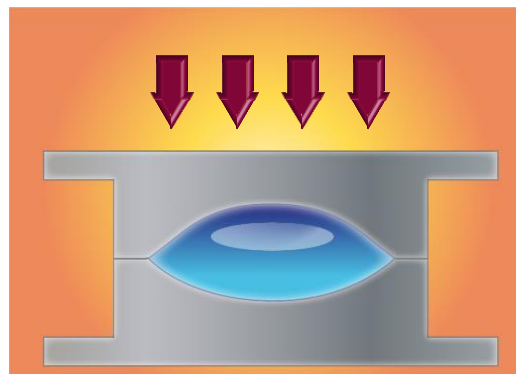
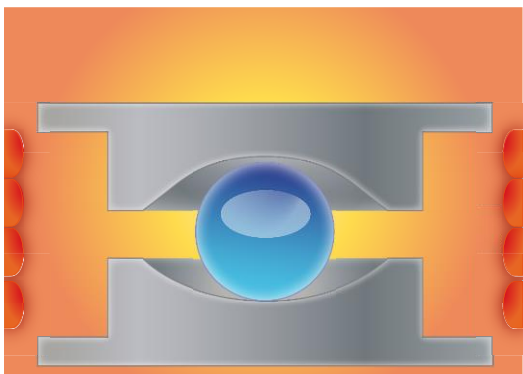
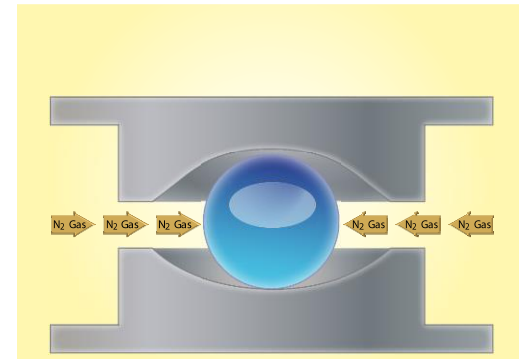
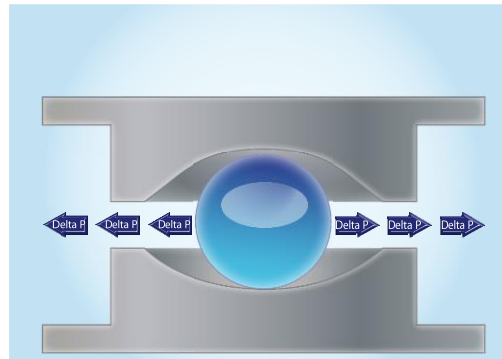
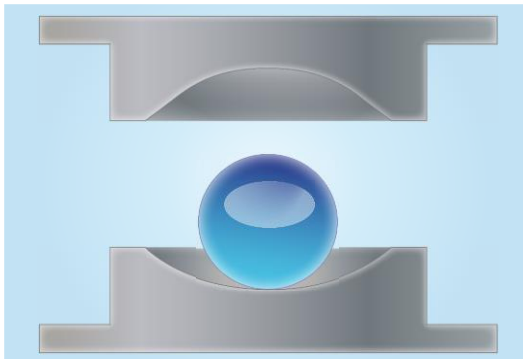
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Advanced Optical Assemblies FISBA Beam Twister™ (FBT)

- FBT Unit
 - FAC
 - Twister Array
- SAC Lens
- Focusing Lens

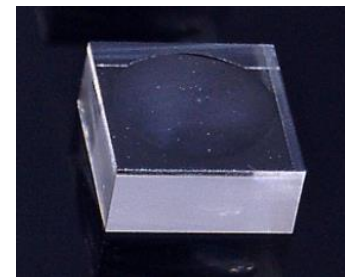
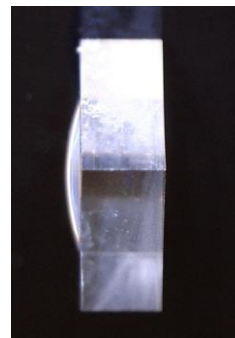
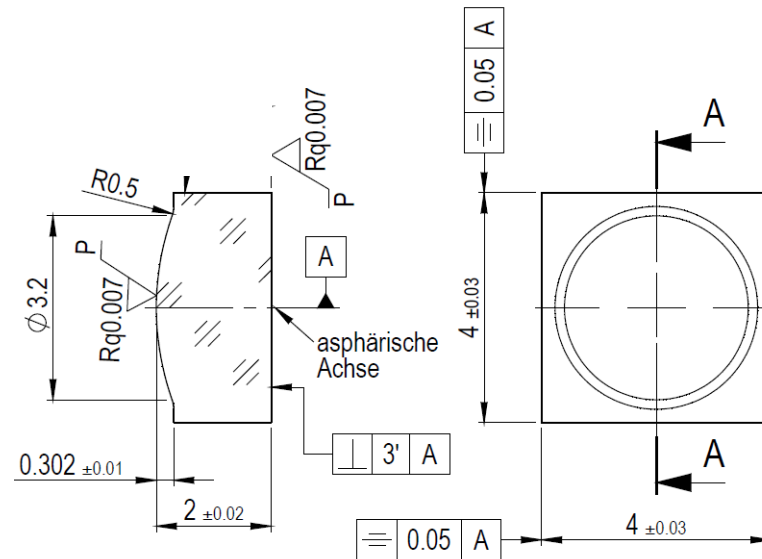


Precision Glass Molding: Process Steps

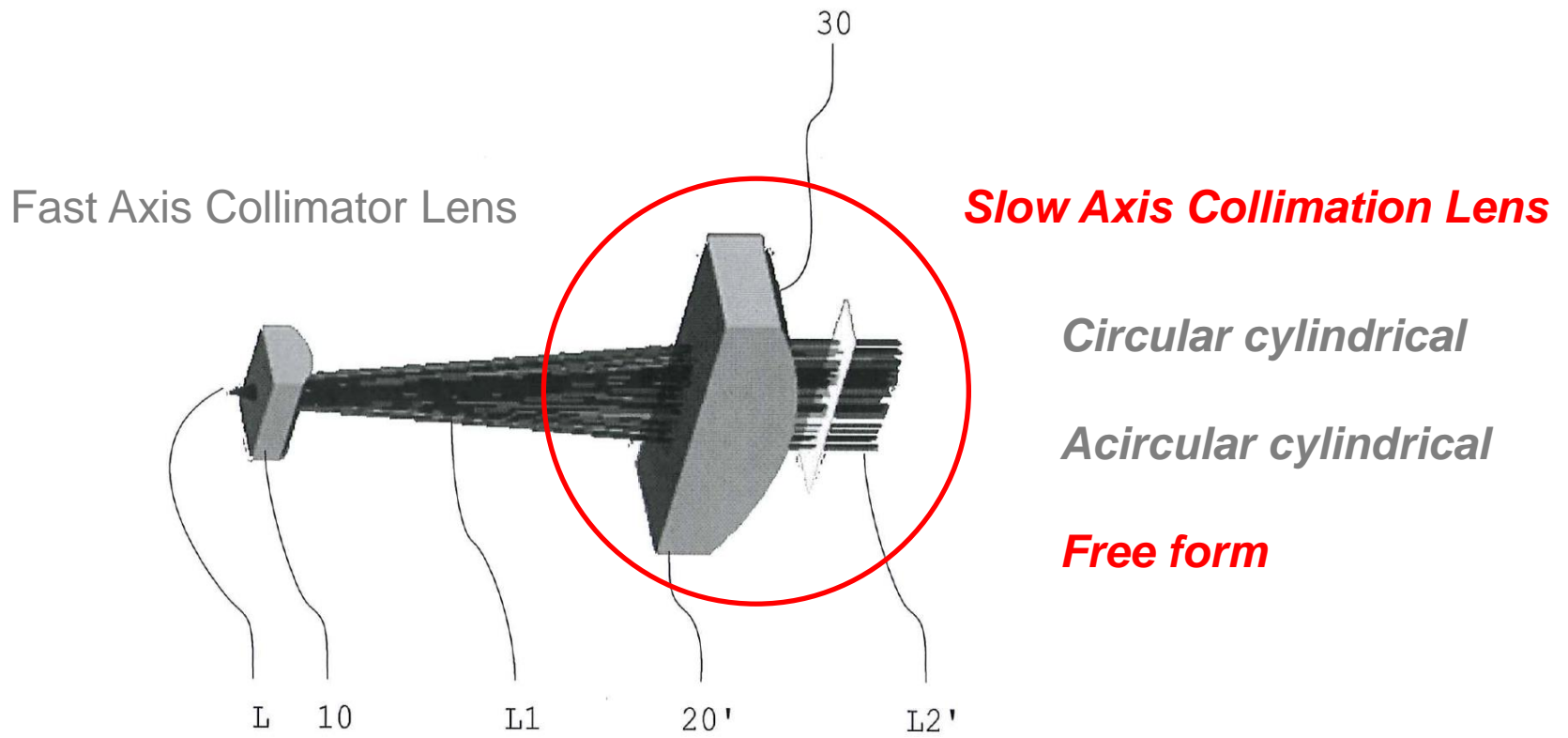




Precision Glass Molding: Lens Array Example

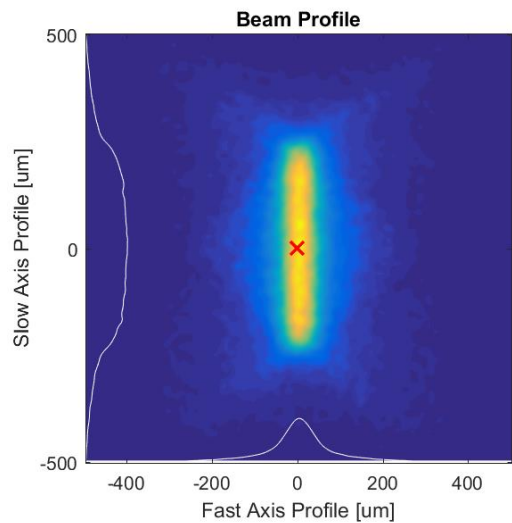


Laser Diodes: Fast and Slow Axis Collimation Concepts

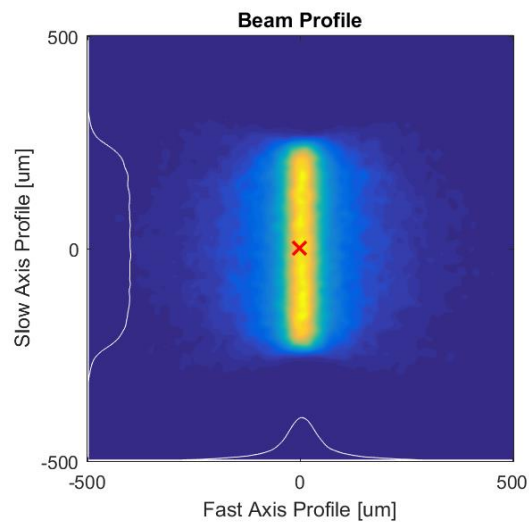


Concept Performance Simulation Beam Profile

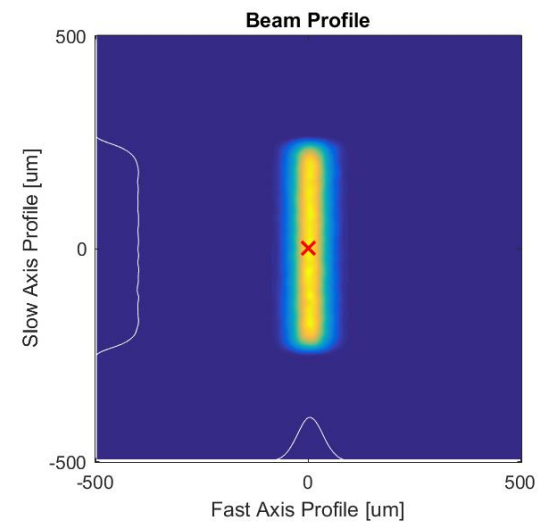
Circular cylindrical



Acircular cylindrical

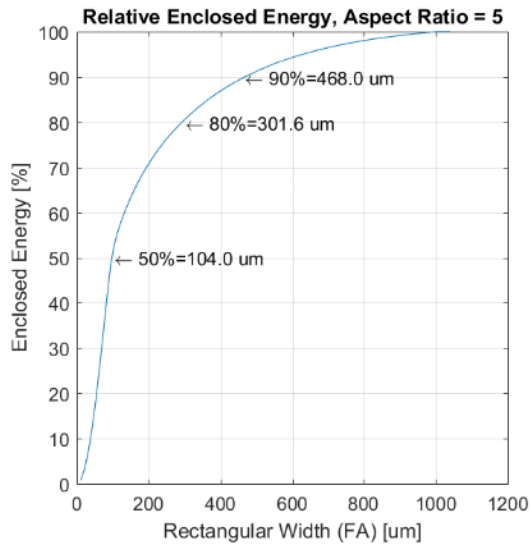


Free form

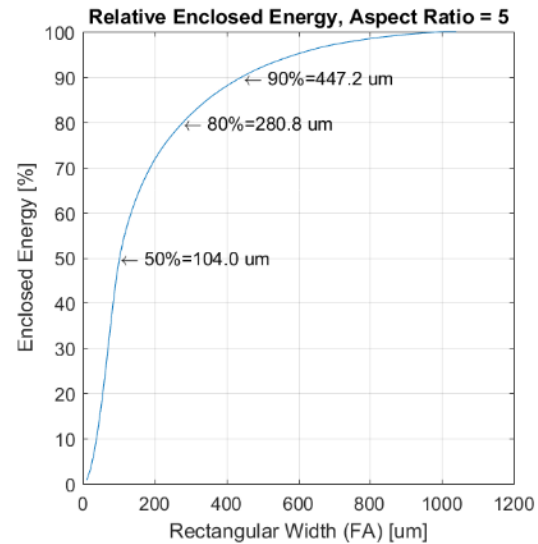


Concept Performance Simulation Relative Enclosed Energy

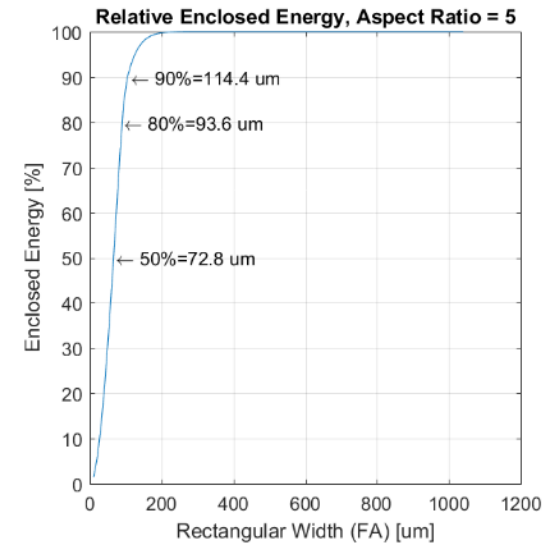
Circular cylindrical



Acircular cylindrical

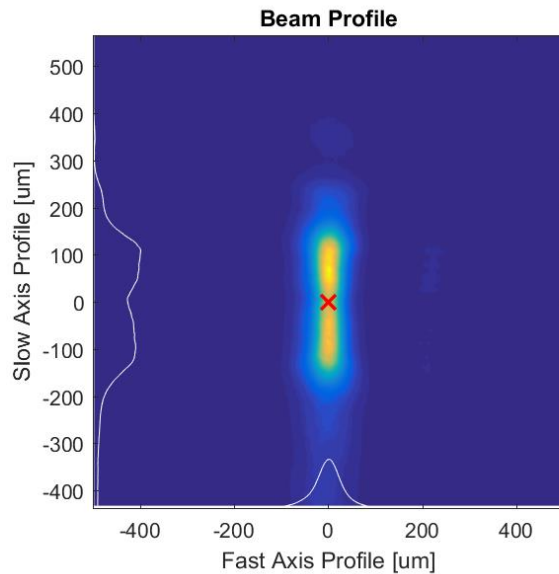


Free form

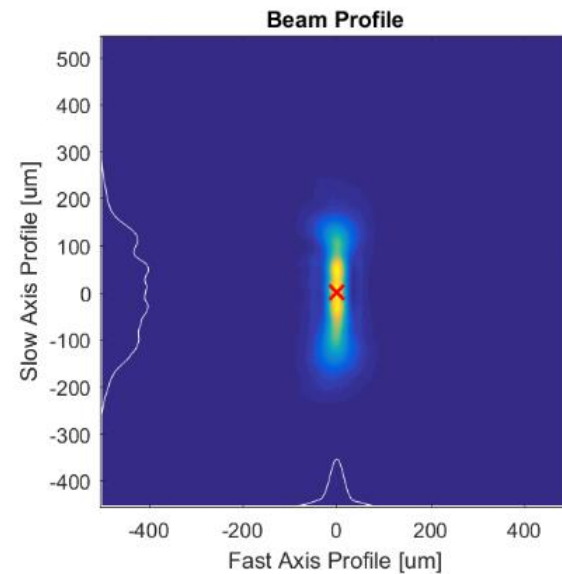


Concept Verification Beam Profile & Relative Enclosed Energy

Acircular cylindrical

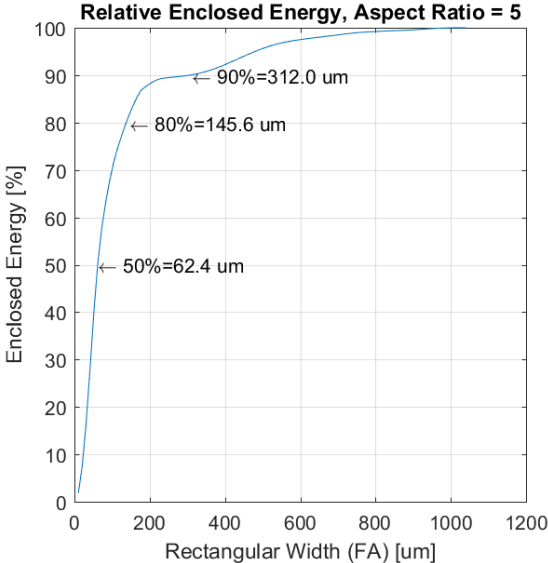


Free form

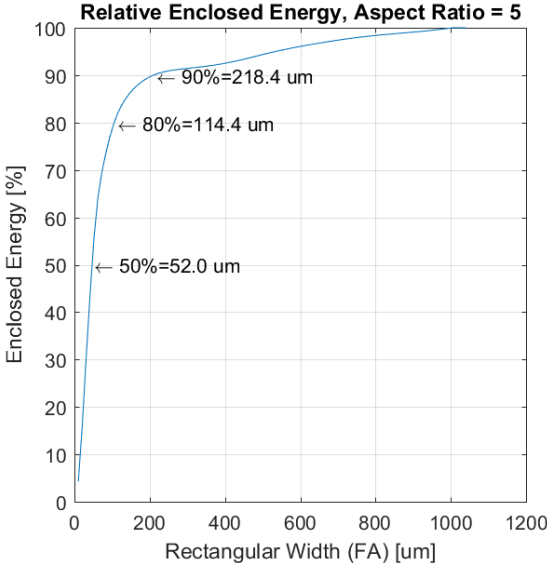


Concept Verification Relative Enclosed Energy

Acircular cylindrical



Free form



FISBA Innovators
in Photonics

