



Fiber Shaping - Cleaving

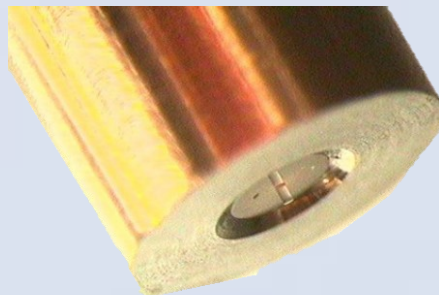
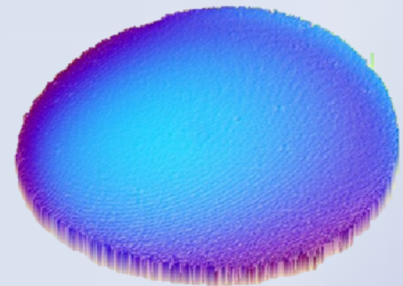
Cleaved Fiber Assemblies

OFP has pioneered high performance cleaving of fibers using computer controlled rapid CO2 laser ablation technologies to cut the angles with high accuracy to form miniature 'optical' interfaces at the end of optical fibers. These enable high efficiency coupling while limiting back reflections

OFP's technical expertise, leading packaging capabilities and quality control set the company apart from its competitors. OFP offers a complete packaging solution for cleaved fiber assemblies with the addition of AR coating, metallization, hermetic ferrules, and connectors.

Laser Ablated Cleave — Attributes

- Cleave angles 0-50 degrees
- Angular tolerance ± 1 degree
- "Super smooth" ideal cleave surface
- Superior angle repeatability
- Single or multi-fiber assemblies
- Any type of SMF, MMF, PM fiber



- Suitable for multiple fiber diameters
- Engineered for low back reflection
- Can be optionally AR coated
- Can be cleaved in a array
- PM fiber cleaves with zero stress



Optical Fiber Packaging Ltd.

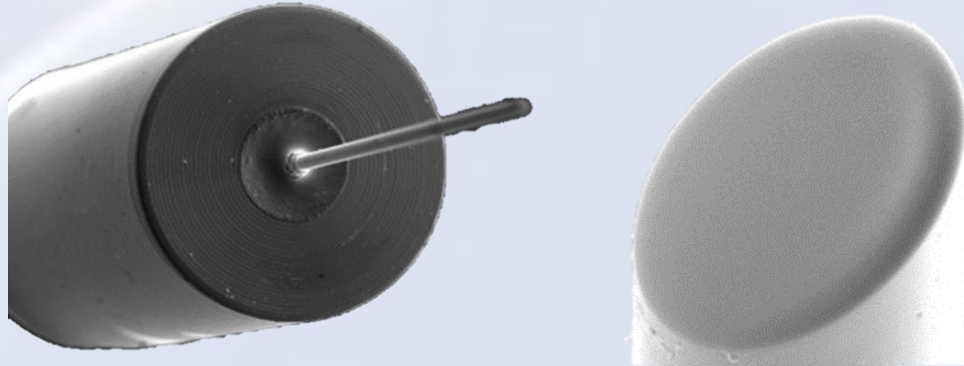
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Fiber Shaping - Cleaving



Properties	Specifications
Cleave Angle	0 > 50 degrees
Angle Accuracy	+/- 1 degrees
Fiber Strip Length	1-500 mm +/- 0.2 mm
Fiber Diameter	3um > 200 µm
AR coating options including high power	Customized coatings to suit. Narrow band or wide-band, typical 600nm > 1,600nm , R's <0.1-0.5%
Surface Quality – scratch/dig	N/A
Fiber tip to Ferrule Distance	Application dependant, 0.3mm -200mm +/-0.2mm
PER for PMF	>30 dB
Packaging Options	
Metalized fiber, single and dual zone	Ni/Au electroless or PVD
Glass sealed ferrule, single or dual	0.7-10 mm diameter, Au or Ni plated
Operating temperature	-55° to +100° C
Fiber Types	SM, MM, PM, doped, specialty
Max welding/solder temperature	200° C
Connectors on pigtailed devices	Any type



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Fiber Shaping - Lensing

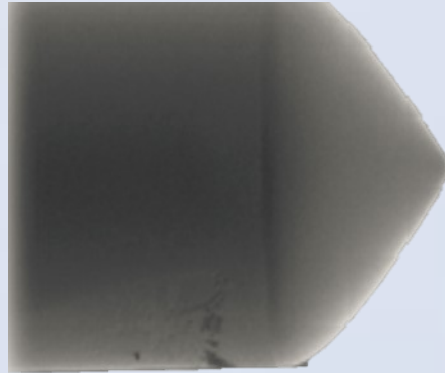
Directly Lensed Fiber Assemblies

OFP has pioneered high performance lensing of fibers using computer controlled rapid CO2 laser ablation technologies to cut Conical and Wedge lenses to multiple geometries directly on the fiber core. These enable customizable high efficiency coupling to many emitter and detector types

OFP's also offers traditional 'polished' lenses for specific application types. OFP offers a complete packaging solution for all lensed assemblies with the addition of AR coating, metallization, hermetic ferrules, and connectors.

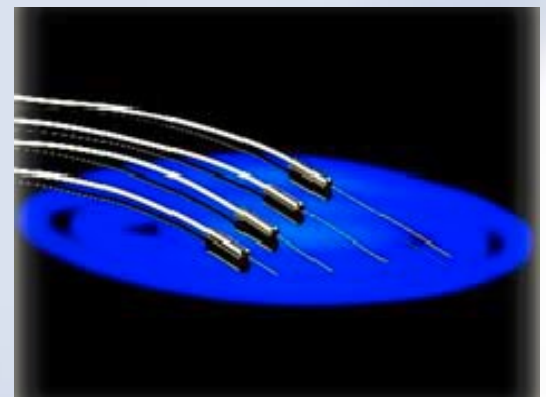
Laser Ablated Lens Attributes

- Coupling efficiencies > 80% (SM)
- Conical or wedge (CLF) shapes
- Automatic lens process control
- Fast production for large volumes
- High repeatability



Polished Lens Attributes

- Coupling efficiencies 80-95% MM
- Custom shapes and dimensions
- Deal for high power single emitters
- Multiple tapered angles (50-140°)
- Wide lens radius range (5-35 um)



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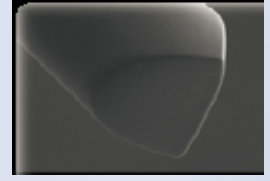
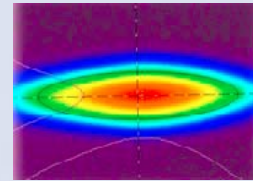
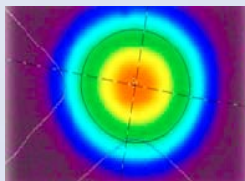
Fiber Shaping - Lensing

Conical Lens Attributes

- 5um > 30 um lens radius
- Any type of SMF, MMF, PM
- SOA, Detector, SLED applications
- Length matched pigtailed for >40G

Wedge Lens Attributes

- SM, MM, PM, doped, coated fibers
- Efficient laser coupling
- High power applications
- Excellent fiber centricity



Properties

Lens Radius

Tapered angle

Fiber Strip Length

Fiber Diameter

AR coating including high power

Fiber centricity to the core center

Fiber tip to Ferrule Distance

Lens PER for PMF

Specification Range

6um > 8um +/- 1 um laser, 5um > 30 um polished

104° laser, 50° > 140° polished

1mm > 500 mm +/- 0.2 mm

5um > 200 um laser, 5um > 500 um polished

Customized coatings to suit. Narrow band or wide - band, typical 600nm > 1,600nm, R's < 0.1-0.5%

0.5um > 5 um

0.7mm > 200mm +/- 0.2mm

>28 dB

Packaging Options

Metalized fiber, single and dual zone

Ni/Au electroless or PVD

Glass sealed ferrule, single or dual

0.7mm > 10 mm diameter, Au or Ni plated

Operating temperature

-55° C > to +100° C

Fiber Types

SM, MM, PM, doped, specialty

Max welding/solder temperature

200° C

Pull & Bend Strength (with boot)

Per Telcordia or MIL

Hermeticity, typical

2x10⁻¹⁰ Pa.m³/sec' 2x10⁻⁹ atm. cc/sec

Connectors for pigtailed assemblies

Any type



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