



# Fiber Shaping - Cleaving

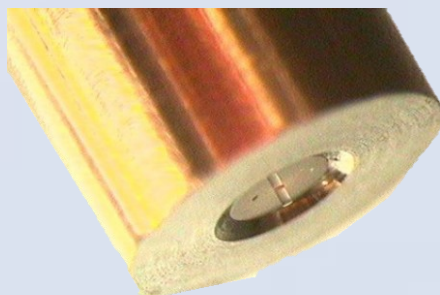
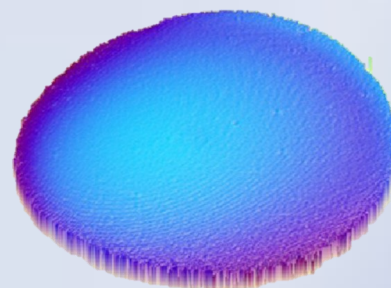
## Cleaved Fiber Assemblies

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  $\pm 1$  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.

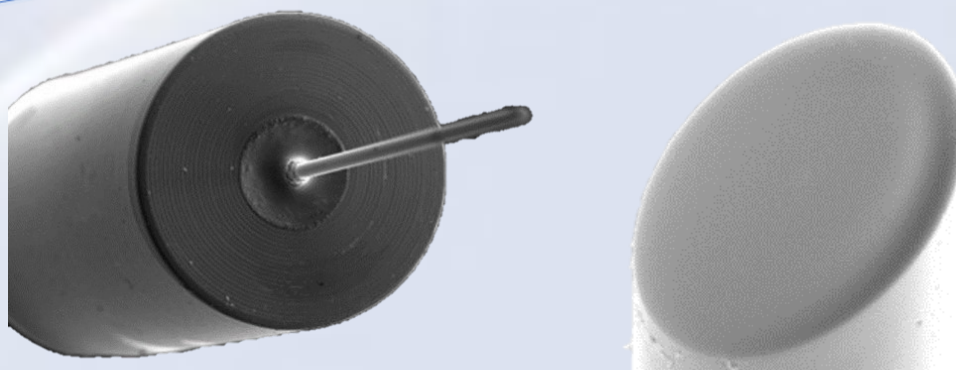
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# Fiber Shaping - Cleaving



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



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# Fiber Shaping - Lensing

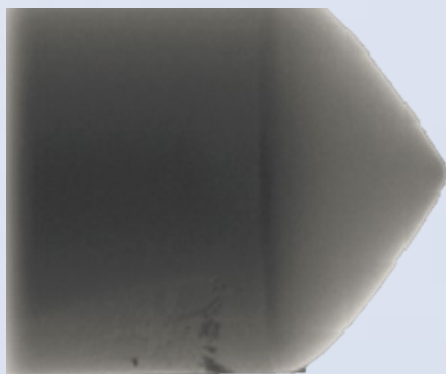
## Directly Lensed Fiber Assemblies

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.

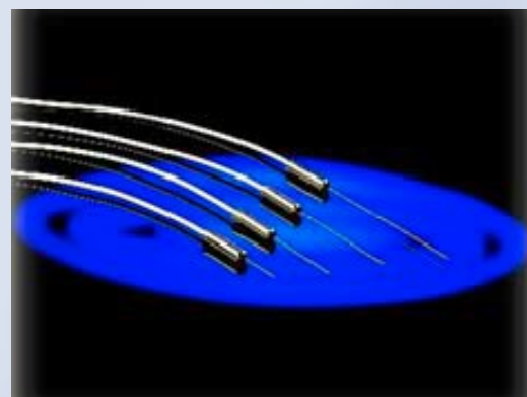
### Laser Ablated Lens Attributes

- 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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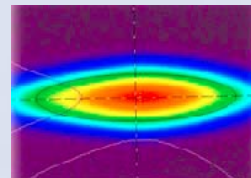
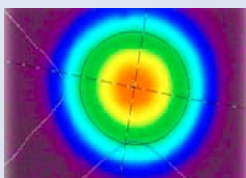
# Fiber Shaping - Lensing

## Conical Lens Attributes

- 5um > 30 um lens radius
- Any type of SMF, MMF, PM
- SOA, Detector, SLED applications
- Length matched pigtails 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<sup>-10</sup> Pa.m<sup>3</sup>/sec' 2x10<sup>-9</sup> atm. cc/sec

**Connectors for pigtailed assemblies**

Any type



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