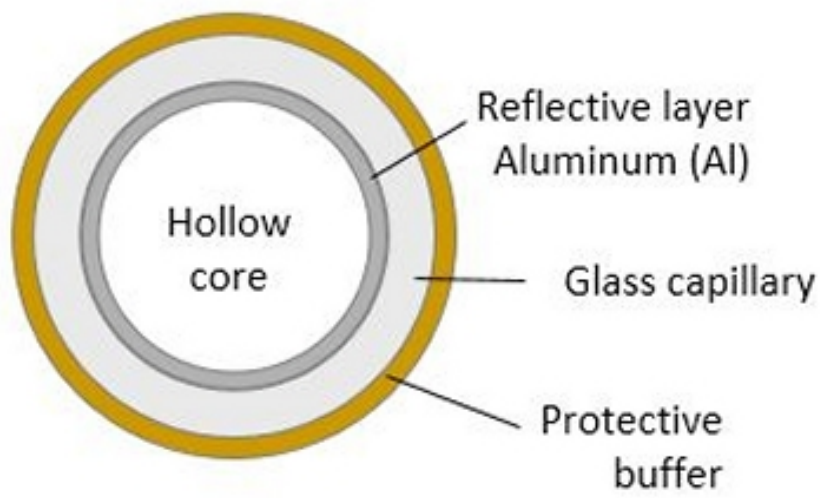
Hollow Fibers Optics Solutions for UV and Visible / NIR

Aluminum hollow core fibers

Hollow glass waveguides coated with a reflective aluminum layer provide an excellent fiber optic delivery solution for ultra-violet (UV) lasers spanning the wavelength range from 100 – 400 nm. For vacuum UV wavelengths the fibers can be purged with an inert gas.



Cross-section of bare hollow core UV fiber

Internal Diameter (ID)	320 µm	700 µm	1000 µm
Typical Loss† (straight)	2 dB/m	1 dB/m	0.5 dB/m
Max Energy* (λ = 193 nm ArF)	1 mJ	5 mJ	10 mJ
Maximum Power (average)*	0.5 W	1.0 W	2.0 W
Minimum Bend Radius	10 cm	20 cm	50 cm
Patch Cable Length	0.1 - 1.0 m		

† Additional loss on bending, which scales with radius (R) as 1/R.
* Assuming proper coupling. Initial alignment should always be done at reduced power.

Coupling

Coupling into aluminum coated hollow fibers is similar to coupling into our Mid-IR fibers. In general, a relatively long focal length lens should be used with the beam focused straight into the fiber.

Additional Information

Additional information on aluminum coated hollow fibers can be found in the following article:

Yuji Matsuura and Mitsunobu Miyagi, “Hollow Optical Fibers for Ultraviolet and Vacuum Ultraviolet Light”, IEEE J. Selected Topics in Quantum Electronics, VOL. 10, NO. 6, (2004).