

“The Mid-IR Fibers and Devices Company”



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Chalcogenide MWIR Fused Fiber Combiner (1.5 μm to 6.5 μm)

Fiber optic combiners are used to combine two or more fibers into one common aperture. The signals from several sources are combined into one fused fiber, thereby combining their output powers and wavelengths.

Inspired by silica fiber power combiners in near-IR used to combine power for pumping double clad fiber lasers and incoherent beam combining of high power lasers, IRflex Corporation proprietary manufacturing techniques of chalcogenide glass Mid-IR fibers make it possible to extend the power combining capacity beyond 2 μm silica fiber wavelength range.

Chalcogenide glass is made from a mixture of the chalcogenide elements: sulfur, selenium and tellurium. It offers promising properties such as transmission in mid and far infrared regions of spectra, lower values of phonon energies, high refractive index and very large nonlinearities as compared to silica. Chalcogenide glass fibers are the ideal candidates to manufacture the mid-wave infrared fiber combiner; the fiber transmits mid-infrared wavelengths from 1.5 to 6.5 μm with typical fiber loss of 0.1dB/m.

Using IRflex's arsenic sulfide glass fibers, IRflex's multimode Mid-IR Fused fiber combiners can incoherently combine the power from multiple laser sources into a common output aperture. These combiners can also spectrally combine laser sources that cover the MWIR spectrum from 1.5 to 6.5 μm .

KEY FEATURES:

- High port transmission and combining efficiency for MWIR spectral beam combining
- Independent wavelength transmission from 1.5 to 6.5 μm
- High power handling strength with mechanical flexibility
- Custom configurations availability

APPLICATIONS:

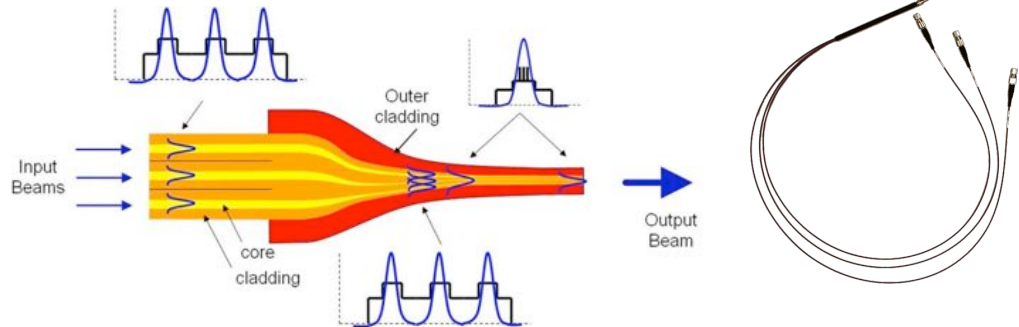
- Power and wavelength combining of IR diodes and quantum cascade lasers for high power laser systems.
- Remote sensing
- Long-range target identification and LIDAR
- Gaseous leaking detection, mineral and petroleum prospecting
- Medical surgery



IRflex Corporation is the only U.S. company totally dedicated to the development and manufacture of mid-infrared fibers and devices for wavelength from 1.5 to 11 micron.

IRflex has several patents on specialty optical fibers and expertise in specialty optical fiber design and development. A suite of patents relating to chalcogenide glass based fiber optics has been licensed to IRflex from the U.S. Naval Research Laboratory (NRL). These strong patent portfolio and intellectual know-how, coupled with advanced manufacturing processes are the core competencies, which enable IRflex to sustain its leadership in the mid-infrared industry and provide cutting-edge products for mid-infrared applications.

Fused Fiber Combiner Concept



Technical Specifications

Models	Ports	Operation Wavelength	Input Fiber	Output Aperture	Port Transmission Efficiency
MWIR-FC-3	3-to-1	1.5 to 6.5 μm	100 μm core diameter NA=0.30	100 μm diameter NA=0.30	75 to 98%
MWIR-FC-7	7-to-1	1.5 to 6.5 μm	50 μm core diameter NA=0.20	100 μm diameter NA=0.20	75 to 98%

The input fiber connector types include FC/APC, FC/UPC, SMA or IRflex's FC/B[®] - the FC connector at Brewster Angle that enables perfect coupling without reflection with polarized laser beam. The standard output fiber connector is SMA connector.

Anti-reflecting coating, broadband or at specific wavelength, can also be applied to any flat input and output connectors as an option.

All statements and technical information related to the products herein are based upon information believed to be reliable or accurate. However, IRflex assumes no responsibility for any inaccuracies. The users assume all risks and liability whatsoever in connection with the use of a product or its application. IRflex reserves the right to change at any time without notice the design or specifications of its products described herein. (Version: 201712)

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