IRF-S Series Nonlinear Mid-Infrared Fibers

IRflex is the only U.S. company totally dedicated to the development and production of innovative fibers and fiber-optic devices for mid – infrared applications from 2 to 10 µm.

A suite of patents relating to chalcogenide glass based fiber optics has been licensed to IRflex from the U.S. Naval Research Laboratory. These patents, in conjunction with IRflex's experienced team, enable IRflex to find cutting-edge solutions to non-linear mid-infrared applications.

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 for mid-infrared applications that require high power laser delivery, chemical sensing, thermal imaging and temperature monitoring.

IRflex's IRF-S Series nonlinear mid-infrared fiber, made from extra high purity chalcogenide glass As_2S_3, is specially designed, and manufactured to generate and/or guide mid-infrared wavelengths from 1.5 to 6.5 µm with high transmission efficiency and nonlinearities about 100 times that of silica glass fiber.

BENEFITS

Extra low loss

High power handling strength

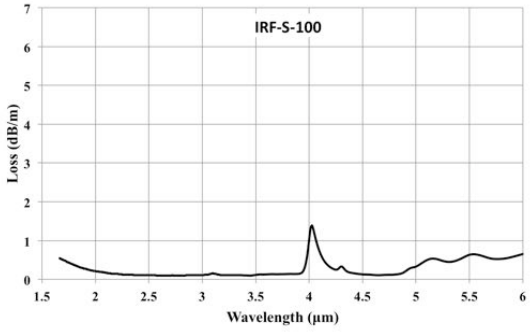
High mechanical flexibility

Reliability and reproducibility

APPLICATIONS

- Mid-IR laser beam delivery
- IR spectroscopy
- Chemical sensing
- Scientific and medical diagnostics IR-imaging system
- Nonlinear supercontinuum generation
- Infrared countermeasure (IRCM)

Attenuation Spectrum Measured on IRF-S-100



IRflex

"The Mid-IR Fibers and Devices Company"

Technical Specifications

Transmission Range (μm)	1.5 – 6.5
Typical Optical Loss (dB/m)	0.05 @ 2.8 μm
Glass Composition	As_2S_3
Refractive Index	2.4
Numerical Aperture (NA)	0.28 – 0.30
Core Non-Circularity (%)	<1
Core/Clad Concentricity Error (μm)	<3
Tensile Proof Test (kpsi)	>15

IRF-S Series Fiber Models	Core Diameter (μm)	Cladding Diameter (μm)	Operating Wavelength (μm)
IRF-S-5	5	100	1.5 – 3
IRF-S-6.5	6.5	125	1.5 – 4.2
IRF-S-7	7	140	1.5 - 4.4
IRF-S-9	9	170	1.5 - 5.3
IRF-S-50	50	85	1.5 – 6.5
IRF-S-100	100	170	1.5 – 6.5
IRF-S-200	200	250	1.5– 6.5

Standard fiber cables are terminated with stainless steel ferrules, FC/UPC, FC/APC, SMA905 connectors, stainless steel, stainless with PVC sheathing, PVDF or PVC jackets. Other different cable assembling configurations are offered upon request.

IRflex's FC/B® Connector: The FC connector at Brewster Angle on the input side of fiber cable enables perfect coupling without reflection with polarized laser beam, is also available upon request.

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