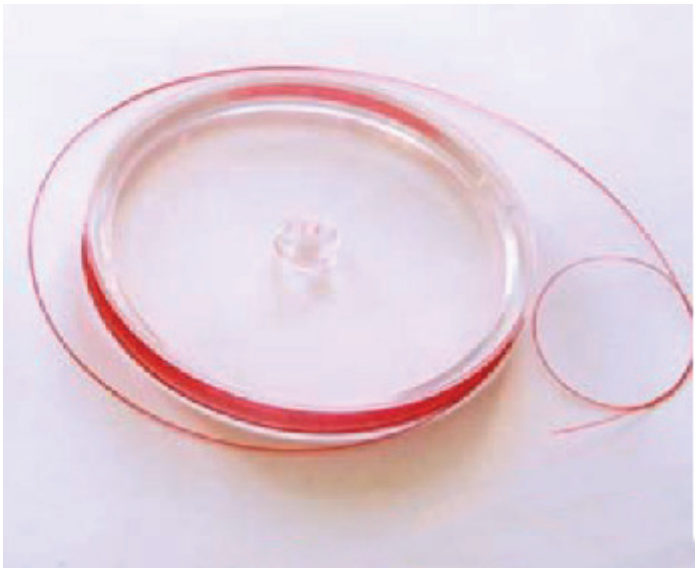
Chalcogenide Mid-InfraRed Fiber

art photonics
MEMBER OF THE NYNOMIC GROUP

Chalcogenide As-S glass fiber transmits IR-radiation in the spectral range of 1.1 - 6.5µm. High performance CIR core/clad fiber are drawn with core diameters span from 8µm to 340µm. Advanced drawing process with double polymer jacket provides a superior mechanical strength and high flexibility of CIR- fibers.
Low optical losses and small absorption peaks over the mentioned spectral range ensure a successful use of CIR-fiber for a wide range of applications.

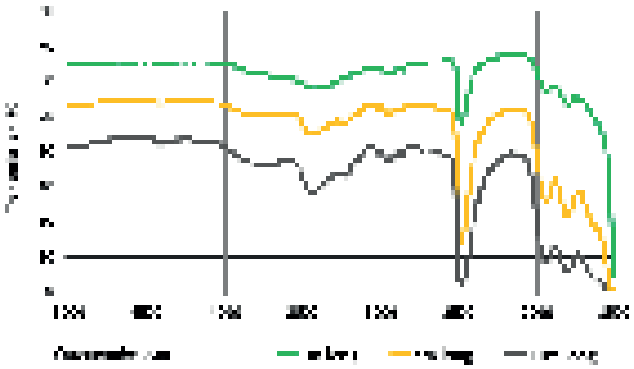


Applications:

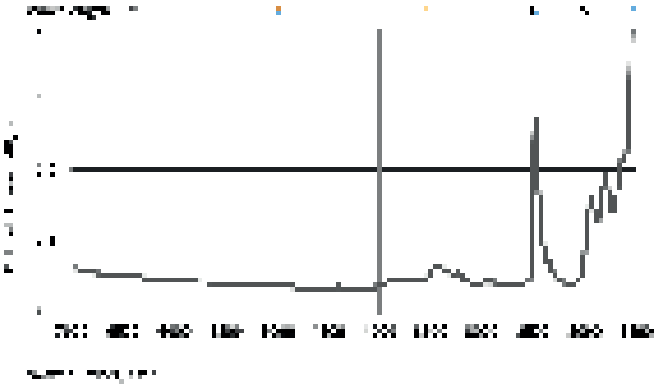
- Mid IR spectroscopy
- Flexible IR pyrometry
- Flexible IR-Imaging systems
- Power delivery for Quantum Cascade Lasers

Features:

- High transmittance in 1.1 - 6.5 µm range
- Low optical losses 0.2 - 0.3 dB/m at 2.5 - 4 µm and 4.5 - 5 µm
- Core/Clad structure with core diameters span from 8 to 500 µm
- Double polymer coating for high flexibility



Transmission Spectra of CIR-Fibers of Different Length

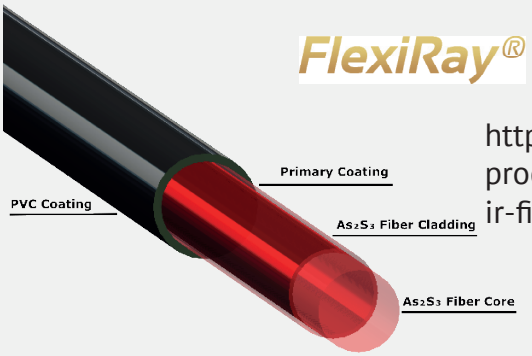


Optical Losses Spectrum of CIR- Fiber



Specifications

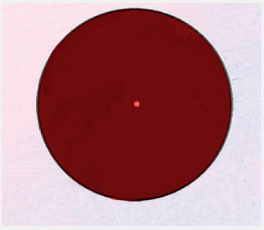
Core/Cladding Composition	As_2S_3
Spectral Range	1.1 - 6.5 µm
Core Refractive Index	2.42
Fresnel Reflection Losses	31%
Attenuation at 3 - 4 µm & 4.5µm – 5µm	0.2 - 0.4 dB/m
Effective Numerical Aperture NA	see table below
Glass Transition Temperature, Tg	185 °C
Operating Temperature	–273 to +90°C
Core/Clad Diameter (standard)	see table below
Protective Jacket	Fluoro polymer + PVC
Tensile Strength	> 70 MPa
Minimum Bending Radius (fixed)	100 [Fiber Diameter]
Minimum Elastic Bending Radius	200 [Fiber Diameter]



https://artphotonics.com/product/chalcogenide-mid-ir-fibers/



a) Multimode Fiber cross-section



c) Single Mode Fiber cross-section

Parameters of standard Chalcogenide fibers

Code	Type	Core, µm	Cladding, µm	Protective Jacket, µm	NA	Min. bending Radius, mm
CIR8/300	Step Index Singlemode	8 ± 1	300 ± 15	400 ± 20	0.25 ± 0.02	60
CIR50/250	Step Index few modes	50 ± 3	250 ± 10	410 ± 20	0.13 ± 0.02	50
CIR250/300	Step Index Multimode	250 ± 10	300 ± 15	400 ± 30	0.30 ± 0.03	60

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