

Highly Nonlinear Multimode Mid Infrared Fibers

高非线性多模中红外光纤

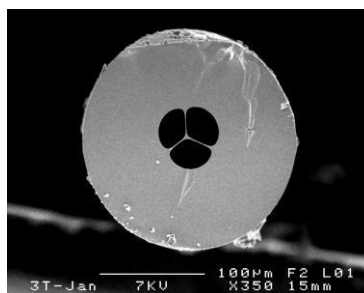
Advantages

- Highly NonLinear
- Low losses transmission up to 8.5 μm
- Core diameter and dispersion can be adjusted

Applications

- Supercontinuum generation
- Wavelength Conversion

Specifications



Reference	AsSe Suspended Core
Glass	$\text{As}_{38}\text{Se}_{62}$
Refractive Index @1.55 μm	2.81
Nonlinear Refractive index n_2 (m^2/W)	$\approx 1.1 \cdot 10^{-17}$ ($\approx 500 \cdot n_2$ silica)
Brillouin Gain, gB (W/m)	$\approx 5.5 \cdot 10^{-9}$ ($\approx 130 \cdot \text{gB}$ silica)
Operating Range (μm)/Guiding Regime	1.5-8.5 (Multimode) (possibility to extend the transmission up to 10 μm)
Typical Attenuation (dB/m)	Equivalent to AsSe SM2
Typical Core Diameter (μm)	4
Typical Cladding Diameter (μm)	200
Typical Numerical Aperture	>0.7
Zero Dispersion Wavelength (μm)	<3.5
Possible Customized specifications	-Core diameter can be adjusted in the [2-7] μm range - Transmission can be upgraded up to 10 μm

Reference:

- Uffe Mollet et Al; « Multi-milliwatt mid-infrared supercontinuum generation in a suspended core chalcogenide fiber »; Optics Express, Vol.23, N°3, 2015.

联系人: 王小姐

电话: 18616772132/021-62486110-22

邮箱: christy.wang@sinoptix.fr

西诺光学: www.sinoptix.com.cn

Highly Nonlinear Single Mode Mid Infrared Fibers

高非线性单模中红外光纤

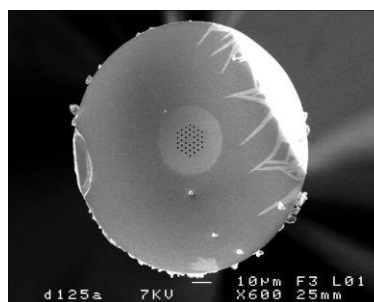
Advantages

- Highly NonLinear
- Single mode
- Low losses transmission
- Core diameter and dispersion can be adjusted

Applications

- Supercontinuum generation
- Brillouin Fiber Laser Wavelength Conversion

Specifications



Reference	GeAsSe SM
Glass	Ge ₁₀ As ₂₂ Se ₆₈
Refractive Index @1.55µm	2.62
Nonlinear Refractive index n_2 (m ² /W)	$\approx 8.8 \cdot 10^{-18}$ ($\approx 400 \cdot n_2$ silica)
Brillouin Gain, gB (W/m)	$\approx 4.4 \cdot 10^{-9}$ ($\approx 100 \cdot gB$ silica)
Operating Range (µm)/Guiding Regime	1.5-4 (Single Mode)
Typical Attenuation (dB/m)	<2.5 @ 1.55 µm
Typical Core Diameter (µm)	4
Typical Cladding Diameter (µm)	130
Typical Numerical Aperture	≈ 0.35 @1.55µm
Zero Dispersion Wavelength (µm)	<4.5
Possible Customized specifications	Core diameter can be adjusted in the [3-13] µm range for applications up to 10 µm

References:

- Kenny Hey Tow et Al; « Linewidth-narrowing and intensity noise reduction of the 2nd order Stokes component of a low threshold Brillouin laser made of Ge₁₀As₂₂Se₆₈ chalcogenide fiber »; Optics Express, Vol.20, N°26, 2012.
- Kenny Hey Tow et Al; « Toward More Coherent Sources Using a Microstructured Chalcogenide Brillouin Fiber Laser »; Photonics Technology Letters, Vol. 25, N°3, 2013.

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