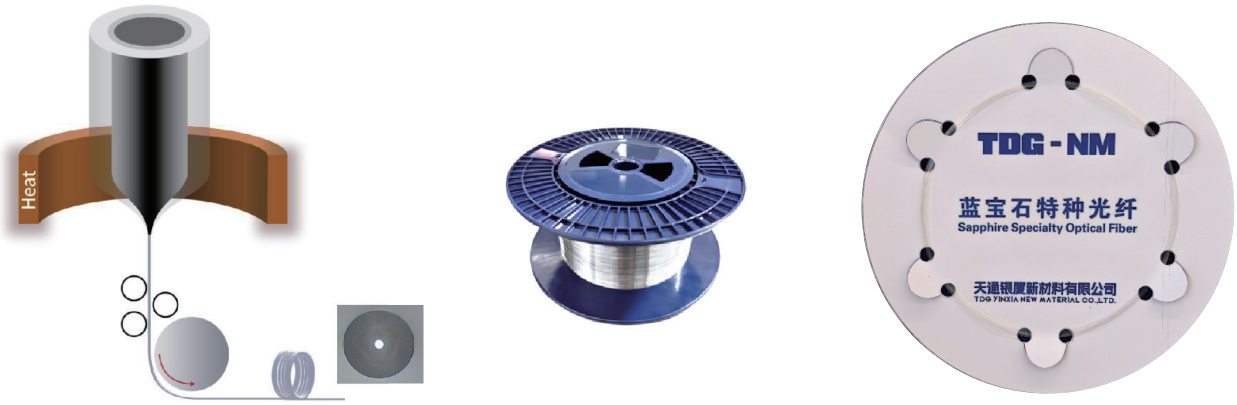
蓝宝石衍生光纤
Sapphire-Derived Fiber

蓝宝石衍生光纤（Sapphire-Derived Fiber，SDF)是一种以单晶蓝宝石光纤为芯棒，通过管棒法制备的新型特种光纤，具有优异的耐高温、抗腐蚀和机械强度特性，专为极端环境下的光学传感与信号传输而设计。



蓝宝石衍生光纤制备及实物图

蓝宝石衍生光纤技术参数

类别	项目	参数	备注
几何特性	纤芯直径	(5~20) ±1μm	可根据需求定制
	包层直径	(100~250) ±1μm	
	涂覆直径	(200~350) ±1μm	
光学特性	传输损耗	≤ 2dB/m (@1550nm)	
	数值孔径 (NA)	0.3~0.5	可调控
	传输模式	单模/少模/多模	
	工作波长范围	1300~2000 nm	
特殊性能	折射率调制	≤0.015	可调控
	耐温极限	≤1400°C (短期)；≤1000°C (长期)	

联系人： 邬先生 18267307540 wcx@tdgcore.com
康先生 18109586298 ks@tdgcore.com

Sapphire-Derived Fiber

Sapphire-Derived Fiber (SDF) is a new type of special optical fiber fabricated by the rod-in-tube method using a single-crystal sapphire fiber as the core rod. It exhibits excellent high-temperature resistance, corrosion resistance, and mechanical strength, and is specially designed for optical sensing and signal transmission in extreme environments.

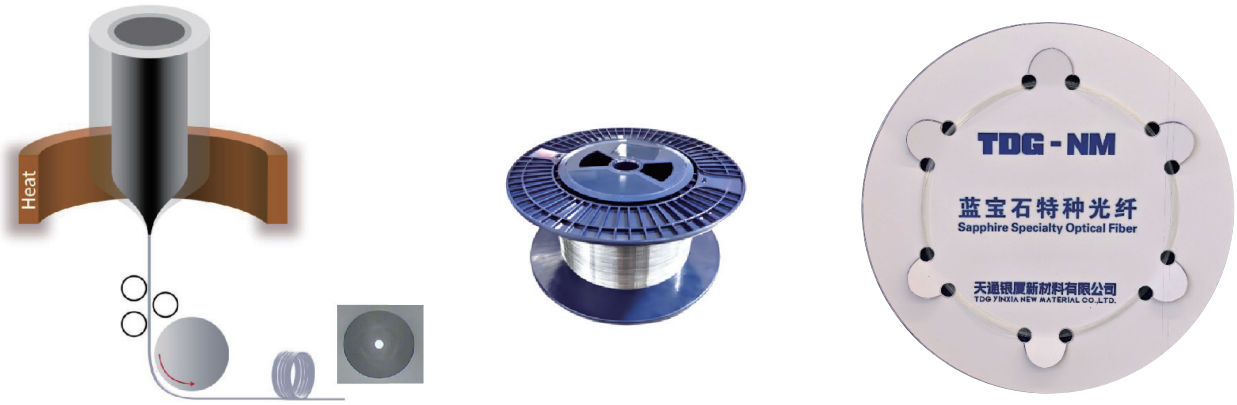


Figure 1: Preparation and physical image of Sapphire-Derived Fiber (SDF)

Technical Parameters of Sapphire-Derived Fiber

Category	Item	Parameters	Notes
Geometric Properties	Core Diameter	(5~20) ±1 μm	Customizable
	Cladding Diameter	(100~250) ±1μm	—
	Coating Diameter	(200~350) ±1μm	—
Optical Properties	Transmission Loss	⩽ 2dB/m (@1550nm)	—
	Numerical Aperture (NA)	0.3~0.5	Tunable
	Transmission Mode	Single-mode / Few-mode / Multi-mode	—
	Operating Wavelength Range	1300~2000 nm	—
Special Properties	Refractive Index Modulation	⩽0.015	Tunable
	Temperature Resistance	⩽1400 °C (short-term); ⩽1000 °C (long-term);	—

Contact: Mr. Wu 18267307540 wcx@tdgcore.com
Mr. Kang 18109586298 ks@tdgcore.com