

Energy Transmission Fiber and Laser Transmission System

产品介绍 Product Descriptions

该成果为面向高功率，大能量激光柔性传输的微结构空芯传能光纤及其耦合系统。微结构空芯光纤顾名思义，由特殊结构的玻璃毛细管组成特殊包层结构并以该包层围绕而成的空气区域为纤芯。由于特殊的导光机理，激光能量将极大的被限制在纤芯区域，为激光光束传输提供了理想的传输通道，在高功率，大能量激光柔性传输领域具有极大优势。

The outcome is a micro-structured hollow-core fiber and its laser beam transmission system, designed for the flexible transmission of high-power and high-energy lasers. The micro-structured hollow fiber features a specialized cladding structure composed of uniquely arranged glass capillaries, utilizing the air region surrounding the cladding as its core. This distinctive light guiding mechanism significantly confines laser energy to the core area, thereby providing an optimal transmission pathway for laser beam propagation and offering substantial advantages in the realm of flexible transmission for high-power and large-energy lasers.

技术优势 Technical Advantages

中国科学院上海光机所一直致力于微结构空芯光纤及其传能研究，是国内最早开展该特种光纤研究的机构。当前可提供全波段，不同类型的微结构传能光纤，满足各种应用需求;并可根据不同应用需求提供成熟可靠的传能解决方案。

The Shanghai Institute of Optics and Fine Mechanics has been dedicated to researching micro-structured hollow fibers and their energy transfer capabilities and has become one of the pioneering institutions in China for this specialized fiber research. Currently, the institute offers a comprehensive range of full-band micro-structured energy transfer fibers to meet diverse application requirements. Additionally, it can provide reliable energy transfer solutions according to specific application needs.

应用场景 Applications

基于微结构空芯光纤的激光柔性传输技术具有巨大的技术优势，可广泛应用于包括：激光焊接，切割等工业加工领域，激光手术等生物医学领域，激光通讯领域以及基础科研领域等。

Utilizing micro-structured hollow fibers, the laser flexible transmission technology offers significant technical advantages and has extensive applications, including laser welding and cutting, biomedical applications like laser surgery, laser communication, and fundamental scientific research.

技术指标 Specifications

Specifications of micro-structure hollow core fiber	
Typical operating wavelength	532nm/780nm/1064nm/1550nm/2μm
Transmission loss	<20dB/km
Minimum bending radius	16cm
Typical fiber length	5m/10m/20m/
Properties of laser transmission system	
Type of input laser	Continuous wave/pulse
Transmission efficiency	>85%
Output laser beam quality	M²<1.2
Type of transmission cable	Water cooling, gas filling, SMA, PC/APC

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