

光纤传感和光通信

国产掺铥双包层光纤光谱特性研究

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摘要:

对内包层截面为六边形的国产掺Tm3+双包层光纤的光谱特性进行了较全面的实验研究。在1064nm激光泵浦下, 观察到掺铥光纤发出明亮的蓝光, 对其上转换谱进行了测量, 并分析了产生的机理。在785nm LD泵浦下, 测量了光纤的荧光谱。选用3种不同透过率的输出镜, 对长度分别为4.5m和2.2m的掺Tm3+光纤实现了2μm波段的激光输出; 利用红外光谱仪测得了激光波长。实验获得最大输出功率达到5.1W, 斜率效率41.9%, 并对实验结果做了分析。

关键词: 掺Tm3+双包层光纤 光纤激光器 2μm激光 频率上转换

Spectral characteristics of domestic Tm-doped double cladding fiber

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Abstract:

Comprehensive researches of the spectral characteristics on the domestic Tm-doped double cladding fiber with hexagon inner cladding cross section are presented. When the fiber is pumped by 1064nm laser, the bright blue light is observed. The up-conversion spectra are measured and the mechanism is analyzed. The fluorescent spectra and the laser spectra are also measured when the fiber is pumped by a 785nm LD. The fiber lasers operated at ~2μm wavelength are obtained with three different output coupler mirrors and with two fiber lengths of 4.5m and 2.2m, respectively. The maximum output power is 5.1W and the slope efficiency is 41.9%. The experiment results are analyzed.

Keywords: thulium(Tm3+)-doped double cladding fiber fiber laser 2μm laser frequency up-conversion

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