

论文

基于变脉宽光源的分布式光纤拉曼温度传感器研究

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摘要:

提出了在分布式光纤拉曼温度传感器中,采用可变脉宽光源实现双功能温度监测的方法.采用窄脉冲获得高空间分辨率进行峰值温度监测,再改用宽脉冲获得高温度分辨率进行平均温度监测,可以兼顾不同测温环境对高温度分辨率或高空间分辨率的不同使用要求.结果表明,与采用固定脉宽光源的传统方法相比,采用可变脉宽光源可以在获得相同温度分辨率的前提下,降低了系统进行平均温度监测的测量时间.

关键词: 光纤 拉曼散射

Fiber Raman Distributed Temperature Sensor Based on the Light Source with Adjustable Pulseswidth

Abstract:

Based on a light source with adjustable pulseswidth,a dual functional fiber Raman distributed temperature sensor was proposed.Short pulses were used to achieve high spatial resolution for peak temperature detection.Wide pulses were adopted to obtain high temperature resolution for average temperature monitoring.The proposed method can achieve either high spatial resolution or high temperature resolution for various applications.The experimental results indicate that the measurement time can be saved greatly for the same temperature resolution comparing to the conventional method with constant pulseswidth.

Keywords: Optical fiber Raman scattering

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