

## 一种耐高温光纤Bragg光栅温度传感器

作者: 王宏亮, 张晶, 乔学光, 王瑜

单位: 西安石油大学 光电油气测井与检测教育部重点实验室, 陕西 西安 710065

基金项目:

摘要:

分析了光纤Bragg光栅在高温段的线性特征, 设计了一种高温光纤Bragg光栅的传感探头, 并进行了理论和实验研究, 结果表明: 该传感器有很好的重复性和良好的线性特性。其灵敏度为 $0.0304\text{nm}/^\circ\text{C}$ , 是裸栅的3倍, 可检测的温度范围为 $0\text{--}230^\circ\text{C}$ , 且具有很高的稳定性, 经10次等精度测量, 其灵敏度值的波动不超过0.06%。可应用于高温环境下测量温度的变化。

关键词: 光纤Bragg光栅; 温度传感器; 耐高温; 线性度

## A Fiber Bragg Grating Temperature Sensor with High Temperature-resistance

**Author's Name:** WANG Hong-liang, ZHANG Jing, QIAO Xue-guang, WANG Yu

**Institution:** Key Laboratory of Photoelectric Gas-oil Logging and Detecting Ministry of Education, Xi'an Shiyou University, Shaanxi Xi'an 710065, China

**Abstract:**

The linear characteristics of fiber bragg grating in high temperature has been analyzed. A fiber bragg grating temperature sensor with high temperature-resistance is designed, the theoretical and experimental results showed: This sensor has good repeatability and linearity. The sensitivity is to  $0.0304\text{nm}/^\circ\text{C}$ , which is 3 times higher than the bare optical fiber grating, this sensor has high stability and the temperature range it can be detected is from  $0^\circ\text{C}$  to  $230^\circ\text{C}$ . After 10 equal observations, the fluctuation of sensitivity is less than 0.06%. This fiber bragg grating temperature sensor can be used in high-temperature environments measuring temperature changes

**Keywords:** fiber Bragg grating(FBG); temperature sensor; temperature-resistance; linearity

投稿时间: 2010-04-12

[查看pdf文件](#)