How about high-temperature resistant fiber optic sensors

Overview

This paper reviews the sensing principle, structural design, and temperature measurement performance of fiber-optic high-temperature sensors, as well as recent significant progress in the transition of sensing solutions from glass to crystal fiber. High-temperature measurements above 1000 °C are critical in harsh environments such as aerospace, metallurgy, fossil fuel, and power production. Fiber-optic high-temperature sensors are gradually replacing traditional electronic sensors due to their small size, resistance to electromagnetic. Optical fiber sensors have the advantages of small size, easy design, corrosion resistance, anti-electromagnetic interfer-ence, and the ability to achieve distributed or quasi-distributed sensing and have broad application prospects for temper-ature sensing in extreme environments. Up to now, MEISU has developed various high-temperature resistant optical devices not only with regular SM fiber, but also. These features enable this new optical fiber to be used for high density cabling and optical fiber sensing in high-temperature environments up to 200˚C. Standard commercial adhesives typically only survive up to about 400 C. But, they detach at >500 C at the higher operating.

Article Content

Sensitivity Calibration and Temperature Influence Analysis of High ...

This article completes the precise calibration of strain and temperature under high temperature conditions through the construction of a sensitivity calibration

A Miniature high-temperature fiber-optic sensor based on tip ...

In this paper, we propose and demonstrate a miniature high-temperature fiber-optic sensor based on tip-packaged Fabry-Perot interferometer which is insensitive to changes in external ...

Optical Fiber Sensors for High-Temperature Monitoring: A Review

Fiber-optic high-temperature sensors are gradually replacing traditional electronic sensors due to their small size, resistance to electromagnetic interference, remote detection, multiplexing, and distributed ...

Optical Fiber Sensors for High-Temperature Monitoring: A Review

This paper reviews the sensing principle, structural design, and temperature measurement performance of fiber-optic high-temperature sensors, as well as recent significant ...

Fiber optic high temperature sensor with weak strain ...

We proposed a fiber optic high temperature sensor based on the Mach-Zehnder interference (MZI) structure, which is composed of two lengths of multi-mode fibers (MMFs), a length ...

Recent advances in optical fiber high-temperature sensors and ...

Optical fiber high-temperature sensors can be divided into FBG-type, FPI-type and blackbody radiation-based type, according to the sensing principle. This paper mainly introduces FBG-based and FPI ...

HT Fiber Device, High Temperature Fiber Optic Sensing System

MEISU developed high-temperature resistant optical devices with SM fiber and PM fiber for fiber sensing system. By applying a special high-temperature coating to the normal PM fiber, it provides multiple ...

High Temperature Resistant Attachment Method for Optical Fiber Sensors

A novel method that prevents detachment of an optical fiber from a metal/alloy tube and allows strain measurement up to higher temperatures, about 800 C has been developed.

Heat-Resistant Thin Optical Fiber for Sensing in High ...

From the results presented here, we conclude that this new heat-resistant optical fiber is effective in high density metal tube cabling and is well-suited to optical fiber sensing under high-temperatures up to ...

Optical Fiber Sensors for High-Temperature Monitoring: ...

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