Polarization-maintaining fiber interferometry structure



Overview

Polarization-maintaining hollow-core fibers (PM-HCFs) are intended for for short-reach applications such as high-precision interferometric sensing, polarization control, and fiber-based spectroscopic systems, where birefringence is the primary performance metric. Light is guided either in the so-called „fast“, or the „slow“ axis and linearly. In this work, a novel polarization-maintaining hollow-core fiber structure featuring a semi-circular nested dual-ring geometry is proposed. Resonant frequency beyond 2,300 Hz and sensitivity of 29 pm/g were demonstrated. Abstract—We present methods and processes of using a ghost-peak-freedistributedpolarizationcrosstalkanalyzer(DPXA)toac-curately obtain all polarization related parameters of polarization-maintaining (PM) fibers.

Article Content

Polarization-maintaining fiber based macehead shaped interferometric ...

A macehead-shaped bent polarization-maintaining fiber-based interferometric sensing structure called MBPIS is described and experimentally demonstrated for precise temperature and

Polarization-maintaining optical fiber

OverviewDesignsPolarization crosstalkPrinciple of operationApplications

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Several different designs are used to create birefringence in a fiber. The fiber may be geometrically asymmetric or have a refractive index profile which is asymmetric such as the design using an elliptical cladding as shown in the diagram. Alternatively, stress permanently induced in the fiber will produce stress birefringence; this may be accomplished using rods of another material included within the cladding. Several dif

Fiber Coupling to Polarization-Maintaining Fibers and Collimation

For standard single-mode fibers the light is guided in two principle states of polarization. Imperfections in the fiber do lead, however, to random power transfer between the two principle states of polarization

Design and Optimization of Polarization-Maintaining Low-Loss ...

This work presents a novel polarization-maintaining hollow-core anti-resonant fiber design featuring a nested semicircular dual-ring structure and optimized through a multi-objective

Accelerometer Based on Polarization-Maintaining Microstructured

A novel optical fiber accelerometer based on Sagnac interferometer constructed with a 0.35-m long polarization-maintaining microstructured optical fiber and a 3-dB coupler was successfully

Complete Characterization of Polarization-Maintaining Fibers Using ...

The polarization maintaining ability of a PM fiber is generally characterized by polarization extinction ratio (PER) or h-parameter (PER per unit length), while the fundamental parameter governing the

Polarization-Maintaining Fiber

Polarization maintaining fibers are fabricated with structures to impart an asymmetric stress profile across the fiber, enhancing the birefringence of the fiber between the axes normal to and parallel to

Polarization-Maintaining Fiber With Uniform Doping Concentration ...

In this study, we propose a polarization-maintaining few-mode fiber (PM-FMF) with a uniform doping concentration, capable of supporting up to 10 weakly coupled modes. The fiber

Interferometric polarization compensation based on one single ...

Using polarization-maintaining fiber (PMF) in dual-frequency heterodyne interferometry has the advantages of reducing the laser''s own drift, obtaining high-quality light spots, and improving ...

Polarization-Maintaining Fiber Coupler: Working

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This article will introduce the working principle, structural characteristics and performance characteristics of polarization-maintaining fiber coupler in detail.

Design and Optimization of Polarization-Maintaining

In this work, a novel polarization-maintaining hollow-core fiber structure featuring a semi-circular nested dual-ring geometry is proposed. To

Accurate alignment

Polarization-maintaining connectors feature a positioning key aligned to the slow axis of the fiber. The key permits the connector to be mated only with another connector or component at a single angular

Characterization of Distributed Polarization-Mode Coupling for Fiber

In addition, it can help improve the wound technique, and then suppress the polarization-mode coupling. The optical coherence domain polarimetry system based on white-light interferometer is a suitable

Optical Fibers Profiling Using Interferometric and Digital Holographic ...

Optical interferometry and digital holography methods are accurate and effective tools used to achieve this task. In this chapter, we illustrate the application of different types of optical interference on

Polarization maintaining fiber interferometer based on superimposed ...

A novel polarization maintaining fiber interferometer based on superimposed Mach–Zehnder and Sagnac interferences is presented. Higher order cladding modes are effectively

Design and Optimization of Polarization-Maintaining

This work proposes a novel polarization-maintaining hollow-core anti-resonant fiber structure characterized by high birefringence and low transmission

Characterization of birefringence dispersion in polarization ...

Request PDF | Characterization of birefringence dispersion in polarization-maintaining fibers by use of white-light interferometry | A new method for measuring the birefringence dispersion

What are Polarization Maintaining (PM) Fibers?

A Polarization Maintaining Fiber is a single-mode fiber that preserves and transmits the polarization state of the light entering into it. Usually,

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Additional source notes

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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