

Micro Nano Fiber Bragg Grating



Overview

Microfiber-based Bragg gratings (MFBGs) are an emerging concept in ultra-small optical fiber sensors. They have attracted great attention among researchers in the fiber sensing area because of their large evanescent field and compactness. In this review, the basic techniques for the fabrication of a refractive index (RI) sensor based on micro-nano fiber (MN-fiber) with chirped fiber Bragg grating (CFBG) Fabry-Perot cavity (FP-cavity) for a microfluidic chip has been proposed. A single-mode fiber is drawn by hydrogen flame heading come into MN-fiber. Two CFBGs are written into this MN-fiber. A method of fabricating Fiber Bragg gratings in a micro/nanofiber using ultrashort pulse irradiation, the method includes elongating and flame-brushing a single mode optical fiber to create a micro/nanofiber, and generating the ultrashort pulse irradiation to induce a plurality of refractive index. dy, we theoretically show an optomechanical effect in silica MNF Bragg gratings (MNFBGs).



Article Content

Development of a Microforce Sensor Based on a Fiber Bragg Grating

This article proposes a cantilever-type fiber Bragg grating (FBG)-based microforce sensor with micro-Newton resolution. A complete theoretical model is proposed to establish the mapping

Microfiber-Based Bragg Gratings for Sensing Applications: A Review

Microfiber-based Bragg gratings (MFBGs) are an emerging concept in ultra-small optical fiber sensors. They have attracted great attention among researchers in the fiber sensing area

A refractive index sensor based on micro-nano fiber with chirped fiber ...

A refractive index (RI) sensor based on micro-nano fiber (MN-fiber) with chirped fiber Bragg grating (CFBG) Fabry-Perot cavity (FP-cavity) for a microfluidic chip has been proposed.

Fiber Bragg Gratings with Micro-Engineered Temperature Coefficients

In this paper, we present a design framework for micro-engineering the temperature coefficients of FBGs over specified temperature ranges, while maintaining low loss and good spectral

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Fiber Bragg Grating (FBG) is one of the basic optical fiber components that have a wide range of applications. FBG introduces periodic variations in the refractive index (RI) in the fiber...

3D Printed Micro-Nano Waveguide Ultrashort Bragg Grating on

Abstract: An optical fiber ultrashort polymer micro-nano waveguide Bragg grating (PMWG) for contact liquid temperature sensor was fabricated on the single-mode fiber tip by the femtosecond laser

Reconfigurable optical-force-drive chirp and delay-line in micro/nano ...

loiting new applications in typical MNF devices such as gratings merit further attention. Fib r gratings have become a critical component for many applications in fiber-optic systems. However, radiation

3D Printed Micro-Nano Waveguide Ultrashort Bragg Grating on

In this study, we demonstrate a miniature fiber optical nanomechanical probe (FONP) that can be used to detect the mechanical properties of single cells and in vivo tissue measurements.

Optimized optical tunable microfiber-Bragg grating

Fiber Bragg grating (FBG), as is well known, has been widely applied in optical sensors , optical communications , tunable fiber filters , and multi-wavelength fiber lasers .

Hybrid optical fiber Fabry-Perot interferometer for nano-displacement ...

Nano-displacement sensing based on an extrinsic hybrid fiber Fabry-Perot interferometer is proposed and demonstrated. The lead-in fiber tip of such an interferometer consists of a strongly

Tapered fiber bragg grating sensor coated with zinc oxide

Summary A new approach to measure relative humidity changes by using fiber Bragg grating (FBG) is presented. Etching method is used to fabricate an FBG taper, which is then coated with zinc oxide

Femtosecond laser micromachining triple-modality optical fiber sensor ...

In this study, we demonstrate, for the first time, the monolithic integration of three distinct sensing modalities—Mach-Zehnder interferometry (MZI), surface plasmon resonance (SPR), and

Fiber-optic sensor

Fiber Bragg grating based fiber-optic sensors significantly enhance performance, efficiency and safety in several industries. With FBG integrated technology, sensors can provide detailed analysis and

Research on measurement for bending stress of gear with Fiber Bragg ...

Niu, H.; Zhang, X. 2015: Design on a bending stress measurement system of micro-gear with fiber Bragg grating 2015 IEEE 10th International Conference on Nano/Micro Engineered and Molecular Systems,

Micro-D-Shaped Fiber Laser for High-Resolution Refractive Index

Traditional optical fiber RI sensors based on spectral wavelength analysis are limited by the device resolution of the optical spectrum analyzer (OSA). In this paper, a micro-D-shaped fiber

A Miniaturized Fabry-Perot Accelerometer Based on a 45° Fiber ...

A high-reliability acceleration sensor based on fiber Bragg grating (FBG) that can be used in downhole for a long time is proposed, which is aimed at solving the problem of low-reliability of ...

Single Chip-Based Nano-Optomechanical Accelerometer Based on ...

Optical coupling between subwavelength grating pairs allows for the precise measurement of lateral or vertical displacement of grating elements and gives rise to different types of displacement and inertial

Fabrication and Characterization of Fiber-Optic Nano-Probes with

Peng, W.et al. Longitudinal Mode Characteristics of an External-Cavity Semiconductor Laser with Fiber Bragg Gratings Ying, L.et al. Three-Dimension Reconstruction by Space Image Fusion Weiyi, L.et al.

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