

Plasma Crystal Fiber Optic Sensor



Overview

With their ability to modify core and cladding structures, PCFs offer exceptional control over light guidance, dispersion management, and light confinement, making them highly suitable for applications in refractive index (RI) sensing, biomedical imaging, and nonlinear optical. With their ability to modify core and cladding structures, PCFs offer exceptional control over light guidance, dispersion management, and light confinement, making them highly suitable for applications in refractive index (RI) sensing, biomedical imaging, and nonlinear optical. This article presents a comprehensive overview of recent advancements in photonic crystal fiber (PCF)-based sensors, with a particular focus on the surface plasmon resonance (SPR) phenomenon for biosensing. In recent decades, various kinds of fiber probes with special structures were. Optical fiber sensors based on surface plasma technology have many unique advantages in specific applications such as extreme environmental monitoring, physical parameter determination, and biomedical indicators testing. In fact, SPR optical fiber biosensors are becoming very.

Article Content

Photonic crystal fiber based plasmonic sensors

This review discusses fundamentals and fabrication of fiber optic technologies incorporating plasmonic coatings to rationally design, optimize and construct PCF SPR sensors as

Photonic Crystal Fiber Sensor Based on Surface

An ultra-sensitive photonic crystal optical fiber sensor based on surface plasmon resonance (SPR) is designed and analyzed. The D-shaped

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By combining the sensitivity of SPWs with the optical properties of optical fibers, Jorgenson pioneered the first SPR-based optical fiber chemical sensor in 1993.

Surface plasmon resonance

Fiber optic SPR involves the integration of SPR sensors into the optical fibers, enabling the direct coupling of light with the surface plasmons as light is passed

Design and analysis of a high-sensitivity fan-shaped photonic crystal ...

A high-sensitivity fan-shaped photonic crystal fiber sensor based on surface plasmon resonance (SPR) is proposed and theoretically analyzed. In order to excite SPR, Indium Tin Oxide

Dual-Aperture Dual-Core Photonic Crystal Fiber Sensor Based

Surface plasmon resonance sensing, which is based on photonic crystal fiber sensing technology, has a broad spectrum of applications in the detection of pharmaceuticals, environmental

Wide refractive index detection range surface plasmon resonance sensor ...

We propose and simulate a surface plasmon resonance (SPR) refractive index (RI) sensor based on a novel D-shaped photonic crystal fiber. We used an open air hole coated with gold film to

Blood component detection using photonic crystal fibre sensor

This paper proposes a photonic crystal fibre (PCF)-based sensor specifically designed to identify blood components such as haemoglobin, red blood cells (RBCs), white blood cells (WBCs),

Novel Optical Fiber-Based Structures for Plasmonics

Optical fiber sensors based on surface plasma technology have many unique advantages in specific applications such as extreme environmental

A D-type dual side-polished, highly sensitive, plasma

In this paper, a D-shape dual side-polished (DSP) photonic crystal fiber (PCF) sensor based on high sensitivity and high range refractive index (RI)

D-shaped photonic crystal fiber based on surface ...

In recent years, with the first fiber-based sensor reported, Surface plasmon resonance-based optical fibers have garnered extensive attention with numerous reports and successful

A Fiber Optic Catalytic Sensor for Neutral Atom

The presented sensor for neutral oxygen atom measurement in oxygen plasma is a catalytic probe which uses fiber optics and infrared detection system

Recent advances of optical fiber biosensors based on

The sensing principles of optical fiber-based SPR sensors are introduced, and different optical fiber-based SPR biosensors are described.

Use of Fiber-Optic Sensor to Record Pulsed Plasma Discharge Current

The need to increase the precision with which the form of the pulse of the rapidly varying current of powerful plasma radiation is recorded under the conditions of powerful electromagnetic

Photonic crystal fiber-based SPR sensor for broad range of refractive ...

In this paper, a high-sensitivity surface plasmon resonance (SPR) sensor based on photonic crystal fibre (PCF) is designed and simulated for a wide range of applications involving

Novel Optical Fiber-Based Structures for Plasmonics

In this paper, the fabrication technology, characteristics, development status and application scenarios of different special optical fiber structures are briefly

Development of plasma bolometers using fiber-optic temperature sensors

Resistive bolometer sensors have long been utilized in tokamaks and helical devices but suffer from electromagnetic interference (EMI). Results are shown from initial testing of a new bolometer concept

Research on Fiber Optic Surface Plasmon Resonance

Due to the benefits of the high sensitivity, real-time response, no labeling requirement, and good selectivity, fiber optic sensors based on surface

High-Sensitivity Broad-Range Refractive Index Sensor Using

A surface plasmon resonance photonic crystal fiber sensor featuring a photonic crystal fiber-enhanced design with three layers of periodically arranged air holes has been designed to

A D-type dual side-polished, highly sensitive, plasma

A D-type dual side-polished, highly sensitive, plasma refractive index sensor based on photonic crystal fiber

Novel Optical Fiber-Based Structures for Plasmonics

Based on the fabrication technology and sensing principle of the classical optical fiber platform, the multi-parameter detection and sensing

Advances on Photonic Crystal Fiber Sensors and Applications

In this review paper some recent advances on optical sensors based on photonic crystal fibres are reported. The different strategies successfully applied in order to obtain feasible and reliable

Fiber-Optic Localized Surface Plasmon Resonance

Applying fiber-optics on surface plasmon resonance (SPR) sensors is aimed at practical usability over conventional SPR sensors. Recently, field

Photonic fibre crystal sensor with a D-shape based on surface plasma ...

Abstract A gold-coated D-shape photonic crystal fibre sensor based on surface plasmon resonance (PCF-SPR) is designed with microfluidic channels and numerically investigated for

Recent Advances in Photonic Crystal Fiber-Based SPR Biosensors:

This article presents a comprehensive overview of recent advancements in photonic crystal fiber (PCF)-based sensors, with a particular focus on the surface plasmon resonance (SPR) phenomenon for

Recent Advances in Photonic Crystal Fiber-Based SPR Biosensors

Thus, an exhaustive analysis of various sensing parameters, plasmonic materials, and sensor models used in PCF-SPR sensors is presented and explored in this article.

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