

Microstructured Photonic Crystal Fiber Sensing



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. With their ability to modify core and cladding structures, PCFs offer exceptional control. Photonic crystal fibers (PCFs) are a special class of optical fibers with a periodic arrangement of microstructured holes located in the fiber's cladding. Light confinement is achieved by means of either index-guiding, or the photonic bandgap effect in a low-index core.



Article Content

Recent Advances in Photonic Crystal Fiber-Based SPR Biosensors

This article presents a comprehensive overview of recent advancements in photonic crystal fiber (PCF)-based

Hollow-Core Photonic Crystal Fiber Gas Sensing

Fiber gas sensing techniques have been applied for a wide range of industrial applications. In this paper, the basic

Highly sensitive dual-mode D-shaped photonic crystal fiber ...

Surface plasmon resonance (SPR) sensors based on photonic crystal fibers (PCFs) have emerged as powerful tools

Photonic Crystal Fiber Sensor Based on Surface Plasmon ...

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

A review of recent developments in photonic crystal fibers ...

This photonic crystal fiber with a circular hollow-core (CC-PCF) optical sensor was constructed and statistically

Design and numerical analysis of microstructured-core octagonal ...

This paper presents an octagonal photonic crystal fiber (O-PCF) for liquid sensing, in which both core and cladding are

A review of photonic crystal fiber sensor applications for different ...

Hollow-core photonic band gap fiber has the potential to overcome some of the fundamental limitations of solid fiber

Recent advances in photonic crystal fiber based chemical and

Photonic crystal fiber (PCF) sensors exhibit significant potential for applications in diverse fields, including

Recent Advances in Sensor Applications of Microstructured Optical ...

Their diverse structural configurations, encompassing fiber Bragg gratings (FBGs), photonic crystal fibers (PCFs), and tapered fibers,

Developments in photonic crystal fiber structures-based plasmonic ...

Various sensing methods to develop chemical sensors for the detection of liquid analytes are outlined here.

The sensing characteristics of microstructure-core photonic crystal ...

Abstract A highly-sensitive temperature sensor based on the Sagnac interferometer embedded with a microstructure

Microstructure core photonic crystal fiber for gas

In this paper, a highly sensitive gas sensor based on the microstructure core and cladding photonic crystal

Prospects of Photonic Crystal Fiber as Physical Sensor: An Overview

From its invention PCF is showing its potential not only in low loss communication but also in many versatile and improved

Photonic Crystal Fibers for Sensing Applications

Photonic crystal fibers (PCFs) offer several advantages over conventional fibers for developing sensors, improving their

(PDF) Photonic Crystal Fiber Sensors, Literature Review, Challenges ...

This work discusses several photonic crystal structures, such as photonic crystal waveguides, cavities, and photonic

Design and Sensitivity Improvement of Microstructured-Core Photonic ...

Abstract: This paper describes a gas detection sensor that is based on a microstructured-core photonic crystal fiber (PCF). The finite

Dual D-Shaped Photonic Crystal Fiber Sensor for Three-Parameter

Abstract: A surface plasmon resonance (SPR) sensor based on dual D-shaped hollow microstructured fiber is

Optical Sensors Using Microstructured and Photonics Crystal Fibers

Abstract: This Special Issue aims to highlight advances in the design, modelling, development and testing of fiber sensors based on

A review of microstructured optical fibers for sensing applications

In this review we first summarize fabrication methods and transmission mechanisms of microstructured fibers.

A review on photonic crystal fiber based fluorescence sensing for ...

Abstract Photonic crystal fibers (PCFs) have received tremendous interest in recent years for many biomedical

Advances on Photonic Crystal Fiber Sensors and Applications

It is well known that photonic crystal fibers (PCFs), thanks to their microstructured section have allowed the

A review of microstructured optical fibers for sensing applications

Abstract Microstructured optical fibers, including not only photonic crystal fibers but also new types of fiber with different

Highly sensitive biosensor based on a microstructured photonic crystal ...

Highly sensitive biosensor based on a microstructured photonic crystal fibre for alcohol sensing Chuan Shi Ang a,

Photonic crystal fiber based plasmonic sensors

However, optical fiber based SPR sensors are required to direct the incident light at a narrow angle. A planar photonic

Advances in Photonic Crystal Fiber-Based Sensor for Detection of ...

The promising properties of photonic crystal fibers (PCFs) have sparked the interest of a number of research organizations. Due to

A review on various sensing prospects of SPR based photonic crystal fibers

This review article deals with various prospects of the Photonic Crystal Fiber (PCF) and its applications in biosensing,

Photonic Crystal Fibers

Photonic crystal fibers Photonic crystal fibers (PCFs) are mainly divided into two categories based on their guiding principles – index

Photonic Crystal Fiber Pressure Sensors | Springer Nature Link

This chapter introduces photonic crystal fibers (PCFs) Photonic crystal fiber specifically designed for pressure

Infiltrated Photonic Crystal Fibers for Sensing Applications

Photonic crystal fibers (PCFs) are a special class of optical fibers with a periodic arrangement of microstructured holes

Recent advances in photonic crystal fiber-based sensors for

Abstract Nowadays, the usage of photonic crystal fibers (PCF) has become a very quick and prevalent innovation in

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