

Fiber Optic Biochemical Sensing Technology



Overview

ABSTRACT: Over the last 20 years, optical fiber-based devices have been exploited extensively in the field of biochemical sensing, with applications in many specific areas such as the food processing industry, environmental monitoring, health diagnosis, bioengineering . ABSTRACT: Over the last 20 years, optical fiber-based devices have been exploited extensively in the field of biochemical sensing, with applications in many specific areas such as the food processing industry, environmental monitoring, health diagnosis, bioengineering . ABSTRACT: Over the last 20 years, optical fiber-based devices have been exploited extensively in the field of biochemical sensing, with applications in many specific areas such as the food processing industry, environmental monitoring, health diagnosis, bioengineering, disease diagnosis, and the. Fiber-optic systems meet this need by integrating into clinical workflows with highly localized dosimetric and spectroscopic feedback. Their small size and flexibility allow deployment within catheters, endoscopes, or treatment applicators, making them suitable for both external beam and internal.



Article Content

Oct 06, 2025

Recent advances of optical fiber biosensors based on surface

Recently, optical fiber sensing technology has gained attention in biosensing due to distinctive features such as high

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Review of plasmonic fiber optic biochemical sensors ...

This paper presents a brief overview of the technologies used to implement surface plasmon resonance (SPR) effects

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Optical fiber biosensors toward in vivo detection.

This review takes stock of the various optical fiber-based biosensors that could be used for in vivo applications. We

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Optical Fiber Optofluidic Bio-Chemical Sensors: A Review

Research progress and current status of OFOF bio-chemical sensors based on various sensing mechanisms are

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Recent development of fiber-optic chemical sensors and biosensors ...

Furthermore, recent developments on fiber-optic chemical sensors and biosensors are summarized, analyzed and

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Emerging Technologies for Fiber-Optic-Based Sensors in Biomedical ...

Abstract: Fiber-optic sensor (FOS) technology, a proximate of optoelectronics and fiber-optic communications, has

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All-in-fiber label-free biochemical sensors by femtosecond laser ...

In this review, we give a comprehensive introduction to the emerging fiber optic biochemical sensors realized by

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Fiber-Optic Chemical Sensors and Fiber-Optic Bio-Sensors

This review summarizes principles and current stage of development of fiber-optic chemical sensors (FOCS) and

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Advances in Optical Fiber Aptasensor for Biochemical Sensing ...

Optical fiber biochemical sensing technology, as a cutting-edge, multidisciplinary, and universal sensing technology,

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Emerging Trends in Optical Fiber Biosensing for Non-Invasive

This paper examines the latest uses and accomplishments of optical fiber sensors (OFSs) and technology in the realm of biosensing.

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Applications of Optical Fiber in Label-Free Biosensors and ...

1. Introduction With the advancement of optical fiber technologies and the unique advantages such as small size,

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Optical fiber sensors in biomedical: trends and emerging research - A ...

Optical fiber sensors represent a rapidly advancing technology with substantial applications across various fields,

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Fiber-optic sensor

A fiber-optic sensor is a sensor that uses optical fiber either as the sensing element ("intrinsic sensors"), or as a means of relaying

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Label-Free Biochemical Sensing Using Processed Optical Fiber ...

This Review provides a comprehensive review of the fundamentals as well as the current advances in developing optical fiber

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Advances in optical fiber SERS sensor for biochemical sensing ...

Optical fiber SERS sensing, which combines the advantages of optical fibers, opens up a new path for detection in the

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Advances in Distributed Fiber Optic Biochemical Sensing Technology

Optical fiber biochemical sensors are ideal tools for biochemical detection due to their unmarked, in-situ, fast, and accurate

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Review of Optical Fiber Optofluidic Chemical Sensors and Biosensors

Optical fiber optofluidic systems possess the advantages of the low invasiveness, compact structure, excellent

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Label-Free Biochemical Sensing Using Processed Optical Fiber ...

ABSTRACT: Over the last 20 years, optical fiber-based devices have been exploited extensively in the field of biochemical sensing,

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Recent Development in Optical Fiber Biosensors

The micro- and nano-scale miniaturization of chemical and biochemical sensors is of great scientific and technological

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Optical Fibre-Based Sensors—An Assessment of Current Innovations

Optical fibre sensors are an essential subset of optical fibre technology, designed specifically for sensing and measuring several

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Fiber-Optic Surface Plasmon Resonance Sensors and Biochemical ...

Fiber-optic (FO) surface plasmon resonance (SPR) sensors can be used as label-free and highly sensitive tools for

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Optical Fiber Sensors: Working Principle, Applications, and Limitations

Fiber-optic technology emerged originally for applications in data transmission and telecommunications. However,

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Review of Optical Fiber Optofluidic Chemical Sensors and Biosensors

Optical fiber sensors have gained significant attention in recent years owing to their remarkable advantages of remote

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Applications of fiber-optic biochemical sensor in microfluidic chips: A ...

Then, applications of fiber-optic biochemical sensors in microfluidic sensor chips in detecting nucleic acids, proteins,

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Fiber Optic Sensors in Chemical and Biological Applications

At the very beginning, optical fibers served in light transmission from a measured area to a detector. Subsequent research has

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Advances in Optical Fiber Aptasensor for Biochemical Sensing ...

This article aims to review the recent research progress of fiber-optic aptamer biochemical sensors, with a focus on

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Optical Fiber Sensing Technologies in Radiation Therapy

This paper reviews the fundamental principles and diverse applications of optical fiber sensing technologies in

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Graphene-Fiber Biochemical Sensors: Principles, Implementations, and ...

These graphene-fiber biochemical sensors can offer tools in various applications, such as gas tracing, chemical

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Advanced Materials Technologies is the materials technology journal for multidisciplinary research in materials

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Recent Development in Optical Fiber Biosensors

On the other hand, the development of optical-fiber sensors during recent years is related to two of the most important

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Advances in optical fiber SERS sensor for biochemical sensing ...

With the continuous progress in nanofabrication technologies, increasingly sophisticated and intricate probe structures

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