

Fiber Optic Sensing Nano-Optoelectronics

Overview

In this book, more than ten research papers were collected and studied on the optical micro/nanofiber devices and related integrated systems, covering the high-performance optical micro/nanofiber sensors, fine characterization technologies for optical. In this book, more than ten research papers were collected and studied on the optical micro/nanofiber devices and related integrated systems, covering the high-performance optical micro/nanofiber sensors, fine characterization technologies for optical. Optical fiber sensing has rapidly evolved into a transformative technology, enabling breakthroughs across multiple disciplines, from geophysics and structural health monitoring to environmental science, biomedicine, and industrial automation. With continuous advancements in fiber fabrication. This is the power of fiber optic sensing, a technology that transforms ordinary optical fibers into the digital world's sensory network. In 2023, researchers turned submarine cables into earthquake warning systems and gave electric vehicles “optical nerves” to prevent battery failures. The institute explores various optoelectronic systems, ranging from quantum emitters, plasmonic nano-structures, embedded semiconducting tunneling barriers, to ultrafast THz.



Article Content

Oct 09, 2025

Nanosecond-latency all-optical fiber sensing with in-sensor computing

This work proposes an all-optical fiber sensing architecture with in-sensor computing that achieves & lt;3 ns

Nov 05, 2025

Turning Fiber into a Sensing System: The Magic of

From energy and transportation to agriculture and cybersecurity, fiber sensing is quietly

Oct 18, 2025

Fiber Optic Sensors in Tactile Sensing: A Review

Fiber Optic Sensors in Tactile Sensing: A Review Abstract: Tactile is an important source of information for people to explore the

Dec 13, 2025

Micro/Nano-structured Optical Fiber Gas Sensor

Micro- and nano-structured optical fibers enable compact gas sensors with enhanced sensitivity. This paper overviews recent

Apr 23, 2026

Review Advancements in fiber optic tactile sensors: A comprehensive ...

Recent advancements in fiber-optic sensing technology have significantly propelled the development of optical tactile

Nov 11, 2025

Turning Fiber into a Sensing System: The Magic of

Imagine a world where the Internet doesn't just connect but senses—detecting earthquakes,

May 04, 2026

Fiber Optic Sensors: Short Review and Applications

Developments fiber optic sensor technology has been a major user of technology associated with the

Jun 07, 2026

(PDF) Nanophotonics and optical fibers: New avenues for sensing and ...

This article focuses on the recent advancements in the field of nanophotonics and optical fiber to use them in sensing

Jul 10, 2026

Distributed optical fiber sensing: Review and perspective

Distributed optical fiber sensors characterized by spatially resolved measurements along a

Jun 13, 2026

Nanophotonics and optical fibers: New avenues for sensing and active ...

In the field of optical fiber technology integrated with nanophotonics emerged new avenues for applications in remote

Oct 13, 2025

Micro-/Nano-Fiber Sensors and Optical Integration Devices

Because of their strong surface evanescent field, micro-/nanofibers have been used to develop optical sensors and

Mar 01, 2026

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

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

Oct 28, 2025

Optical Fiber Sensors: Working Principle, Applications, and Limitations

This work reviews the fiber-optic sensors based on Bragg gratings, long period gratings, interferometers, surface

Jan 08, 2026

Micro-/Nanofiber Optics: Merging Photonics and Material Science on ...

Micro-/nanofibers (MNFs) are optical fibers with diameters close to or below the wavelength of the guided light. These tiny fibers can

Apr 24, 2026

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

This review paper presents the foundations of fiber-optic chemical sensing or biosensing, including the sensing

Oct 29, 2025

(PDF) Optical Fiber Sensors: Working Principle, Applications, and ...

Brief theory of sensing principle, fabrication method, applications, advantages and disadvantages of the different

Jun 17, 2026

Micro/Nanofibre Optical Sensors: Challenges and Prospects

Meanwhile, the mesoporous matrix and small diameter of a polymer MNF, make it an excellent host fibre for functional

May 19, 2026

Micro-/Nano-Fiber Sensors and Optical Integration Devices

4. High Integration Optical Fiber Assisted-Sensing System The optical fiber can be conveniently connected to the high-performance

Jan 19, 2026

Recent Development of Polymer Nanofibers in the Field of Optical Sensing

In recent years, with the continuous development of optical fiber sensing technology, the combination of micro-nano

Jul 26, 2025

Special Issue "Fiber Optic Sensors and Applications": An Overview

We present here the recent advance in exploring new detection mechanisms, materials, processes, and applications of fiber optic

Oct 27, 2025

Photonics & Optoelectronics

We explore methods to concentrate optical fields to extreme lengthscales using plasmonics and photonic crystals and, thereby,

Apr 20, 2026

Nano-optomechanical fiber-tip sensing

In this work, we present a fiber-coupled nano-optomechanical sensor that requires no coupling optics. This is achieved

Apr 04, 2026

Recent Advances in Spectroscopic Gas Sensing With Micro/Nano

With micro- and nano-structured optical fibers, parts-per-million to parts-per-trillion level gas detection has been

Nov 01, 2025

Recent Advances and Applications in Optical Fiber Sensing

This Special Issue aims to present the latest research on optical fiber sensing technologies, covering new theoretical

Nov 14, 2025

Advanced Fibre-Optic Sensing

Fibre-optic sensing techniques play a vital role in the larger family of photonic sensing techniques, and have undergone a significant

May 13, 2026

Highly Sensitive Fiber-Optic Fabry–Perot Microforce Probe

Abstract: In this paper, we report fabrication of highly sensitive nano- and micro-force probes on the end facet of optical fibers using

Mar 01, 2026

A review on nanomaterial-modified optical fiber sensors for gases ...

The mesmerizing properties of nanomaterials and the features offered by optical fibers can be combined to result in an attractive new

Sep 18, 2025

Optoelectronic fiber devices: Design, advancements, and perspectives

This comprehensive review thoroughly examines optoelectronic fiber devices, providing an in-depth overview of their

Dec 29, 2025

Topic Editorial on Fiber-Optic Sensors

Over the past few years, Micromachines MDPI has published a wealth of innovative and groundbreaking research on

Jan 18, 2026

Applications and Development of Optical Fiber Sensors

Optical fiber sensors have become a cornerstone of modern sensing technologies, offering exceptional advantages such as immunity

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