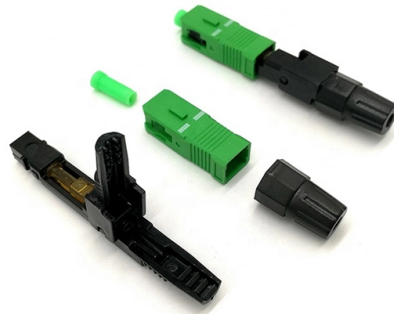


Fiber Optic Sensor pH Value Detection



Overview

This review offers a comprehensive analysis of recent advances in optical fiber-based pH sensors, covering key techniques such as fluorescence-based, absorbance-based, evanescent wave, and interferometric methods. The apparatus is a straightforward modification of an existing phase fluorometer and exhibits accuracy and precision of approximately 0. Background: This study presents the development and characterisation of an optical fibre coated with silver nanoparticles and silica composite for pH measurement, where pH corresponds to the negative log of hydrogen ions in solution. Methods: A fabrication process, including sol-gel synthesis. Microfluidics is used in many applications ranging from chemistry, medicine, biology and biomedical research, and the ability to measure pH values in-situ is an important parameter for creating and monitoring environments within a microfluidic chip for many such applications.



Article Content

Oct 24, 2025

Fiber optic pH sensor based on mode-filtered light detection

Abstract A novel mode-filtered light fiber optic pH sensor was developed by inserting an optical fiber immobilized with a pH-sensitive indicator into a fused-silica capillary. In the experiment,

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Highly sensitive fiber-optic chemical pH sensor based on surface ...

The pH value plays a vital role in many biological and chemical reactions. In this work, the fiber-optic chemical pH sensors were fabricated based on

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This is the first comprehensive review on methods and materials for use in optical sensing of pH values and on applications of such sensors. The Review starts with an introduction that

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Abstract Fiber optic sensor pH Mode-filtered light detection Bromocresol green Cresol red a b s t r a c t A novel mode-filtered light fiber optic pH sensor was

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Applications of fiber-optic sensors in environmental detection, biomedical research, medical monitoring and industrial process control are summarized.

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Optical fiber sensors have proven highly effective for pH detection due to their exceptional sensitivity, rapid response, and resistance to electromagnetic

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Microfluidics is used in many applications ranging from chemistry, medicine, biology and biomedical research, and the ability to measure pH values in-situ is an important parameter for creating and

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Measurements of pH in small-sample volumes and online pH monitoring in vivo can be employed to obtain such information. For such

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(PDF) Fiber-optic probes for real-time pH monitoring

Here, we present the development of compact pH fiber probes by integrating silica optical fiber with a colorimetric pH indicator. Our approach

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A Portable "Plug-and-Play" Fibre Optic Sensor for In-Situ

We present a portable, optical fibre-based sensor for monitoring the pH based on the fluorescent intensity change of an acrylamidofluorescein dye, immobilized on the tip of a multimode

Mar 03, 2026

A fluorescence-based pH sensor with microfluidic mixing and fiber optic ...

A fluorescence-based pH sensor based on a microfluidic chip is described. The indicator dye, 8-hydroxypyrene- 1,3,6-trisulfonic acid trisodium salt (HPTS) and the test solution are mixed in

May 18, 2026

Development and characterisation of optical fibre-based pH sensor

ABSTRACT Background: This study presents the development and characterisation of an optical fibre coated with silver nanoparticles and silica composite for pH measurement, where pH corresponds to

Mar 22, 2026

Development of optical fiber sensors for high-alkaline pH monitoring ...

Fluorescent optical fiber pH sensors provide stable readings without dye leaching issues. The fluorescent sensors enable the rapid and precise pH measurement in concrete pore solutions.

Mar 07, 2026

Lab-in-fibers: Single optical fiber with three channels for ...

Download Citation | On Mar 1, 2023, Lingxin Kong and others published Lab-in-fibers: Single optical fiber with three channels for simultaneous detection of pH value, refractive index and ...

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(PDF) Fiber-Optic pH Sensor

The same approach was used in the development of optical fiber sensors for biochemical analysis [86,87], determination of solution pH [88,89],

Apr 28, 2026

Fiber optic sensor designs and luminescence-based methods for the ...

In addition, the measurement of an evanescence field interaction between the optical fiber core and a luminescence material attached to it was also successfully used in a fiber-optic flow cell

Feb 08, 2026

Fiber Optic pH Sensor Based on Phase Fluorescence

A fiber optic pH sensor based on single fiber phase fluorescence lifetime measurements of commercially available fluorescence indicators is described.

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Precise pH monitoring is essential in fields like scientific research, healthcare, and industrial processes. Herein, we have developed hydrogel-based optical fiber (OF) sensors for continuous and ...

Oct 13, 2025

Lab-in-fibers: Single optical fiber with three channels for ...

The detection of pH value is very important in chemistry, biochemistry, clinical chemistry, environmental science and other fields , . At present, the research hotspot of optical fiber pH

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Optical fiber F-P cavity pH sensor based on polyaniline reaction ...

The optical fiber F-P cavity sensing mechanism and the pH response characteristics of PANI can achieve measurement of pH value. pH is an important chemical parameter in the fields of

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Advanced hydrogel optical fiber sensors with triple-readout for real ...

Herein, we have developed hydrogel-based optical fiber (OF) sensors for continuous and real-time pH sensing using a hydrogel matrix with the pH-sensitive dye Neutral Red to obtain a...

Aug 17, 2025

Space Station Research Investigation

The following content was provided by Scott A. Dulchavsky, M.D., Ph.D., and is maintained by the ISS Research Integration Office.

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