Fiber Optic BCG Sensor



Overview

These systems can collect information from the vibrations in the chest due to blood pumping and the movements generated by breathing, known as ballistocardiography (BCG). This work presents the development of a sensor based on fiber optics, developing a sensitive area with a. This work proposes a highly sensitive sandwich heterostructure multimode optical fiber microbend sensor for heart rate (HR), respiratory rate (RR), and ballistocardiography (BCG) monitoring, which is fabricated by combining a sandwich heterostructure multimode fiber Mach–Zehnder interferometer. Abstract: A compressed sensing (CS) framework is built for ballistocardiography (BCG) signals, which contains two parts of an optical fiber sensor-based heart monitoring system with a CS module and an end-to-end deep learning-based reconstruction algorithm. The heart monitoring system collects BCG. Wearable monitoring systems have represented a breakthrough in monitoring vital signs such as respiratory and heart rates.

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Article Content

Quality evaluation of ballistocardiogram from fiber optic sensors using ...

A packaging structure for fiber Bragg grating sensors is proposed, and experimental results demonstrate its effectiveness in capturing BCG signals. Evaluating the quality of

Contactless Arrhythmia Detection and Short-Term HRV Analysis

This article presents a noncontact ballistocardiogram (BCG) monitoring system utilizing a fiber optic sensor (FOS) for PAC identification and short-term heart rate variability (HRV) analysis.

A Wearable Sandwich Heterostructure Multimode Fiber Optic ...

Abstract This work proposes a highly sensitive sandwich heterostructure multimode optical fiber microbend sensor for heart rate (HR), respiratory rate (RR), and ballistocardiography

AI-driven system for non-contact continuous nocturnal blood pressure ...

Here we introduce a non-contact system for continuous monitoring of nocturnal blood pressure, utilizing ballistocardiogram signals. The key component of this system is the utilization of

Vital Signs Monitoring Using Fiber Optic Sensors

This paper explores the efficacy of using non-invasive fiber optic sensors (FOS) for continuous monitoring of vital signs, particularly heart rate (HR) and respiratory rate (RR), through

Compressed sensing framework for BCG signals based on the optical

Abstract: A compressed sensing (CS) framework is built for ballistocardiography (BCG) signals, which contains two parts of an optical fiber sensor-based heart monitoring system with a CS module and an

Compressed sensing framework for BCG signals based on the optical

The proposed elastomer optical fiber sensor can achieve simultaneous measurement of RR and HR in different body positions, and also ballistocardiography (BCG) signal measurement in

Ballistocardiography sensor based on polymeric optical fiber: a ...

These systems can collect information from the vibrations in the chest due to blood pumping and the movements generated by breathing, known as ballistocardiography (BCG). This work presents the

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High Fidelity MZI-BCG Sensor With Homodyne Demodulation for

Abstract: An all-optical active homodyne detection aided fiber-optic Mach-Zehnder interferometer (MZI) vital signs monitoring system is proposed and investigated.

A. C. Cannons Sensor Technology for Water Quality Monitoring

Fiber Optic SensorTwo methods for the detection of important human pathogens, Cryptosporidium parvum and Helicobacter pylori, were investigated: a fiber optic biosensor, and real time PCR. The

Construction of an enzyme-based all-fiber SPR biosensor for detection ...

Herein, we first created a direct-assay-type optic fiber SPR D-AA biosensor for the instantaneous and highly sensitive detection of chiral AAs. The schematic diagram of the sensor

MoTe2-enhanced optical fiber surface plasmon resonance sensor ...

Abstract This study proposes a MoTe 2 -enhanced optical fiber surface plasmon resonance (SPR) sensor with microfluidic technology, achieving high sensitivity and continuous

A plug-and-play optical fiber SPR sensor for ...

Both theory and experiment results verify the feasibility of the “plug-and-play” sensor to measure the dual biomass of glucose and cholesterol with ultra-low detection limit and good

Machine learning-enhanced SPR-based optical biosensor for cancer

A review work with the broader survey on fiber-based SPR sensors identified the general performance boundaries of conventional designs . Machine learning (ML) techniques have

Fiber Optic Sensors – Mouser

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Simulation and analysis of different approaches towards fiber optic ...

A comparative analysis of fiber-based surface plasmonic resonance sensors utilizing various fluoride glass cores and the influence of different oxide layers on the sensor performance in near-infrared

Fiber Optics and Types

Fiber optic cables are used for long-distance and high-performance data networking. They are capable of transmitting data over longer distances and

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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 signals from a remote sensor to the electro

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