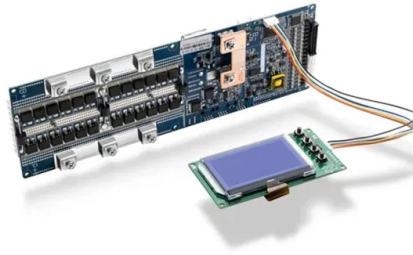


Liquid Refractive Index Fiber Optic Sensor



Overview

The paper describes a technique to determine the refractive index of liquids using reflective type fiber optic displacement sensor. The sensor consists of two multimode step index fibers and a mirror. This review is focused on microstructured optical fiber sensors developed in recent years for liquid RI sensing. The output light intensity from the receiving fiber is measured as a function of displacement of. In this present work we report fabrication of fiber optic liquid refractive index (RI) measurement sensor based on Michelson Interferometer method. This sensor was assembled by using graded index multimode (MM) fiber with core diameter $50\text{ }\mu\text{m}$ and the cladding of fiber was removed by simple chemical. Yadira-Aracely Fuentes-rubio, René-Fernando Domínguez-Cruz, and José-Rafael Guzmán-Sepúlveda 2Centro de Investigación y de Estudios Avanzados del IPN, Unidad Monterrey, Vía del Conocimiento 201, Parque de Investigación e Innovación Tecnológica, km 9. 5 de la Autopista Nueva al Aeropuerto.



Article Content

(PDF) MEASUREMENT OF REFRACTIVE INDEX OF

Experiments have been carried out to study the refractive index of well water using the principle of refraction of a laser beam on a hollow prism.

An ultra-high sensitivity methane gas sensor based on Vernier effect in ...

To our best knowledge, we presented the methane gas sensor based on VE in two parallel optical fiber Sagnac loops for the first time. The designed optical fiber methane gas sensor

Turning Fiber into a Sensing System: The Magic of

Imagine a world where the Internet doesn't just connect but senses—detecting earthquakes, monitoring battery health, or safeguarding

Advanced Functional Optical Fiber Sensors for Smart

Moreover, the high sensitivity of optical fiber sensors and their multiplexing capability allow the integration of multifunctional sensing structures on a single

Simultaneous Measurement of Liquid Level and

The work describes a surface plasmon resonance (SPR) sensor that measures the liquid level and refractive index (RI) simultaneously. The sensor is

External coated hollow fiber-based SPR sensor for low refractive index ...

This paper aims to simplify the fabrication and broaden the applications of hollow fiber-based surface plasmon resonance (SPR) sensors for low refractive index (RI) detection. The authors propose an

RefractiveIndex

It's also used in thin-film optics, often as antireflection coatings on optical devices. Beyond its optical applications, silicon dioxide finds use in ceramics, construction, and even as a food additive.

Azobenzene based optically driven fiber-optic self-sensing sub ...

Unlike other micro/nano devices, fiber optic components can incorporate embedded high-resolution microsensors, offering unique advantages in self-sensing and micro/nano execution .

Calibration Procedure of a Fiber-Optic Refractometric Sensor

In some cases, it is necessary to carry out the calibration procedure under ideal conditions, avoiding sudden temperature changes, since the refractive index of liquids decreases with increasing

A micro optical sensor based on twin-core fiber

The FPI-based optical fiber sensors having a variety of cavity lengths have been constructed in the literature to measure the strain, temperature, magnetic field, and refractive index of

Fiber Optic Sensors

Fiber optic sensors are compact because the detection circuit is located in the amplifier, allowing for detection even in narrow spaces. Installation and

Fiber optic liquid refractive index sensor

In this present work we report fabrication of fiber optic liquid refractive index (RI) measurement sensor based on Michelson Interferometer method. This sensor.

Hollow Fiber Coupler Sensor

We present a bi-conical optical directional coupler composed of solid and hollow core fibers. Through an evanescent wave coupling mechanism, the detection of liquid refractive index and its temperature

Simultaneous measurement of liquid level and R.I. sensor using POF ...

In this paper, a dual-parameter liquid level and refractive index (R.I.) sensor is fabricated using three pieces of bare polymer optical fibers (POFs), which can independently and...

Fiber optic sensing of liquid refractive index

An optical fiber, partially stripped of its cladding is shown to sense refractive index of a liquid in which the uncladded sensing region is immersed, to a high degree of precision and over a

Measurement of refractive index of liquids using fiber optic ...

A simple fiber optic sensor is presented to determine the refractive index of liquids. The study shows that the output light intensity peak observed in various liquids is function of the refractive index of the

Refractive index of the photoresists IP-S, IP-Dip, IP-L ...

Refractive index of the photoresists IP-S, IP-Dip, IP-L, and OrmoComp depending on the UV dose. For all photoresists the refractive index rises with longer UV curing times over the entire ...

Highly Efficient Refractive Index Sensor Based on a Dual-Side

In this paper, we propose a sensor for determining the RI of liquids based on femtosecond laser (fs-laser) writing of a dual-side polished singlemode-multimode-singlemode (SMS) fiber.

A Dual-Parameter Optical Fiber Sensor Based on SPR and LMR for ...

A compact dual-parameter optical fiber sensor combining surface plasmon resonance (SPR) and lossy mode resonance (LMR) technologies was proposed for the simultaneous

Multipoint fiber optics refractive index sensor based on

Abstract We demonstrate a fiber optics sensing structure for the measurement of the refractive index of liquid samples at multiple spatial

Refractive Index Measurement of Liquids Based on

This review is focused on microstructured optical fiber sensors developed in recent years for liquid RI sensing. The review is divided into three

Temperature Compensation of Fiber Bragg Gratings

Basic fundamentals of FBG and recent progress of fiber Bragg grating-based sensors used in various applications for temperature, pressure,

(PDF) Fiber Optic Sensor for Liquid Refractive Index

The intensity of light signal transmitted through an optical fiber, whose cladding over a finite length is removed, is used as a sensor of refractive index of liquids, in which the fiber is immersed.

Temperature and refractive index dual-parameter optical fiber sensor ...

Abstract This paper proposed a cascaded fiber structure comprising single mode-hollow core-single mode convex-taper fibers (SHSC), where the air column of the hollow-core fiber (HCF) is filled by the

How Salt Water Concentration Affects Refractive Index: A Detailed Look

For water, the refractive index is typically **1.333** at room temperature, but this value changes with impurities, temperature, and pressure. In optics, refractive index is crucial for designing lenses,

A New Method Based on Multilayer Micro-Nano Structures for

However, liquid detection involves complex data processing, and the difficulty in measuring the refractive index makes it challenging to distinguish between different types of liquids. In this article, a label-free,

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