

Principle of Single-Fiber Liquid Level Sensor



Overview

The fiber, with a sensing length of 1.55 mm, has been processed with a femtosecond laser, so that it incorporates four holes in its structure. In this way, the liquid enters the air core, and it is possible to perform the sensing through the Fabry-Perot cavities that. Itive U-shaped liquid level sensor based on single- e sensing region, cladding modes are further excited due to fiber bending and create more mode interference. The sensor consists of a fiber splitter with the configuration of one input to multiple fiber outputs, i. 1×4, 1×8 and 1×12 arrangements that act as a. In this work, a novel optical fiber sensor capable of measuring both the liquid level and its refractive index is designed, manufactured and demonstrated through simulations and experimentally.



Article Content

Fiber Optic Liquid Level Sensor Based on Integration of Lever

We present a fiber-optic liquid level sensor that is conducted by a combination of optical interferometry and lever principle. The sensing unit is a Mach-Zehnder interferometer (MZI), which is

Fiber-optic liquid-level sensor

Abstract An intensity-based fiber-optic liquid-level sensor for point measurement is described. The sensing principle is based on the total internal reflection of light, which is disturbed by

High sensitivity liquid level sensor based on dual side-hole fiber Mach ...

Abstract A novel highly sensitive liquid-level sensor based on an asymmetric dual side-hole fiber (DSHF) using the core mode as the sensing mode and the cladding mode as the reference

High sensitivity optical fiber liquid level sensor based on a compact ...

In this paper, we demonstrate a novel in-fiber liquid level sensor based on the multimode fiber cascading hollow-core fiber and FBG (MMF-HCF-FBG) structure. The principle of the sensor is

(PDF) Discrete liquid level fiber sensor

Optical fibers with certain length are connected at the splitter's outputs and these fibers have flat cleaved end facet. Each of these fiber's end facets is then fixed uniformly at certain height within the

Temperature-insensitive U-shaped liquid level sensor based on single ...

A temperature-insensitive U-shaped liquid level sensor based on single-mode fiber (SMF) cascaded with double spheres is proposed. Cladding modes are excited by spherical structures.

High resolution liquid level sensor based on Archimedes' law of ...

In this paper, we present a polymer optical fiber (POF) Bragg grating (FBG) to measure liquid level based on Archimedes' law of buoyancy. The sensor c

A high-sensitivity liquid level sensor based on single

The sensor head is composed of a single-mode taper-thin core taper single-mode fiber structure constructed via fusion splicing. The operational

An Optical Fiber Liquid Level Sensor Based on Side

An optical fiber liquid level sensor based on two twisted polymer optical fibers twining around a racetrack column is demonstrated in this study.

An optical fiber sensor for the detections of liquid level and strain ...

An optical fiber sensor combining the Sagnac interference and modal interference was fabricated and experimentally investigated for the measurements of liquid level and strain.

Liquid level sensor using fiber bundle

Abstract Liquid level sensors can be constructed using a pair of bundle probe based on fiber-optic displacement sensor. The working mechanism of the sensor is detecting displacement in

Hydrostatic Fiber-Optic Liquid Level Sensor with a Position ...

The operating principle of the hydrostatic fiber-optic liquid level sensor with a PSD. The optical triangulation sensor for small displacements 13 is connected through the optical feedthroughs

Polymer Optical Fiber Liquid Level Sensor: A Review

Polymer optical fiber (POF) level sensors have a lot of potential in liquid level sensing because of their inherent safety, chemical corrosion resistance, anti-electromagnetic interference,

Temperature-insensitive U-shaped liquid level sensor based on single ...

sensor based on a SMF cascade with double spheres is designed and demonstrated for liquid level measurement. Cladding modes are more easily excited by spherical structures, and higher-order

High-precision fiber optic liquid level sensor based on fast Fourier ...

Abstract This study presents a fiber optic liquid level sensor (FOLLS) by acquiring information from the amplitude of spectral fast Fourier transform (FFT) in a specified narrow

Simultaneous measurement of liquid level and R.I.

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),

High Accuracy and Cost-Effective Fiber Optic Liquid

In this paper, a novel liquid level sensing system is proposed to enhance the capacity of the sensing system, as well as reduce the cost and

High-Resolution and Large-Sensing-Range Liquid-Level

Liquid-level sensors are required in modern industrial and medical fields. Optical liquid-level sensors can solve the safety problems of traditional

Liquid level sensor based on dynamic Fabry-Perot interferometers in ...

In this work, a novel optical fiber sensor capable of measuring both the liquid level and its refractive index is designed, manufactured and demonstrated through simulations and experimentally.

High sensitivity liquid level sensor based on a hollow core fiber ...

In this work, a highly sensitive liquid level sensor formed by using a short section of HCF sandwiched between two single mode fibers (SMFs) is proposed and experimentally demonstrated.

Self-Temperature Compensated Fiber-Optic Liquid Level Sensor With

With the merits of low-cost, large-scale and ease of fabrication, our scheme is very practical and promising in the engineering and applications related to liquid level sensing.

Optical Fiber-Based Continuous Liquid Level Sensor

This work reports an optical fiber-based continuous liquid level sensor for cryogenic propellant mass gauging, which has significant advantages

All-Fiber Liquid-Level Sensor Based on In-Line MSM

We propose and demonstrate an all-fiber liquid-level sensor using an in-line multimode-single-mode-multimode (MSM) fiber structure. A piece of single

Liquid level sensor based on fiber ring laser with single-mode-offset ...

A novel reflective liquid level sensor based on single-mode-offset coreless-single-mode (SOCS) fiber structure is proposed and experimentally demonstrated. Theory analyses and

High sensitivity liquid level sensor for microfluidic applications ...

Liquid level measurement in microfluidics is challenging, where a sensor with ultra-high sensitivity but miniature in nature is demanded. In this paper, we propose for the first time a

Fiber Optic Liquid Level Sensor Based on Integration of

Abstract and Figures We present a fiber-optic liquid level sensor that is conducted by a combination of optical interferometry and lever principle.

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