

Fiber Optic Sensing of Liquid Concentration



Overview

In this study, different configurations based on linear fiber lasers were proposed and experimentally demonstrated to measure the concentration of liquid solutions. Samples of paracetamol liquid solutions with different concentrations, in the range from 52.33 g/kg, were used as a. This work reports an optical fiber-based continuous liquid level sensor for cryogenic propellant mass gauging, which has significant advantages over the existing liquid level sensors in terms of accuracy, simplicity, and reliability. Based on Rayleigh backscattering coherent optical frequency. OFS is currently employed to sense physical and chemical characteristics, namely light intensity, vibration, temperature, pressure, strain, liquid level, pH, chemical analysis, concentration, density, refractive index of liquids, etc. It offers a number of advantages including spark free, low. 1Maestría en Física Aplicada, Escuela de Posgrado, Pontificia Universidad Católica del Perú, Lima, Perú. Baldwin, "Liquid concentration measurements with fiber optic sensor," in Latin America Optics and Photonics Conference, OSA Technical Digest (Optica. Liquid concentration measurement would provide indirect clues for liquid quality monitoring for safeguarding human health. The salinity of liquid is a very important parameter for Mariculture, prediction of climatic changes, Oceanic, marine liquid monitoring, drinking liquid monitoring similarly. 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 increase the sensing accuracy.



Article Content

Linear Fiber Laser Configurations for Optical

In this study, different configurations based on linear fiber lasers were proposed and experimentally demonstrated to measure the concentration of

THE DESIGN OF FIBER OPTIC SENSOR FOR THE

Optical fiber sensors, known for their small size and high sensitivity, are widely used to measure physical quantities like concentration, temperature, and vibration. In this paper, we present a fiber optic

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

Simple Machine Learning Approach for Liquid Concentration

We proposed an extremely simple fiber-optic tip sensor system to identify liquids by combining their corresponding droplet evaporation events with analyses using machine learning

(PDF) Fiber Optic Sensor for the Measurement of

This paper reports the use of fiber optic sensor consists of two-fiber probe and reflector for the measurement of concentration and refractive index of

Liquid concentration measurements with fiber optic sensor

We present liquid concentration measurements based on light losses in fiber optic curvatures. Lateral polishing of the transition region of its u-shaped curved fiber increases sensor sensitivity.

Portable optical fiber sensor for continuous liquid level sensing using ...

Abstract This paper presents a portable optical fiber sensor (OFS) design for continuous liquid level measurement, fabricated using two pieces of bare polymer optical fibers (POFs).

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

Commercial accounting for petroleum products requires more precise measurements and more stable operation of the liquid level gauges set up for factory conditions and spark-explosion

THE DESIGN OF FIBER OPTIC SENSOR FOR THE MEASUREMENT OF LIQUID ...

<p>Optical fiber sensors, known for their small size and high sensitivity, are widely used to measure physical quantities like concentration, temperature, and vibration. In this paper, we present a fiber

Intelligent Fiber Optic Sensor for Estimating the

This paper presents the construction and working principles of an intelligent fiber-optic intensity sensor used for examining the concentration of a

Investigation of liquid concentration measurement system by U

A U-shaped fiber optic system is designed and made to measure liquid concentration. Since laser light is highly monochromatic and liquid temperature is constant, the concentration of solution ...

Detection of adulterated honey by surface plasmon resonance optical sensor

When it comes on sample adulteration detection, optical method based on fiber optic is commonly utilized. From previous reports, this technique has been employed to determine;

Intensity Modulated U-Shaped Bent Tapered Optical Fiber

In this paper, a liquid concentration (viscosity) sensor is designed and developed at a low cost using a clad removed U-shaped bent plastic optical fiber (POF).

Liquid concentration measurement based on SMS fiber sensor with ...

Abstract A highly sensitive liquid concentration sensor based on a single-mode-multimode-single-mode (SMS) fiber structure cascaded with a FBG is utilized and

Fiber optic SPR sensor for liquid concentration measurement

A liquid concentration measurement system with end-reflection optic fiber SPR sensor was set up in this paper. Especially, a chemical method based on silver mirror reaction is proposed to

Graphene enhanced optical fiber SPR sensor for liquid concentration ...

The sensitivity of optical fiber SPR liquid concentration sensor was improved to 6.417 nm/%. A high sensitivity optical fiber Surface Plasmon Resonance (SPR) sensor which based on

An Overview Of Optical Fiber Sensor Applications In

The current state of the art of optical fiber technology is reviewed, namely based on its main characteristics and sensing advantages. In addition, the working principle

Optical Fiber-Based Continuous Liquid Level Sensor Based on

This work reports an optical fiber-based continuous liquid level sensor for cryogenic propellant mass gauging, which has significant advantages over the existing liquid level sensors in terms of accuracy,

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The utilization of optical fibers in measuring concentration is a necessity to many industries since it is safe to be applied in volatile liquids. Besides that, optical fibers based on refractive index (RI) have

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This review briefly presents the recent research and developments of optical fiber sensor technology with the focus on various methods in liquid concentration and refractive index measurement.

Graphene enhanced optical fiber SPR sensor for liquid concentration ...

A high sensitivity optical fiber Surface Plasmon Resonance (SPR) sensor which based on coreless optical fiber, silver film and graphene, has been designed and implemented for liquid

Microhole fiber-optic sensors for nanoliter liquid measurement

Here, we outline the cumulative introduction and the previous experimental research work on microhole fiber-optic sensors for nanoliter liquid, and ends with some conclusions and prospects.

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