

LPG Fiber Optic Sensing





Overview

A fiber-optic sensing platform based on a transient and traveling long-period grating (LPG) in a single-mode optical fiber has been proposed and demonstrated. Fibre Long Period Gratings (LPGs) and Tapers (adiabatic and non-adiabatic) are both devices that couple light from the fibre core into cladding modes. Relative humidity (RH) is an important factor in the field of structural health monitoring, especially during the early stage of corrosion. Many methods have been proposed for humidity sensing, and one of the attractive sensors is fiber-optic long-period grating (LPG) sensors. The FBG enables real-time temperature compensation, while the SP-LPG offers high.



LPG Fiber Optic Sensing



Investigating the performance of SnO₂-functionalized fiber optic

A fiber optic toxic gas sensor for Liquefied Petroleum Gas (LPG) detection was developed, featuring a few centimetres stripped cladding region functionalised with nanocrystalline tin oxide (SnO₂) as the

Research on fiber optic magnetic field sensor based on LPG and FBG

Long period grating (LPG) is a kind of optical fiber sensing element which is sensitive to the change of refractive index in external environment. Magnetic fluid has the characteristic of changing its



Fluid flow measurement using LPG fiber optic sensor

An LPG sensor attached to a bar in a cantilever configuration is used to measure the speed of the water that flows in a pipe, when a 600-liter tank is emptied.



Long Period Grating Based Fibre Optic Chemical Sensors

The principle of operation of optical fibre Long period grating long period grating (LPG) sensors is described. In particular, the chapter explores the use of LPGs as a chemical sensing



Hybrid FBG-LPG sensor for surrounding refractive

Compared to conventional sensors, optical fiber sensors have potentially greater sensitivity, dynamic range and resolution when detecting small parameter variations . In



Integrated fiber optic platform combining FBG and small-period LPG

We present a compact fiber optic sensor operating in reflection mode, cascading a fiber Bragg grating (FBG) and a small-period long period grating (SP-LPG) on a single fiber embedded within a



Functionalized fiber-optic long-period grating with reduced cladding

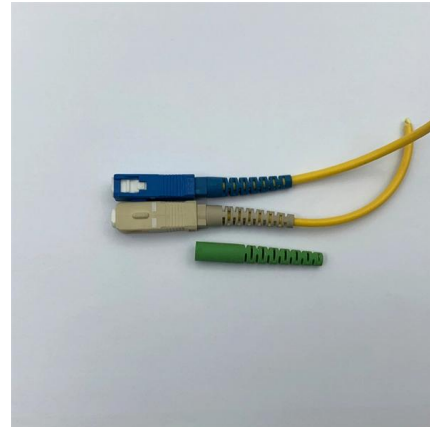
A thin fiber-optic LPG sensor with a self-assembled thin film of PAH + / PAA - is proposed and demonstrated for humidity measurements. The LPG sensor is inscribed in a single





Tapered Fibre LPG Device as a Sensing Element for Refractive Index

A LPG is an axially periodic refractive index variation inscribed in the core of a photosensitive single-mode optical fibre by ultra-violet radiation, or other means, that couples light from the core to



Carbon Dioxide Optical Sensing using Tapered and Coated LPGs and

In addition, artificial neural networks were used to improve the estimation of carbon dioxide concentration, considering the cross-sensitivity effect with temperature. Index Terms- Artificial



Enhanced sensitivity fibre optic long period grating temperature sensor

In this paper we demonstrate a simple technique for forming a fibre optic long period grating (LPG) with enhanced temperature sensitivity by surrounding the LPG with a material with a high thermo-optic



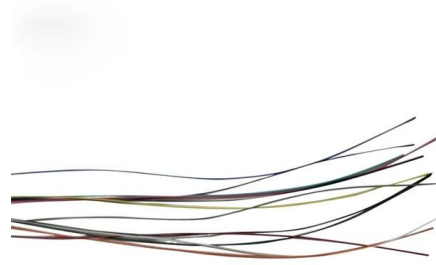
(INVITED)Chemical sensors based on long period fiber gratings: A review

Fiber optic devices are being increasingly employed in the fields of chemical and environmental sensing due to their important features, such as high accuracy, small size, chemical



Ultra-Sensitive Fiber Optic Gas Sensor Using Graphene Oxide

In this letter, we develop two types of refractive index based sensors using single-mode fiber (SMF-28) to sense hazardous toxic gases in underground mines. The first sensor design is



Long Period Grating based Optical Fiber Sensors: Fabrication

Advantages of long-period grating (LPG) based optical fibers for sensing applications along with different fabrication techniques to draw grating on the core of fiber have been reviewed.

Long Period Grating based Optical Fiber Sensors: Fabrication Techniques

Advantages of long-period grating (LPG) based optical fibers for sensing applications along with different fabrication techniques to draw grating on the core of fiber have been reviewed. Some advantages



Superlens-Assisted laser nanostructuring of Long Period optical fiber

We introduce an innovative approach to enhance refractive index sensing utilizing Long Period Optical Fiber Gratings (LPGs) processed through microsphere-assisted superlens laser



Sensitivity Improvement of an LPG-based Fiber Optic Humidity Sensor

Fiber optic sensors for determination of relative humidity are today a highly competitive option compared to conventional sensing technologies. This is due to the unique characteristics that

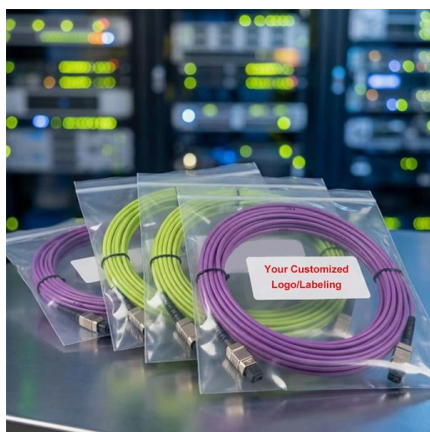


Metaltal-organic frameworks modified optical fiber SPR biosensor for

An optical fibre long period grating (LPG) based volatile organic compound (VOC) sensor coated with ZIF-8, a material from the zeolite imidazolate framework (ZIF) family, functional coating is

(PDF) Fibre Tip Sensor with Embedded FBG-LPG for

Abstract and Figures A novel optical fibre sensing system based on a hybrid long period grating (LPG) and Bragg grating (FBG) configuration is



Optical Fibre Long-Period Grating Sensors Operating at

This type of optical fibre grating has been demonstrated as a sensor for use in a wide range of applications. In this review chapter, an overview of



LPG based fiber optic sensor for carbon dioxide

In this work a novel optical-fiber sensor for carbon dioxide measurement is presented. A polymeric sensitive layer based on the acid-base equilibrium of phenol and of its derivative 4-nitrophenol is

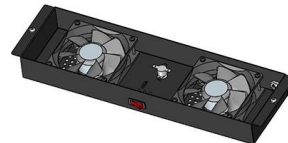


Optical Fibre Long-Period Gratings Functionalised with

Recently we have demonstrated a fibre optic refractive index sensor based on a long period grating (LPG) with a nano-assembled mesoporous

SENSOR APPLICATIONS OF FIBER BRAGG AND LONG PERIOD

Abstract. The basic idea and theoretical description of fiber Bragg and long period (LPG) gratings are presented. Sensitivity characteristics methods of fabrication are considered. The various



Optical Fibre Long-Period Grating Sensors Operating at

Optical fibres have been exploited as sensors for many years and they provide a versatile platform with a small form factor. Long-period gratings (LPGs)



Flow cell with hybrid LPG and FBG optical fiber sensor

An optical fiber sensing system based on a hybrid cascaded long period grating (LPG) and fiber Bragg grating (FBG) configuration and a thermo

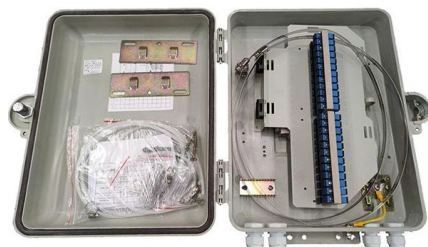
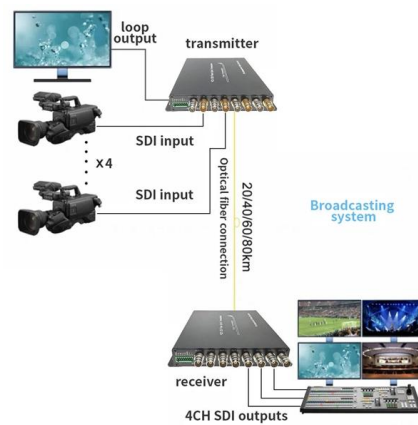


Flow cell with hybrid LPG and FBG optical fiber sensor

The hybrid LPG and FBG optical fiber sensor is manufactured and located in a small volume flow cell.

Fiber-optic physical and biochemical sensing based on transient and

A fiber-optic sensing platform based on a transient and traveling long-period grating (LPG) in a single-mode optical fiber has been proposed and demonstrated. The LPG is generated by pulsed acoustic



Fiber Optic Sensing

VIAMI provides Distributed Temperature Sensing (DTS), simultaneous Distributed Temperature and Strain Sensing (DTSS) and Distributed Acoustic Sensing (DAS)



Long Period Grating Based Fibre Optic Chemical Sensors

In particular, the chapter explores the use of LPGs as a chemical sensing platform, discussing the fabrication of LPGs and the various approaches that have been employed to modify



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