

Long-period fiber grating etching technology



Overview

This review provides a comprehensive analysis of the primary fabrication techniques enabling this approach, including CO₂ laser inscription, femtosecond laser micromachining, electric-arc discharge, chemical etching, and fusion tapering. Structure-Modulated Long-Period Fiber Gratings (SM-LPFGs) represent an advancement in fiber optic sensor technology, moving beyond traditional photosensitivity-based fabrication to achieve enhanced performance through the direct physical modification of the geometry of the fiber. This review. This study proposes a facile method for fabricating long-period fiber gratings. Optical designs were created so that laser light could be written into the grating structure on the fiber cladding without the need to remove the protective polyimide (PI) bufer layer. A laser-assisted wet chemical. Long-period fiber gratings (LPFGs) functioning as band-reject filters have played a pivotal role in the realm of optical communication. Since their initial documentation in 1996, LPFGs have witnessed rapid advancements in areas such as optical sensing, the equalization of optical amplification, and. In essence, a long period fibre grating (LPFG) is an all-fibre device with wavelength dependent loss.

Article Content

Optimized Strain Long-Period Fiber Grating (LPFG) Sensors

Two phenomena for enhancing the sensitivity of long-period fiber gratings are combined toward an increase of the

Arc-Induced Long-Period Fiber Gratings at INESC TEC. Part I ...

In this work, we reviewed the most important achievements of INESC TEC related to the fabrication of long-period fiber

Optical chemsensors utilizing long-period fiber gratings UV-inscribed ...

A novel implementation of an optical chemsensor device is reported based on long-period fiber grating structures ultraviolet-inscribed

Long Period Fibre Gratings

In the last 15 years, alternative writing methods of long-period fibre gratings have been proven after the demonstration of UV

Photoresist-free, laser-assisted chemical etching process for long ...

In this process, the laser etching causes tiny long-period notches to be etched on the fiber surface, distinguishing the etching rate of

Perfectly notched long-period fiber grating filter based on ICP dry ...

This study presents a new process using inductively a coupled plasma dry etching method to manufacture a long

CO2 laser-induced long-period fiber grating in the dispersion turning ...

Abstract A CO₂ laser-induced long-period fiber grating (LPFG) in the dispersion turning point (DTP) has been

Recent Advancement in Long-Period Fiber Grating (LPFG)

The long-period fiber gratings can reduce human involvement in the process and help for improvement in performance

Femtosecond laser direct writing of long period fiber grating sensor ...

Long-period fiber grating sensors with high refractive index sensitivity were designed and validated using femtosecond

Femtosecond laser fabrication of long period fiber gratings and ...

Abstract An improved point-by-point inscription method is proposed to fabricate long period fiber gratings (LPFGs) by

Photoresist-free, laser-assisted chemical etching

This study presents a new process using inductively a coupled plasma dry etching method

Biological sensors based on long period fiber grating

Optical fiber gratings can be divided into Fiber Bragg grating (FBG) and long period grating (LPFG) according to the

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

Efficient Fabrication of Compact Long-Period Gratings Using CO₂

We propose to inscribe a compact and reproducible long-period fiber grating (LPFG) in a standard single-mode fiber by

Mechanically Induced Long-Period Fiber Gratings and Applications

Abstract and Figures Long-period fiber gratings (LPFGs) functioning as band-reject filters have played a pivotal role in

Structure-Modulated Long-Period Fiber Gratings: A Review

Structure-Modulated Long-Period Fiber Gratings (SM-LPFGs) represent an advancement in fiber optic sensor

Fabrication and application of a novel long period fiber grating with ...

In this paper, a new core modulation method is proposed for the first time. A novel long period fiber grating with arched

Mechanically Induced Long-Period Fiber Gratings and Applications

This paper presents a review of the evolution of LPFGs, with a specific focus on the progression and current trends of

Long-Period Fiber Gratings

As an important passive optical component, long-period fiber gratings (LPFGs) have all the advantages of optical fiber sensors, such

Photoresist-free, laser-assisted chemical etching

In this study, we propose a photoresist-free, laser-assisted wet chemical etching process

Long period fiber grating-based biosensing: Recent trends and future ...

Decades have passed since the first demonstration of a long-period fiber grating (LPFG) and its practical application for

Fabrication and application of a novel long period fiber grating with ...

A novel long period fiber grating with arched fiber core is fabricated and the sensing characteristics are investigated. •

Spectral Tuning of Long Period Fiber Gratings Fabricated by ...

The coupling resonant wavelength can easily be controlled by simply tuning the grating period with its period being

A facile process for fabricating long-period fiber grating sensors ...

Abstract This study proposes a facile method for fabricating long-period fiber gratings. Optical designs were created so that laser light

Review of Helical Long-Period Fiber Gratings

In this paper, comprehensive remarks are given that focus on the main fabrications and wide applications of helical

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

In this work, a thorough review about the design, fabrication and characterization of fiber optic chemical sensors based

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