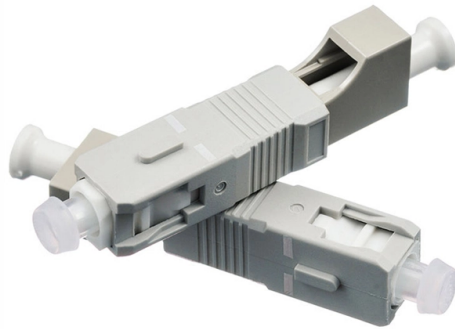


Superstructure Long Period Fiber Grating



Overview

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. In essence, a long period fibre grating (LPFG) is an all-fibre device with wavelength dependent loss. As a band rejection filter, all light in a spectral slice is discarded without affecting the amplitude and phase of neighbouring wavelengths, with the additional advantage of low insertion losses. In this work, we review the most important achievements of INESC TEC related to the properties and applications of arc-induced long-period fiber gratings. One remaining issue is the separation of the strain-induced wavelength shift from that induced by temperature changes.



Article Content

Hot

Analysis of dispersion characteristics of long period fiber

We have demonstrated the feasibility of achieving high-performance fiber polarizers (insertion loss <0.5 dB, extinction ratio >30 dB), based on

Jan 13, 2026 Hot

Long period gratings inscribed with electric arc in nanostructured ...

In this work, for the first time, we demonstrate long period gratings (LPG) in nanostructured optical fibers and their response to gamma radiation. Nanostructured fibers show distinctive features

May 23, 2026 Hot

A miniature ultra long period fiber grating for simultaneous ...

A SMF-MMF-SMF-ultra long period fiber grating (SMS-ULPFG) sensor is proposed for the simultaneous measurement of axial strain and temperature. The all

May 22, 2026 Hot

Customized femtosecond laser-inscribed superstructure fiber Bragg ...

One such fabrication technique involves superimposing a long-period fiber grating (LPG) on an FBG using a CO₂ laser or the use of amplitude masks to create the modulation of the

Dec 21, 2025 Hot

Using Finite Element and Eigenmode Expansion

In this study, a numerical simulation method was employed to investigate and analyze superstructure fiber Bragg gratings (SFBGs) with five

Mar 11, 2026 Hot

Long Period Fibre Gratings

In this chapter we will make a review of the relevant aspects of LPFGs.

Feb 17, 2026 Hot

Recent Advancement in Long-Period Fiber Grating (LPFG)

Inspiring quick, reliable, and real-time measurements, biomass detection, chemical detection for long-period fiber grating (LPFG), for scientific, commercial, and defense applications. In

Sep 18, 2025 Hot

Fiber Bragg grating with long-period fiber grating superstructure for ...

18 June 1998 Fiber Bragg grating with long-period fiber grating superstructure for simultaneous strain and temperature measurement

May 16, 2026 Hot

Optical properties of cascaded long-period and fiber Bragg gratings

The effects of the length of the fiber between long-period grating (LPG) and fiber Bragg grating (FBG), the film refractive index and thickness on the reflection spectra of coated CLPG are discussed.

Feb 23, 2026 Hot

Long Period Fibre Gratings

2. Fabrication methods of long-period fibre gratings The inscription of long-period gratings on optical fibre basically consists in the generation of a periodical perturbation of the refractive index in the

Jan 07, 2026 Hot

Mechanically Induced Long Period Gratings: Recent Progresses

Specifically, long period gratings (LPG) have been mechanically induced in different optical fibers through a 3D printed nearly sinusoidal grooved structure. LPGs have been mechanically induced in

Apr 22, 2026 Hot

(PDF) Spectral and Sensing Performance of Long

Abstract In this paper, we demonstrate the transmission spectral and surrounding refractive index (SRI) sensing performance of long-period fiber

Jul 30, 2025 Hot

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

Abstract In this paper, the fabrication of arched fiber core based on single-mode fiber is first proposed and experimentally studied about the relevant sensing characteristics. A novel kind of

Feb 13, 2026 Hot

Radiation Effects on Long Period Fiber Gratings: A Review

For example, very recently, Morana et al. 5 performed a thorough review about the radiation effects on fiber Bragg gratings (FBG) focused on

May 14, 2026 Hot

Mechanically Induced Long-Period Fiber Gratings and

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

Jul 31, 2025 Hot

Microsoft Word

Abstract: We develop a two-step infrared (IR) femtosecond fiber laser exposure technique to flexibly fabricate long period fiber gratings (LPFGs) with a high peak band-rejection efficiency of 35.4 ...

Jul 04, 2025 Hot

Long Period Gratings in Multicore Optical Fibers for Directional ...

Multicore optical fibers are especially attractive for the fabrication of curvature and shape sensors due to the spatial distribution of the different cores. Fiber Bragg gratings have been used in the past for the

Jul 30, 2025 Hot

Mechanically Induced Long-Period Fiber Gratings and

In this paper, we propose a new technique to fabricate long period gratings (LPGs) by mechanically applying a force to an optical fiber enclosed in a

Jun 01, 2026 Hot

Long-period fiber grating

A long-period fiber grating is an optical fiber structure with the properties periodically varying along the fiber, such that the conditions for the interaction of several copropagating modes are satisfied.

Mar 05, 2026 Hot

Effects of strain and temperature change on the spectra of ...

For the superstructure fiber grating (SFG) consisting of a fiber Bragg grating (FBG) and a long period fiber grating (LPFG), a similarity transformation method for the coupled mode equations

Jan 12, 2026 Hot

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

In this work, we review the most important achievements of INESC TEC related to the properties and applications of arc-induced long-period fiber gratings. The polarization dependence loss, the spectral

Jul 28, 2025 Hot

Fabrication long period fiber Bragg grating by using CO

Results explain a quick and easy (pbp) technique of producing uniform grating's structure using single mode fibres. In the resulting gratings were

May 09, 2026 Hot

Femtosecond Laser Inscribed Phase-Shifted Superstructure FBG and

Abstract: We demonstrate a phase-shifted superstructure fiber Bragg grating (PSSFBG) fabricated using a femtosecond laser-based point-by-point direct writing technique.

May 25, 2026 Hot

Fabrication of high quality, ultra-long fiber Bragg gratings: up to 2 ...

Abstract: The fabrication and characterization of high quality ultra-long (up to 1m) fiber Bragg gratings (FBGs) is reported. A moving phase mask and an electro-optic phase-modulation (EOPM) based ...

Sep 04, 2025 Hot

Customized femtosecond laser-inscribed superstructure fiber Bragg ...

This paper introduces a novel technique to simultaneously measure temperature and strain using a single 5 mm femtosecond laser-inscribed superstructure fiber Bragg grating (SFBG).

May 28, 2026 Hot

Simulation of the Transmission Spectrum of Long-Period Fiber Gratings ...

We simulate transmission through inhomogeneous long-period fiber gratings, -shift and reflective -shift gratings deformed by an acoustic shock front. Coupled mode equations describing interaction of co

Apr 12, 2026 Hot

Mode Couplings in Superstructure Fiber Bragg Gratings

IBER GRATINGS have developed into important com-ponents for many applications in telecommunications and fiber sensor systems . Fiber gratings are broadly classified into two

Aug 07, 2025 Hot

Long-period fiber grating

A long-period fiber grating couples light from a guided mode into forward propagating cladding modes where it is lost due to absorption and scattering. The coupling from the guided mode to cladding

Jun 09, 2026

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