

Article Overview

The first demonstration of long-period fiber gratings (LPFGs) was achieved using a femtosecond laser direct inscription technique, showcasing significant advancements in optical fiber technology.

Overview of the First Demonstration

The first successful demonstration of multicore fiber long-period gratings (LPGs) was reported in a paper presented at the Optical Fiber Communication Conference (OFC) 2025. This innovative approach utilized femtosecond laser direct writing techniques to fabricate LPGs on multicore fibers. The experiment achieved a remarkable coupling efficiency of up to 90%, allowing for independent LPG fabrication at arbitrary cores within the fiber .

Significance of Long-Period Fiber Gratings

Long-period fiber gratings are essential components in optical communication and sensing applications. They are characterized by a periodic modulation of the refractive index along the fiber, which enables the coupling of light from the core mode to cladding modes. This property allows LPFGs to function as band-reject filters, making them valuable for various applications, including optical fiber sensors and telecommunications .

Current Trends and Applications

The evolution of LPFGs has led to numerous advancements in their fabrication techniques and applications. Recent studies have focused on mechanically induced LPFGs and their use in high-resolution measurements, compact sensors, and long-range monitoring. The versatility and robustness of LPFGs continue to attract significant interest in the field of optical fiber technology .

In summary, the first demonstration of long-period fiber gratings marked a pivotal moment in optical fiber technology, paving the way for further innovations and applications in the field.

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

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

We report here, for the first time to our knowledge, the fabrication and characterisation of LPFGs with periods

The first long-period fiber grating

up to

Long-period gratings (LPGs) operating at and around the phase matching turning point (PMTTP) possess some of the

1. Introduction Traditionally, long period fiber gratings (LPG) are made in passive optical fibers that have negligible loss. However,

ABSTRACT We present a review of the development of long-period fiber grating devices for application in optical communication.

Fiber Bragg Gratings (FBGs) become important in modern sensing and telecommunication

This review synthesizes and categorizes a class of novel long-period fiber gratings (LPFGs) engineered through the

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

Fiber Bragg gratings are reflective structures in the core of an optical fiber with a periodic or aperiodic perturbation of the effective

The strain response of a long-period fibre grating arise due to the physical elongation of the fibre, changing the grating pitch and the

Abstract We proposed a long period fiber grating (LPFG) fabricated in graded index few-mode fiber (GI-FMF) using CO

The long-period fiber grating (LPFG) is an optical passive device, which can couple the core mode to the cladding

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

In this work, for the first time, we demonstrate long period gratings (LPG) in nanostructured optical fibers and their

Long-period fiber grating (LPFG) is a kind of wide-range transmission passive photonic device with extensive applications in the field

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The first long-period fiber grating

