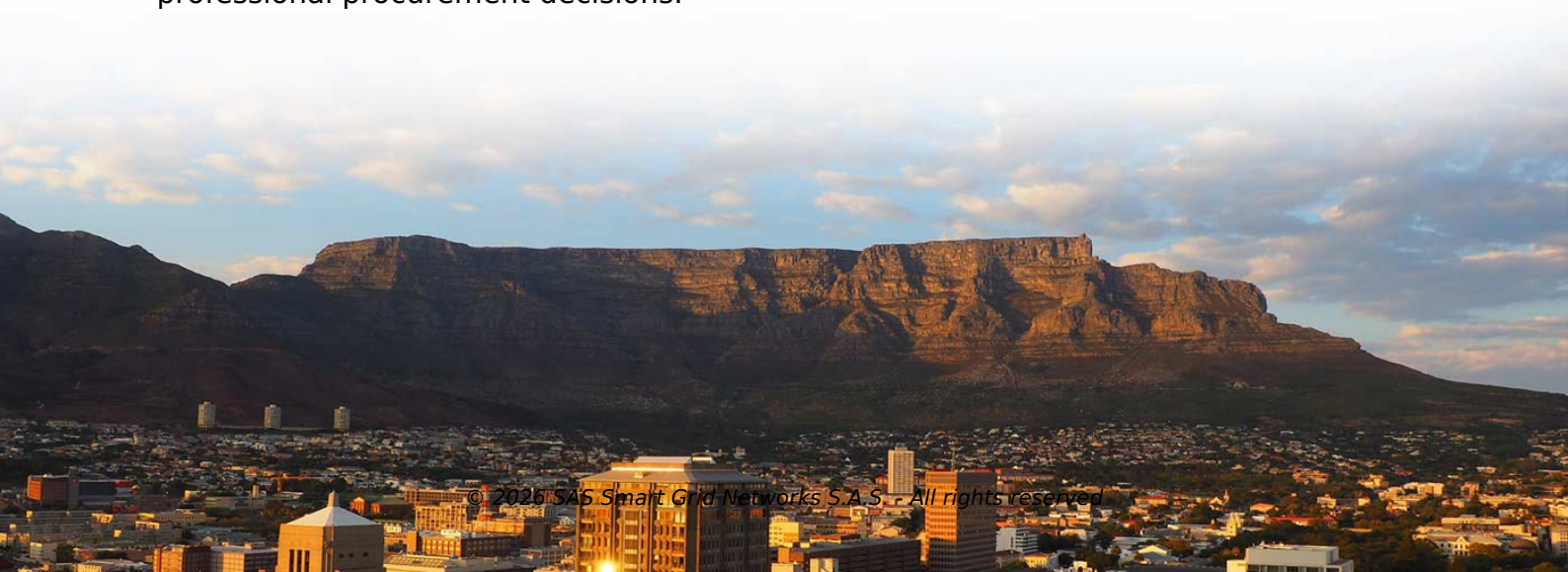
High-order mode long-period fiber grating

Overview

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. 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. 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. A high-order-mode Brillouin Random fiber laser with high purity and broadband tunability based on a long-period fiber grating and distributed Rayleigh scattering in optical fibers was demonstrated. © 2023 The Author (s) View More. This is the first demonstration of the all-fiber 3-order OAM. □□ For purchasing, use the RP Photonics Buyer's Guide for fiber Bragg gratings. It provides an expert-curated supplier directory, buyer-focused technical background information, and structured selection criteria to support professional procurement decisions.



Article Content

Continuous liquid level sensor based on a reflective long period fiber ...

Long-period fiber gratings (LPGs) are widely used as sensors due to their high sensitivity to temperature, strain and refractive index , besides the inherent advantages of fiber sensors.

Low-loss and broadband MDL compensation using LPFG with higher-order ...

Ultra-Broadband Optical Filter based on Long-Period Fiber Gratings using Higher-Order Cladding Modes Myoung Jin Kim, Yong Min Jung, Bok Hyeon Kim, Won-Taek Han, and Byeong Ha Lee

Long-Period Fiber Grating Sensors Based on High Order Mode Coupling

We demonstrate the fabrication of long-period fiber gratings and helical long-period gratings in specialty fibers using focused carbon dioxide laser. The mode coupling and sensing

High-order OAM mode generation in a helical long

In this study, an all-fiber ±3-order orbital angular momentum (OAM) mode generator with ~90% conversion efficiency is proposed and

Fiber Bragg Gratings – FBG, index modulation, filters,

We simulate a long-period grating in a multimode fiber, which can efficiently couple light from the fundamental mode to a specific higher-order mode. Frequently

High-Order Modes Micro-Knot Excited by a Long-Period Fiber Grating

We suggest a fiber micro-knot fabricated on a long-period fiber grating. The long-period fiber grating excites high-order modes into the micro-knot and transfers the output back to the Gaussian mode.

High-order mode fiber laser based on few-mode fiber gratings

The fiber laser has the structure of three sub-ring-cavities. LP01 mode, LP11 mode and LP21 mode can be obtained by different few-mode long-period fiber gratings.

Mode Converters of High Order Core Mode Coupling Based on Long-Period ...

Long-period fiber grating was fabricated in six mode fiber by CO laser to realize mode conversion from LP mode to LP and LP modes with high efficiency. The second-order orbital angular momentum

Simultaneous Efficient Excitation of Multiple Higher-Order OAM Modes ...

Higher-order mode generation using long-period fiber grating (LPFG) has a lot of advantages such as simple structure and compatibility with optical fiber system.

High-order mode fiber laser based on few-mode fiber gratings

The key to realize high-order mode fiber lasers is all-fiber mode conversion devices that can selectively excite specific high-order modes. Several mode conversion techniques have been

Fiber Bragg grating sensors for monitoring of physical

Fiber Bragg grating technology is popularly used in measurements of various physical parameters, such as pressure, temperature, and strain for civil

High-order-mode Brillouin Random Fiber Laser via Long Period Fiber ...

A high-order-mode Brillouin Random fiber laser with high purity and broadband tunability based on a long-period fiber grating and distributed Rayleigh scattering in optical fibers was demonstrated.

Polymeric PEI/PEG coated optical fiber Fabry-Perot ...

In this study, a polyethyleneimine/ poly (ethylene glycol) (PEI/PEG) coated optical fiber Fabry-Perot interferometer (FPI) and its charge transfer process towards CO 2 is investigated.

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

Fiber Bragg grating

A fiber Bragg grating (FBG) is a type of distributed Bragg reflector constructed in a short segment of optical fiber that reflects particular wavelengths of light and

High-order OAM mode generation in a helical long-period fiber grating ...

In this work, a high-eficiency fabrication scheme for all-fiber 3-order OAM mode generator is proposed and experimentally demonstrated based on HLPFG written in a 6MF.

High-order OAM mode generation in a helical long-period fiber grating ...

By using a helical long-period fiber grating (HLPFG) inscribed by an oxyhydrogen-flame, the fundamental mode (LP 01) of the six-mode fiber (6MF) can be effectively converted into the

High-Order OAM Mode Generator Using Multi-Cascaded Long-Period Fiber ...

We propose and demonstrate the inscription of multi-cascaded long-period fiber gratings (LPFGs) in a few-mode fiber using a CO2-laser. The multi-cascaded LPFGs containing three gratings were

High-sensitivity hot-wire anemometer using cobalt-doped fiber-based ...

A high-sensitivity hot-wire anemometer is proposed for use with a cobalt-doped fiber (CDF) based long-period grating (LPG) heated optically by a 1480 nm laser. The CDF-LPG absorbs laser power and

Direct Writing of Fibre Bragg Gratings by Femtosecond

Abstract and Figures A method for inscribing fiber bragg gratings (FBG) using direct, point-by-point writing by an infrared femtosecond laser was

Simultaneous generation of the second

We propose and demonstrate the fabrication of an all-fiber mode converter enabling to simultaneous generation of multiple high-order core modes, which is realized by inscribing helical

Mechanically Induced Long-Period Fiber Gratings and

Long-period fiber gratings (LPFGs) functioning as band-reject filters have played a pivotal role in the realm of optical communication. Since their

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

Few-Mode Fiber-Based Long-Period Fiber Gratings: A

Long-period fiber gratings (LPFGs) are efficient ways to achieve high-order core mode conversion and vortex mode conversion in few-mode

High order diffraction in thin-cladding fiber long-period gratings near ...

In this paper, we report the high order diffraction (HOD) in thin-cladding fiber (TCF) long-period gratings (LPGs) near dual dispersion turning points (DTPs). The spectral performances and

High-order mode fiber laser based on few-mode fiber gratings

We propose and experimentally demonstrate a high-order mode fiber laser based on few-mode fiber gratings. The fiber laser has the structure of three sub-ring-cavities. LP01 mode, LP 11

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