Applications of FBG and LPG in Fiber Optic Sensing

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

FBG sensors are used to monitor strain and temperature in pipelines, ensuring operational safety and preventing leaks. They can also detect changes in downhole environments during drilling operations.

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LPG (Long Period Grating) and FBG (Fiber Bragg Grating) are types of fiber gratings inscribed in optical fibers, utilizing periodic variations in the refractive index to function effectively in applications such as ...

Today, no one doubts that fiber Bragg gratings (FBGs) have become the most used tool for measuring various physical parameters, the structural integrity of engineering systems, and the biological ...

The index of refraction of fiber changes under high temperatures, which could change the numerical aperture of the fiber and ruin or weaken the FBG structural integrity and signal strength.

""Fiber optics real time monitoring of test results against analytical predictions was essential in the success of the full-scale test program." "In areas of high strain gradients these techniques were ...

We present a compact fiber optic sensor operating in reflection, cascading a fiber Bragg grating (FBG) and a Short-Period Long Period Grating (SP-LPG) on a single fiber embedded within a microfluidic chip.

In this work, we investigate the sensing performance of Fiber Bragg Gratings (FBGs) engineered to operate near EPs through precise structural tuning. By aligning the reflection spectrum edges with ...

In this work, the fabrication, demodulation, and applications of large-scale FBG arrays are reviewed. Firstly, the on-line fabrication technology and process of large-scale FBG arrays are introduced.

Additionally, this review compares FBG sensors with other sensing technologies and highlights recent innovations in design, packaging, and implementation techniques.

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