Customization Process for New Fiber Optic Gratings for Security Applications

Overview

The fabrication technique used can significantly impact the quality and characteristics of the FBG. Wasatch Photonics is an innovator in the field of custom gratings for original equipment manufacturing (OEM) and bespoke applications. Femtosecond laser inscription (FLI) enables hydrogen-free, thermally stable, high-resolution, and complex structures of FBG fabrication, but its practical application is limited by manual operation, low. Janis Braunfelds, Ugis Senkans, Farjana Rahman, Nauris Silkans, Sandis Spolitis, Jurgis Porins and Vjaceslavs Bobrovs Submitted: 26 March 2024 Reviewed: 15 April 2024 Published: 02 July 2024 Fiber optical sensors (FOS) have been widely used to ensure physical parameter monitoring such as strain. In this report, modeling and experimental results are presented for three fiber Bragg gratings that were fabricated in Newport F-SMF-28 fiber with the direct-write method. Details on qualitative investigations that drove the. A method of optimizing and manufacturing a diffractive blazed grating array (DBA) is proposed to create a visual security feature when illuminated by a divergent

light-emitting diode source. A pure phase grating array serving as the optical security component consists of blazed grating cells with. Fiber Bragg manufacturing with the NORIA offers both speed and flexibility in writing a large variety of grating types.

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A method of optimizing and manufacturing a diffractive blazed grating array (DBA) is proposed to create a visual security feature when illuminated by a divergent light-emitting diode source.

In this study, we present an AI- powered FLI system that enables automated, stable, and efficient FBG fabrication. By integrating a Multi-Layer Perceptron (MLP) model for real-time fabrication position ...

Fiber Bragg manufacturing with the NORIA offers both speed and flexibility in writing a large variety of grating types. The fast writing process provides the ability to volume manufacture in-house, while the ...

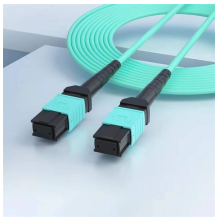
First, it substantially reduces the unit cost for FBG production, and second, it delivers FBGs with excellent unit-to-unit consistency and quality, which greatly simplifies the task of the system ...

The Wasatch Photonics custom grating design team is equipped with the fabrication and metrology equipment to holographically image, cut, and characterize gratings for a diverse range of custom ...

This section details the process by which three specific fiber Bragg gratings (very important milestones for this efort) were fabricated and characterized. The process featured a back-and-forth relationship ...

It is vital to study and develop specific FBG profiles to ensure optimal operation of FBG in security, perimeter, and SHM solutions. In this research, we have evaluated the areas and ...

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



To read the full-text of this research, you can request a copy directly from the authors. A method of optimizing and manufacturing a diffractive blazed grating array (DBA) is proposed to ...

Discover the intricacies of Fiber Bragg Grating fabrication and its applications in optical sensors, enhancing measurement precision and reliability.

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