

Phase Mask Etching of Fiber Gratings



Overview

This involves several steps: coating of substrates with controlled thickness of photoresist, formation of a grating mask by holograph interference exposure and development, and finally transferring etching of this mask into the fused silica substrate to form a permanent. This involves several steps: coating of substrates with controlled thickness of photoresist, formation of a grating mask by holograph interference exposure and development, and finally transferring etching of this mask into the fused silica substrate to form a permanent. Improved Phase-Mask Fabrication of Fiber Bragg Gratings An improved method of fabrication of Bragg gratings in optical fibers combines the best features of two prior methods: one that involves the use of a phase mask and one that involves interference between the two coherent laser beams. The. We present to the best of our knowledge the first example of femtosecond laser inscription/ablation of phase/amplitude masks for the demonstrated purpose of inscribing Bragg gratings in optical fibers. The phase mask technique used for writing fiber gratings has the advantages over the traditional holographic method because of its. Sign up for. Low-Loss 1000°C-Stable Fiber Bragg Gratings Written Using the Phase Mask Technique and a Femtosecond Laser C. With this setup, 2 mm-long gratings with reflectivity up to 92 % were obtained in less than 10 s. 7 pm/°C temperature sensitivity of these FBGs is found, which is in agreement with results. A fused silica phase mask with the period of 1069nm, and ruled area 50×50mm² has been fabricated by a new technique, which combines holographic-ion beam etching and reactive ion beam etching.

Article Content

Fabrication of multiple fiber-Bragg gratings on one SMF using a ...

Among others, the phase-mask technique is widely used for fiber Bragg grating fabrication due to its simplicity and suitability for mass production. The fixed pitch of the phase-mask imposes limitations ...

Phase Mask

A phase mask is defined as a relief grating etched in a UV-transmitting silica plate, used in transmission to diffract an incident UV beam into multiple orders, facilitating the inscription of fiber ...

(PDF) Fabrication of fiber grating by phase mask and its sensing ...

The phase mask technique used for writing fiber gratings has the advantages over the traditional holographic method because of its simpler writing setup and more reproducible...

Fabrication of Type-II Fiber Bragg Gratings with a 300 NM Period ...

High-temperature stable Bragg gratings (i.e., Type-II Bragg gratings) with a 300 nm period are fabricated in non-photosensitized silica-based optical fibers using

Low-Loss 1000°C-Stable Fiber Bragg Gratings Written Using the ...

Low-loss 1000°C-stable Bragg gratings are inscribed in Ge-doped silica fiber using the phase-mask technique and a single infrared femtosecond laser pulse. The morphology of the light-induced ...

Fabrication of Phase Mask for Optical Fiber Grating

Fabrication of Phase Mask for Optical Fiber Grating Abstract: A fused silica phase mask with the period of 1069nm, and ruled area 50×50mm² has been fabricated ...

Improved Phase-Mask Fabrication of Fiber Bragg Gratings

An improved method of fabrication of Bragg gratings in optical fibers combines the best features of two prior methods: one that involves the use of a phase mask and one that involves interference between ...

Phase mask for fabrication of fiber Bragg gratings by femtosecond laser

Using a fused silica phase mask in a 520 nm wavelength femtosecond laser with a period of 1 067 nm, a ruled area 40 mm×30 mm was fabricated via holographic lithography-ion beam etching.

(PDF) Fabrication of fiber grating by phase mask and its ...

This paper reports on the fabrication process of phase mask for fiber grating printing. The masks are produced by Electron Beam Lithography (EBL) and Reactive Ion ...

Novel phase masks with overlapping regions to fabricate fiber Bragg ...

We explore the design of phase masks with repeatable FBG inscriptions. Previously, we explored a phase mask (1 st generation) designed and fabricated with partial overlapping regions ...

Demonstration of inscription and ablation of phase masks for the ...

The masks are used to produce 1st, 2nd and 3rd order fiber Bragg gratings (FBGs) in SMF-28. The work demonstrates the proof of concept and flexibility for the use of femtosecond lasers for the rapid ...

Polymer Fiber Bragg Grating Inscription using Phase Mask and ...

In this work, we combine a phase mask technique with a femtosecond laser system operating at 400 nm to inscribe FBGs in CYTOP fibers. The inscription parameters, such as laser beam energy, ...

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