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Abstract

This paper presents the modeling and characterization of an Apodized optical fiber Bragg grating for maximum reflectivity and minimum side lobe power wastage and narrow spectral response. The modeling is based upon coupled mode theory together with transfer matrix method. This matrix approach is effective at treating a single grating as a series of separate

gratings each having reduced overall length and different pitch lengths, and describing each with its own T-matrix.

FBG sensors are based on the fact that Bragg wavelength changes with change in pitch of the grating and the change in refractive index. Thus, any physical parameter which cause change in above mentioned parameters can be sensed using FBG. In optical sensing, the broad spectral response can result in poor sensitivity. In order to improve and to some extent to tailor the spectral response of FBG length, refractive index change, apodization and FWHM is optimized based upon maximum reflectivity criteria.

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Index Terms

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Key words

FBG

sensor

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