Abstracts

A theoretical analysis of the coupling of light to surface-plasmon oscillations at the edge of a slab waveguide

E. Fontana. "A theoretical analysis of the coupling of light to surface-plasmon oscillations at the edge of a slab waveguide." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 234-241.

A theoretical method that accounts for diffraction and backcoupling of surface plasmon (SP) oscillations excited at the metallized edge of a planar waveguide is described in this paper. The model explains previously reported experimental studies related to the development of SP-based optical-fiber sensors. The method is based on a Fourier transform approach and predicts the appearance of a spatial SP resonance within the light diffracted from the waveguide edge. The approach also allows one to obtain the spectral dependence of light guided back from the remote waveguide edge and can be used to determine design parameters for optimum sensor operation.

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