Abstracts

Mode Coupling Between Dielectric and Semiconductor Planar Waveguides

T.E. Batchman and G.M. Mc Wright. "Mode Coupling Between Dielectric and Semiconductor Planar Waveguides." 1982 Transactions on Microwave Theory and Techniques 30.4 (Apr. 1982 [T-MTT] (Joint Special Issue on Optical Guided Wave Technology)): 628-634.

Computer modeling studies on four-layer silicon-clad planar dielectric waveguides indicate that the attenuation and mode index behave as exponentially damped sinusoids when the silicon thickness is increased. This effect can be explained as a periodic coupling between the guided modes of the lossless structure and the lossy modes supported by the high refractive index silicon. Furthermore, the attenuation and mode index are significantly altered by conductivity changes in the silicon. An amplitude modulator and phase modulator have been proposed using these results. Predicted high attenuations in the device may be reduced significantly with a silicon dioxide buffer layer.

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