

Modeling and Simulations of Surface Plasmon Waveguide Structures

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Abstract : This paper presents an investigation of the fabrication of the optical devices in terms of their characteristics based on the use of the electromagnetic waves. Planar waveguides are used to examine the field modes (bound modes) and the parameters required for this structure. The modifications are conducted on surface plasmons based waveguides. Simple symmetric dielectric slab structure is used and analyzed in terms of transverse electric mode (TE-Mode) and transverse magnetic mode (TM-Mode). The paper presents mathematical and numerical solutions for solving simple symmetric plasmons and provides simulations of surface plasmons for field confinement. Asymmetric TM-mode calculations for dielectric surface plasmons are also provided.

Keywords : surface plasmons, optical waveguides, semiconductor lasers, refractive index, slab dielectrical

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