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MULTILAYERED SILICON OXYNITRIDE PLANAR WAVEGUIDE BASED TM PASS POLARIZER

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Abstract

Recently reported silicon oxynitride (SiON) waveguide grown on silicon substrate has been analyzed through transfer matrix formulation for polarizer applications. Thickness of buffer layer of SiO_2 that has been used in previous work to isolate the waveguide from silicon substrate is controlled in the present work to achieve a TM pass polarizer. It is shown that polarization extinction ratio (PER) of about – 200 dB and insertion loss (IL) less than 1dB/cm for TM mode for 1550 nm window have been achieved by optimizing SiO_2 buffer and SiON guiding film thicknesses for a 10 mm long waveguide.

Keywords : TM-pass polarizer, optical polarizer, silicon oxynitride waveguide, semiconductor waveguide, multilayered waveguide.