A simple three branch optical power splitter design based on iii-nitride semiconductor for optical telecommunication

Retno Wigajatri Purnamaningsih, author

Abstrak

We propose a simple design of 1×3 optical power splitter which uses gallium nitride (GaN) on sapphire. The design consists of widely used large cross section input rib waveguide, a rectangular multimode interference (MMI) structure, and three-branch rib waveguides. The MMI structure is selected since their attractive performances, such as compactness, low excess loss, wide bandwidth and ease to fabricate. The power splitter is designed for the third telecommunication window, i.e., l = 1.55 μm. Optimization of the geometrical structure parameters for the design is conducted theoretically utilizing 3D FD-BPM method. It is found that the power splitter exhibits excess loss of 0.46 dB and imbalanced of 0.001 dB at l = 1.55 μm for