DESIGN, SIMULATION AND FABRICATION OF SYMMETRICAL Y- JUNCTION OPTICAL WAVEGUIDE COUPLER

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ABSTRACT

DESIGN, SIMULATION AND FABRICATION OF SYMMETRICAL Y- JUNCTION OPTICAL WAVEGUIDE COUPLER

Today, optical network is developing rapidly as growing capacity demand in telecommunication system is increasing. Therefore, the communication by optical fibre is potentially the most rewarding of all communication. In this project, multi-mode optical fiber (multimode fiber) is a type of optical fiber mostly used for communication over short distances, such as within a building or on a campus. Typical multimode links have data rates of 10 Mbit/s to 10 Gbit/s over link lengths of up to 600 meter. Symmetrical Y-Junction coupler is a basic element of many optical waveguide coupler which signals from one input guide all and the received power divided between two or four output port. The purpose of this project is to design, simulate, and fabricate of 1x2 and 1x4 symmetrical multimode Y- junction optical waveguide coupler. The focus on this project is to determine the optical output properties by making various branching angle of Y-junction and by coating of gold to enhance the reflectivity of the waveguide. All the design and simulation are done using AutoCAD and ZEMAX software respectively. The analysis is based on how the output power split symmetrically and the output performances which are insertion and excess loss of the model device. In this project, the 1x2 and 1x4 symmetrical Y-junction resulted in approximately 50% and 25% desired output splitting ratio respectively.