

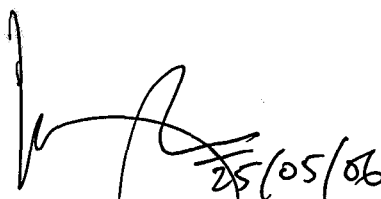
**FILM THICKNESS, REFRACTIVE INDEX AND dn/dT COEFFICIENT
MEASUREMENTS OF OPTICAL PLANAR WAVEGUIDES USING PRISM
COUPLER**

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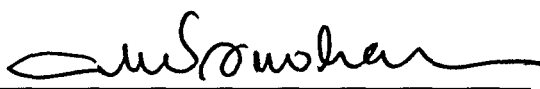
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This Final Year Project Report entitled “**Film Thickness, Refractive Index & dn/dT Coefficient Measurements of Optical Planar Waveguides Using Prism Coupler**” was submitted by Noorwati Binti Md Saad, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences, and was approved by

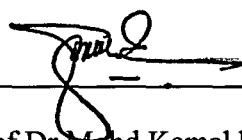


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ABSTRACT

FILM THICKNESS, REFRACTIVE INDEX & dn/dT COEFFICIENT MEASUREMENT OF OPTICAL PLANAR WAVEGUIDES USING PRISM COUPLER

Optical planar waveguides have been fabricated on glass substrate using spin coater and characterized by SPA 4000 prism coupler using optical coupling technique at $\lambda=632.8$ nm (laser 1) and $\lambda=1550$ nm (laser 2). Polymer material used was SU-8 2002 polymer. The advantage of using SU-8 polymer is the possibility to control and maintain its characteristic in high temperature. Film thickness of 0.5 μ m to >200 nm can be achieved with a single coat process. The prism coupling principle is used to determine the effective index, film thickness and coefficient of thermo optical. The refractive indices of the samples were 1.5934 and 1.5733 with the effective film thickness 3.19 μ m and 3.39 μ m respectively for laser 1 and laser 2 give the highest order modes characteristic. Information from this change in refractive index as a function of temperature change (dn/dT) can be used to relate relatively the effect in the materials when given different temperature range between 30°C to 65°C as well. This dn/dT measurement study was failed because of the error in heater stage to function in prism coupler.

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