

## Optimasi Ketebalan Lapisan Ganda Anti-Reflection Coating untuk Devais Opto-Elektronika

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### Abstrak

in this research, thickness of two layers anti-reflection coating (MRC) with refractive index  $n_a$ , of the end facet of weakly-guiding semiconductor (compound III-V), has been optimised to single Transverse Electro-Magnetic (TEM) mode: in order that reflectance had less than 0,0001. Reflection at the boundary is exactly analogous to transmission-line models, with the result that continuity relation using dyadic admittance  $Y$  and impedance  $Z$  operators at transverse plane, also by replacing the waveguide with homogeneous medium of equivalent refractive index  $n_{eq}$  is equal to core refractive index  $n_c$  where wide of the wave guide can be represented of active layer width  $w$ . Through the differential operator, backward electric field can be formed by matrix elements  $R$ , of reflection of interface, in such a way that reflectance at the plane  $z=0$  is obtained. Double layers response frequencies at wavelength  $\lambda = 1,55 \mu\text{m}$  operating, produced the thickness  $d = \lambda/4$  with  $n_1=1,46$  (SiO<sub>2</sub>) or  $n_2=2,5870$  (Si<sub>3</sub>N<sub>4</sub> ZnSe). Difference of both refractive indexes ( $n_1, n_2; n_1=1, n_2=1$ ), minimum reflectance is 0,58 .10<sup>-4</sup> (practically is zero) with optimum thickness  $d/3 = 0,1938 \mu\text{m}$ .