

Journal of Applied Physics / Volume 55 / Issue 2

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J. Appl. Phys. **55**, 503 (1984); <http://dx.doi.org/10.1063/1.333054> (6 pages)

Effective phase and group indices for $\text{In}_{1-x}\text{Ga}_x\text{P}_{1-y}\text{As}_y/\text{InP}$ waveguide structures

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(Received 14 March 1983; accepted 19 September 1983)

Effective phase and effective group indices for the complete wavelength range of the $\text{In}_{1-x}\text{Ga}_x\text{P}_{1-y}\text{As}_y/\text{InP}$ system have been theoretically determined for symmetrical waveguide structures. A comparison between our theory and experimental data gained on a large number of our own lasers as well as on data from literature shows a very good agreement. This result confirms our calculation and rules out the dispersion behavior near the band-gap energy of the models of Afromowitz [Solid-State Commun. **15**, 59 (1974)] and Adachi [J. Appl. Phys. **53**, 5863 (1982)]. The results of our calculation allow us to determine the active layer thickness of DH lasers from the knowledge of the mode spacing and the laser length.

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KEYWORDS and PACS

Keywords

waveguides, indium phosphides, gallium arsenides, band spectra, energy gap, dh lasers, semiconductor lasers, wave propagation, phase shift, refractivity, layered materials

PACS

78.20.Ci
Optical constants (including refractive index, complex dielectric constant, absorption, reflection and transmission coefficients, emissivity)

84.40.Az
Waveguides, transmission lines, striplines

42.79.Gn
Optical waveguides and couplers

ARTICLE DATA

Digital Object Identifier

<http://dx.doi.org/10.1063/1.333054>

PUBLICATION DATA

ISSN

0021-8979 (print)
1089-7550 (online)

For access to fully linked references, you need to [log in](#).

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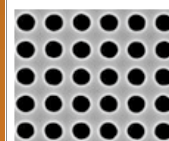
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