Refractive index and Energy gap studies in $InP_{1-x}As_x$ Ternary Semiconductor Alloys

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Abstract:

Refractive index and Energy gap studies in $InP_{1-x}As_x$ Ternary Semiconductor Alloys were calculated as a function of Arsenic composition. Obtained results were found in good agreement with experimental and theoretical data in literature. We have considered these ternary alloys as having cubic symmetry in our calculation for all the five systems to maintain Consistency and simplicity. We expect that for Arsenic composition x = 0.5 the alloy is a layered structure and should be non-cubic. We have taken four layers and hence a cubic unit cell for Arsenic concentrations of x = 0.40, 0.80, 1.00 have replaced by Phosphorus to get the desired concentration of theoretical and experimental data. The band profiles and band gap values are in good agreement with the earlier research works