Pressure dependence of optical transitions in ordered GaP/InP superlattices

Alberto Franceschetti and Alex Zunger

Citation: Applied Physics Letters 65, 2990 (1994); doi: 10.1063/1.112486
View online: http://dx.doi.org/10.1063/1.112486
View Table of Contents: http://scitation.aip.org/content/aip/journal/apl/65/23?ver=pdfcov
Published by the AIP Publishing

Pressure dependence of optical transitions in ordered GaP/InP superlattices

of freedom $t_{s,a}$

mixing with off-Γ states is rather weak, the pressure coefficient is very close to the binary average.

(ii) The pressure coefficients given in Table I correspond to *perfect* long-range order (LRO parameter $\eta=1$), where the admixture with off-Γ states is maximal. The pressure coefficients for lower degrees of order ($0<\eta<1$) can be derived from:[10]

$$a(\eta) = a(0) + \eta^2 [a(1) - a(0)]. \quad (4)$$

Approximating the pressure coefficient $a(0)$ of the random alloy with the average of the binaries (Table II), we obtain $a_\Gamma(0) = 8.2$ meV/kbar and a_X