

Localized interface state in coherent oval semiconductor heterojunction

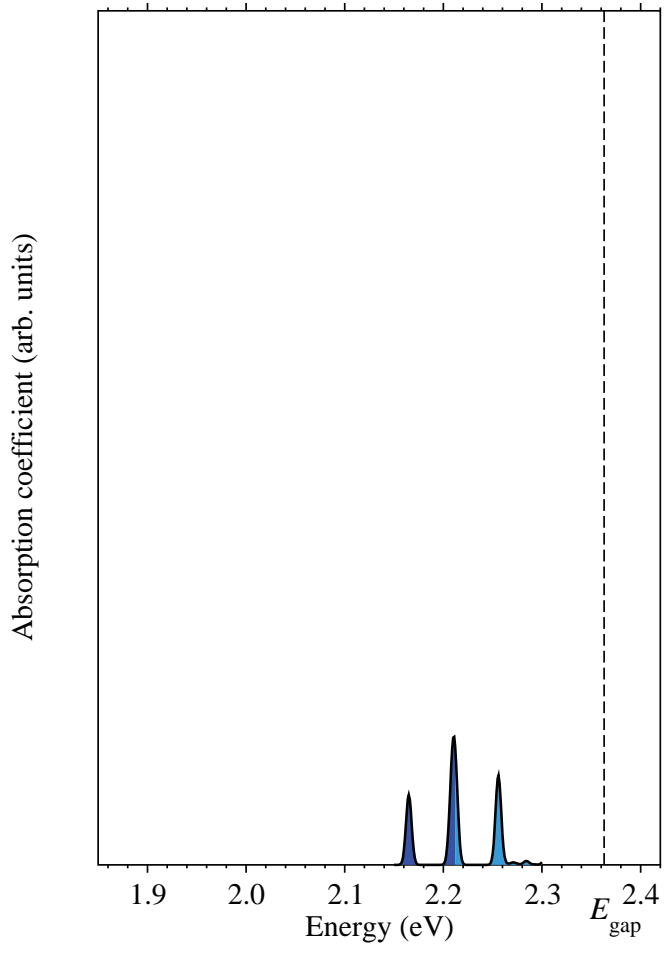
¹P D a a ^{1,2,*} A ^{3,†}
²Na a R a E La a ,G ,C a 80401, USA
³U C a ,B ,C a 80302, USA
 (13 A 2011; 16 S 2011; 22 S 2011)

V
 417252(-) (15456.5 0004172.-.5())-735.4(- - ()-.5(4()-0496.(B)) S)-3-0494-456.5()-5607 4172486

V-C C A A

S CA V B 84, 125315 (2011)





V-C S C A A

S CA V B 84, 125315 (2011)

()
 $n + m$;
(n, m)
 n m
 $n + m$
, X_z

B. Computing the QW eigenstate

T

$$\left[-\frac{\nabla^2}{2} + \sum_n \hat{v}(\vec{r} - \vec{R}_n, \underline{n}) + \hat{V} \right] |i\rangle = E_i |i\rangle, \quad (3)$$

$$v(\vec{r} - \vec{R}_n, \underline{n})$$

\vec{R}_n :

$$v(\vec{r}, \underline{n}) = v(\vec{r}, 0) + T(\underline{n}), \quad (4)$$

(3) ... \hat{V} ... $v(\vec{r}, 0)$... $v(\vec{r}, 0)$... (A) ... (X, L) ...

AB/AC ... $A_x B_{1-x} C$... A ... \vec{R}_n ... M ... B ... 19 ... 20 ...

C. Lattice relaxation by strain minimization

A ...

A. Model of interface state in a single heterojunction

1930, T²⁶ S²⁷

J²⁸

T²⁹

T²⁸, T

A B. I³⁰

S_A () - B, CB

V^B; 7,8 () ()

X. T³¹

A / A A S²⁹

B. Appearance of a single interface state at the InP/GaP junction

T³²

(001)

§0 S³³ n m S () n = m =

(001)- S

, n ,
2
n. , 1
n ,
e_s(

TAB . ; (A2) (A3). A - 5 ; , 5.1346 -09 . A (.)³, . (4). ; , 5.1346 -09 5.1346 × 10⁻⁹.

	a_{SO}		a	b	c
	131.8	5.1346 -09	0.4558	: 5.6533 A	
				-2.049 991 09 +00	1.715 650 28 +00
				7.164 758 74 -02	2.946 307 27 -02
				3.856 523 14 -06	2.901 070 82 -05
				-4.430 377 80 -06	4.525 175 88 +04
A	75.0	1.4621 -01	0.0000	-7.258 096 34 -01	1.278 931 35 +00
				1.711 100 80 -08	2.480 896 24 +01
				2.339 343 68 -01	1.891 093 76 +00
				-1.041 398 17 +00	1.379 048 51 +00
				: 5.8687 A	
	131.8	2.1419 -11	0.5250	-1.637 360 60 +00	1.469 886 47 +00
				2.080 145 97 -01	1.773 726 03 +01
					0.000 000 00 +00
					7.354 110 60 -09
					2.824 113 28 -05
					1.062 455 06 +00
					0.000 000 00 +00
					9.727 849 96 -05
					1.518 192 74 +00
					4.882 919 62 -01
					0.000 000 00 +00
					1.684 469 70 +00

