



"Propiedades electrónicas de semiconductores III-V sometidos a tensión uniaxial en la dirección [111]: un enfoque según el método tight-binding: I. Arseniuros y Fosfuro de Galio" [

Universidad de La Salle Bajío,
2009

text (article)

Analítica

The $sp^3s^*d^5$ empirical tight-binding approach is used to study some properties of the electronic structure in a group of III-V zincblende semiconductors which are of most interest to electronics and optoelectronics. Particularly, it is investigated the influence of [111] uniaxial strain upon these properties. We make use of a formulation based on the elasticity theory to properly derive the relative positions of the nearest neighbors in the lattice and, consequently, write down the set of four basis vectors centered at the anion. Special attention is paid to the inclusion of the internal deformation effect. We present the variation of the Γ -, X- and L-related energy gaps and conduction band effective masses as functions of the uniaxial strain in the case of AlAs, GaAs, InAs, GaP. Comparison with experimental reports on indirect interband transitions in bulk GaP under compressive strain gives very good agreement between these reports and the calculated variation of X-related energy gap as a function of the strain

The $sp^3s^*d^5$ empirical tight-binding approach is used to study some properties of the electronic structure in a group of III-V zincblende semiconductors which are of most interest to electronics and optoelectronics. Particularly, it is investigated the influence of [111] uniaxial strain upon these properties. We make use of a formulation based on the elasticity theory to properly derive the relative positions of the nearest neighbors in the lattice and, consequently, write down the set of four basis vectors centered at the anion. Special attention is paid to the inclusion of the internal deformation effect. We present the variation of the Γ -, X- and L-related energy gaps and conduction band effective masses as functions of the uniaxial strain in the case of AlAs, GaAs, InAs, GaP. Comparison with experimental reports on indirect interband transitions in bulk GaP under compressive strain gives very good agreement between these reports and the calculated variation of X-related energy gap as a function of the strain

Título: "Propiedades electrónicas de semiconductores III-V sometidos a tensión uniaxial en la dirección [111]: un enfoque según el método tight-binding: I. Arseniuros y Fosfuro de Galio" electronic resource]

Editorial: Universidad de La Salle Bajío 2009

Tipo Audiovisual: Tight-binding materiales III-V estructura electrónica tensión uniaxial Tight-binding III-V materials electronic structure uniaxial strain

Documento fuente: Nova scientia, ISSN 2007-0705, N°. 3, 2009-2010, pags. 66-96

Nota general: application/pdf

Restricciones de acceso: Open access content. Open access content star

Condiciones de uso y reproducción: LICENCIA DE USO: Los documentos a texto completo incluidos en Dialnet son de acceso libre y propiedad de sus autores y/o editores. Por tanto, cualquier acto de reproducción, distribución, comunicación pública y/o transformación total o parcial requiere el consentimiento expreso y escrito de aquéllos. Cualquier enlace al texto completo de estos documentos deberá hacerse a través de la URL oficial de éstos en Dialnet. Más información: <http://dialnet.unirioja.es/info/derechosOAI> | INTELLECTUAL PROPERTY RIGHTS STATEMENT: Full text documents hosted by Dialnet are protected by copyright and/or related rights. This digital object is accessible without charge, but its use is subject to the licensing conditions set by its authors or editors. Unless expressly stated otherwise in the licensing conditions, you are free to linking, browsing, printing and making a copy for your own personal purposes. All other acts of reproduction and communication to the public are subject to the licensing conditions expressed by editors and authors and require consent from them. Any link to this document should be made using its official URL in Dialnet. More info: <http://dialnet.unirioja.es/info/derechosOAI>

Lengua: Spanish

Enlace a fuente de información: Nova scientia, ISSN 2007-0705, N°. 3, 2009-2010, pags. 66-96

Baratz Innovación Documental

- Gran Vía, 59 28013 Madrid
- (+34) 91 456 03 60
- informa@baratz.es