

[Back](#)

Combined effect of both polarization charges and deformation on energy spectrum of InAs/GaAs quantum dot

Physica E: Low-Dimensional Systems and Nanostructures • Article • 2020 •

DOI: 10.1016/j.physe.2019.113703

[Leshko, R. Ya.](#) ; [Bilynskyi I.V.](#)

Physics Department, Drohobych Ivan Franko State Pedagogical University, 3 Stryiska Street, Drohobych, 82100, Ukraine

[Show all information](#)

6 49th percentile

Citations

0.42

FWCI

[Full text](#) [Export](#) [Save to list](#)

[Document](#)

[Impact](#)

[Cited by \(6\)](#)

[References \(20\)](#)

[Similar documents](#)

Abstract

The strained spherical quantum dot (QD) InAs/GaAs heterosystem has been considered. A single band model for electrons and a multiband model for holes have been applied. In both models the polarization charges which arise at the surfaces have been taken into account. Deformation of the QD and matrix has been regarded in the electron and hole spectra. For the InAs/GaAs heterosystem polarization and deformation effects change the electron and hole spectra in the opposite manner: polarization charges at the interfaces increase the energy, while deformation effects decrease it. © 2019 Elsevier B.V.

Author keywords

Deformation; Energy spectrum; Multiband hole model; Polarization charges; Strained heterosystem

Indexed keywords

Engineering controlled terms

Deformation; III-V semiconductors; Indium arsenide; Nanocrystals; Polarization; Spectroscopy

Engineering uncontrolled terms

Combined effect; Deformation effects; Energy spectra; Heterosystems; Multiband; Polarization charges; Single band models; Spherical quantum dot

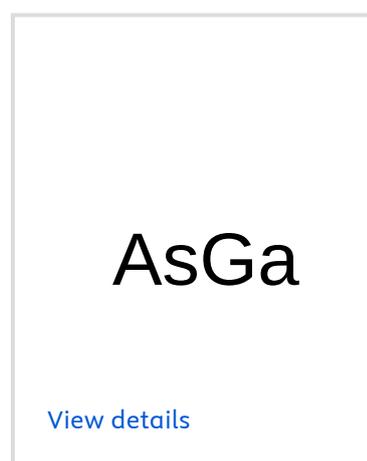
Engineering main heading

Semiconductor quantum dots

Reaxys Chemistry database information

Reaxys is designed to support chemistry researchers at every stage with the ability to investigate chemistry related research topics in peer-reviewed literature, patents and substance databases. Reaxys retrieves substances, substance properties, reaction and synthesis data.

Substances



AsGa

[View details](#)

Powered by **Reaxys**

Corresponding authors

Corresponding
author

R.Y. Leshko

ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗ [Cookies settings](#)

All content on this site: Copyright © 2026 [Elsevier B.V.](#) ↗, its licensors, and contributors. All rights are reserved, including those for text and data mining, AI training, and similar technologies. For all open access content, the relevant licensing terms apply.

