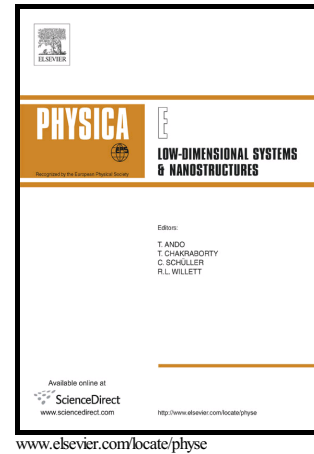


Author's Accepted Manuscript

Study of electronic and optical properties of two-layered hydrogenated aluminum nitrate nanosheet

Somayeh Faghihzadeh, Nasser Shahtahmasebi,
Mahmood Rezaee Roknabadi



PII: S1386-9477(16)31033-5
DOI: <http://dx.doi.org/10.1016/j.physe.2017.03.020>
Reference: PHYSE12762

To appear in: *Physica E: Low-dimensional Systems and Nanostructures*

Received date: 15 September 2016
Revised date: 4 December 2016
Accepted date: 27 March 2017

Cite this article as: Somayeh Faghihzadeh, Nasser Shahtahmasebi and Mahmood Rezaee Roknabadi, Study of electronic and optical properties of two-layered hydrogenated aluminum nitrate nanosheet, *Physica E: Low-dimensional System and Nanostructures*, <http://dx.doi.org/10.1016/j.physe.2017.03.020>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

Study of electronic and optical properties of two-layered hydrogenated aluminum nitrate nanosheet

Somayeh Faghihzadeh, Nasser Shahtahmasebi, Mahmood Rezaee Roknabadi*

Department of Physics, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

*Mobile: +98 9151114306. Tel.: +98 51 38461125; Fax: +98 5138796983. Email: roknabad@um.ac.ir

Abstract

First principle calculations based on density functional theory using GW approximation and two particle Bethe–Salpeter equation with electron-hole effect were performed to investigate electronic structure and optical properties of two-layered hydrogenated AlN. According to many body green function due to decrease in dimension and considering electron-electron effect, direct (indirect) band gap change from 2 (1.01) eV to 4.83 (3.62) eV. The first peak in imaginary part of dielectric function was observed in parallel direction to a plane obtaining 3.4 was achieved by bound exciton states possess 1.39 eV. The first absorption peak was seen in two parallel and perpendicular directions to a plane which are in UV region.

Graphical Abstract

The electronic structure and optical properties of the two-layered hydrogenated aluminum nitrate nanosheet based on first principle many body Green's function and Bethe Salpeter equation formalism are investigated.

Download English Version:

<https://daneshyari.com/en/article/5450020>

Download Persian Version:

<https://daneshyari.com/article/5450020>

[Daneshyari.com](https://daneshyari.com)