Orissa Journal of Physics
ISSN 0974-8202
© Orissa Physical Society
Vol. 24, No.2
August 2017
pp. 219-224

Band Gap Engineering in Hexagonal Bilayer Boron Nitride: A Tight-binding Study

S SAHU[1] , SK Panda[2] and G C ROUT[3,*]

[1]School of Basic Sciences (Physics), IIT Bhubaneswar, Odisha, India
[2]K.D. Science College, Pochilima, Hinjilicut, Ganjam, Odisha, India
[3]Plot No.- 664/4825, Lane -4A, Shree Vihar, Bhubaneswar- 751031, Odisha, India
Corresponding email : *gcr@iob.res.in

Received: 17.6.2017 ; *Revised : 2.7.2017* ; *Accepted :27.7. 2017*

Abstract. We address here the electronic band dispersion and density of states of AB staked bilayer boron nitride in a transverse applied electric field. The system is described by kinetic energy with nearest neighbor electron-hopping with hopping energy t_1 and gate potential V across for both the layers. The electron Green's functions are calculated by Zubarev's Green's function technique and electron band dispersion is found by equating the denominator of the Green's function to zero. Finally density of states is calculated from the imaginary part of the Green's function and results are interpreted by varying the different physical parameters of the system.

Keywords. Band energy dispersion, Density of states, AB- stacked bilayer BN

PACS No. : 71.20.-b, 71.23.-k, 73. 21.-b

[Full Paper]