

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Strain effects on electron transport through ds-DNA molecules**

SADEQ MALAKOOTI, ERIC HEDIN, YONG JOE, Ball State University — Molecular electronics of a double stranded poly(G)-poly(C) DNA molecule under axial mechanical strain is examined with a tight binding scheme. Slater-Koster theory is implemented to describe electronic coupling constants in terms of inter-orbital distances. Electronic structure of an infinite-length DNA model, including band structure and total density of states, is studied for both stretching and compressional cases. In addition, electronic transmission spectra as well as current-voltage characteristics under application of mechanical strain for a 30 base-pair DNA molecule coupled between two semi-infinite electrodes are investigated. Results demonstrate a very sensitive strain dependency for DNA electronics.

Yong Joe  
Ball State University

Date submitted: 07 Nov 2012

Electronic form version 1.4