عنوان مقاله:

Effects of Line Defect on Electronic Transport of Double Gate Armchair Graphene Nanoribbon Field Effect Transistors: a Simulation Study

محل انتشار:

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خلاصه مقاله:

Defect engineering in nonmaterials could be used to modify the properties of materials for various practical applications. In this paper, the impact of linear arrangement of ISTW (LA-ISTW) defect and its position on the transport properties of grapheme nanoribbon transistors is investigated. The analysis show that creating the LA-ISTW defect with a certain density in the proper position of the channel length leads to increase the bandgap, suppress ambipolar conduction and provides the higher on-off current ratio and therefore the structure with LA-ISTW defect in the proper defect position and the specified defect density has better performance than conventional structure. The results have also demonstrated the defect engineering potential on modifying the electronic transport properties of GNR FETs. Simulations has been done based on self-consistent solution of full ۳D Poisson and Schrodinger equations within the non-equilibrium Green’s function formalism. Graphene nanoribbons with non-passivated edges .are used in the transistor channel

کلمات کلیدی:

Inverse Stone Thrower Wales defect, Electronic transport properties, Graphene nanoribbon field-effect transistor, Non-equilibrium Green's function formalism