The effect of bond defect movement on the electronic conductance of linear and cyclic nanostructures

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Abstract

In this paper, the electronic transport of a graphene nanoribbon including a bond defect as well as a polyacetylene nanowire, including an extra bond, has been studied based on Green’s function technique at the tight-binding approach. The results show that the behavior of electronic conductance is different in resonance and nonresonance cases with respect to variation of bond defect position. The conductance value at the zero energy tunes by variation of defect position, only for the cases which includes double bonds. These changes is more observable especially at the polyacetylene nanowires. The amount of antiresonance shift with respect to bond defect position, in conductance spectrum, strongly depends on type and shape of center wire structure.

Keywords: nanoribbon graphene, polyacetylene, bond movement, defect, tight-binding, electronic conductance

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