

Molecular Junctions between Graphene Strips: Electronic and Transport Properties

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Abstract : Molecular junctions are currently considered a promising style in the miniaturization of electronic devices. In this contribution, we provide a tight-binding model to investigate the quantum transport properties across-molecular junctions sandwiched between 2D-graphene nanoribbons in the zigzag direction. We investigate, in particular, the effect of embedded atoms such as Gold and Silicon across the molecular junction. The results exhibit a resonance behavior in terms of incident Fermi levels, depending on the molecular junction type. Additionally, the transport properties under a perpendicular magnetic field exhibit an oscillation for the transmittance versus the magnetic field strength.

Keywords : molecular junction, 2D-graphene nanoribbons, quantum transport properties, magnetic field

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