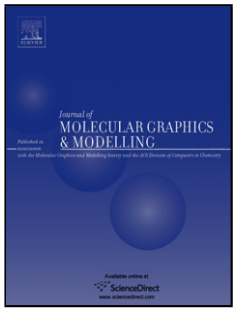

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Atomic Scale Modeling of Electrically doped p-i-n FET from Adenine based Single Wall Nanotube

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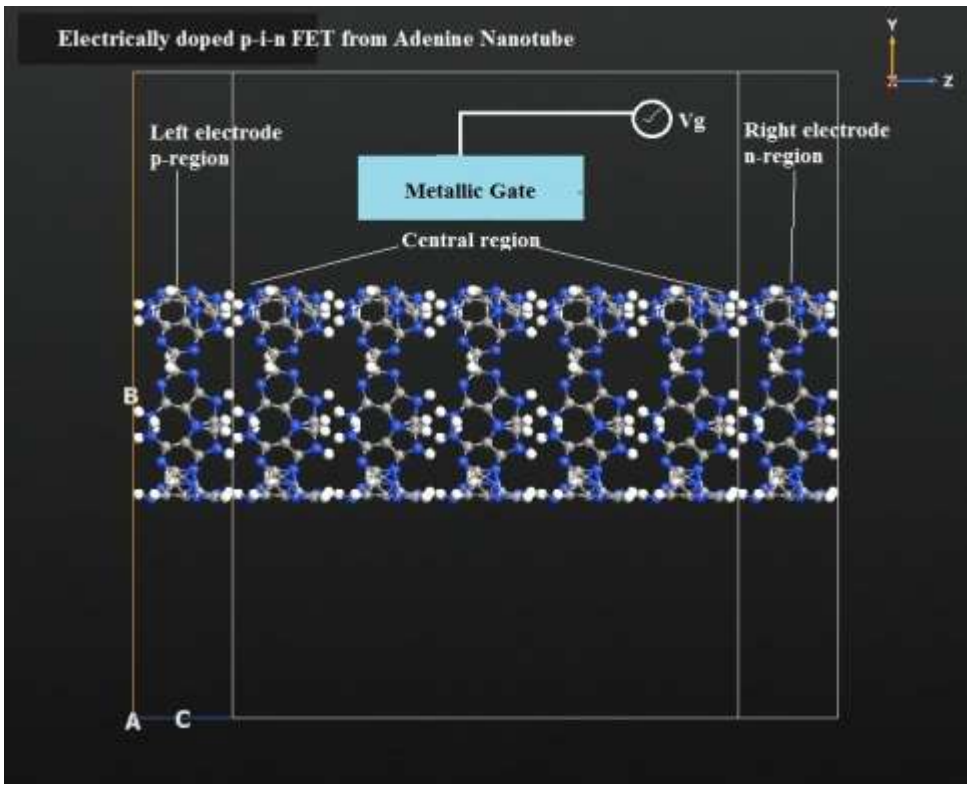
Graphical abstract



Abstract

The Field Effect Transistor (FET) characteristics has been observed from a single-walled Adenine nanotube device using Density Functional Theory associated with Non Equilibrium Green's Function based First Principle approach. This device is electrically doped which shows both n and p channel characteristics of a p-i-n FET. This device is designed and originated from a single-walled biomolecular nanotube structure. The p and n regions have been induced at the two ends of the device using electrical doping process. Thus both n and p channel current-voltage response can be obtained within a single nano-scale device at room temperature