

Transport in Multilayer h -BN and Silicene Junctions

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Transport properties in multilayer h -BN based junctions were studied theoretically and compared with multilayer silicene based junctions. h -BN is a wide band gap insulator and the calculated transmission through h -BN is exponentially dependent on the number of h -BN layers, which can be interpreted through the complex band structure of bulk h -BN along its c -axis. On the other hand, covalent bonds form between neighboring silicene layers and multilayered silicene resembles the atomic structure of bulk silicon. The transmissions of multilayered silicene junctions decay, but not exponentially, as a function of its thickness.