

A Finite Element Modeling for the Vibration of Graphene Sheets Using Beam Elements

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We worked on vibrational aspects of graphene sheets using the finite element simulation. We modeled the graphene sheet as 2D structures with consideration beam elements as bonding and also diagonal link between each atom. The natural frequencies of vibration and their vibration modes are obtained. The simulations are done for different types of grapheme sheets with different geometries . The first five natural frequencies are obtained for aspect ratios in the range of 4 to 20. The results show that the natural frequencies decrease as the aspect ratios increase. The results also indicate similar trends with previous studies in the field of MD and also are compared with the results of another finite element simulation done by the author.

Keywords:

Graphene sheets, Vibration analysis, Beam element, Finite element, SWNT

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