عنوان مقاله:

A molecular dynamics investigation into the vibration behaviour of three-dimensional metallic carbon nanostructures ((T6- and T14-carbon

محل انتشار:

نهمین کنفرانس بین المللی آکوستیک و ارتعاشات (سال: 1398)

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خلاصه مقاله:

Novel stable three-dimensional (3D) configurations of metallic carbon, namely T6- and T14-carbon, have attracted an extensive amount of interest than previously proposed 3D metallic carbon phases owing to numerous applications of metallic carbon in microprocessors, nano de-vices and electronic circuits. Thus, the actual study is motivated tends determining the vibra-tional characteristics of T6- and T14-carbon with interlocking hexagons using molecular dy-namics (MD) simulations. To this end, the natural frequency of the simulated models, i.e. beam-like and plate-like T6- and T14-carbon are obtained. Moreover, the influence on the vibrational behavior of T6- and T14-carbon of the different geometrical parameters such as various lengths, widths and square cross-section areas is investigated. The results illustrated that the geometry of T6- and T14-carbon, especially in the structures with shorter lengths has a significant effect on the natural frequency. In a specific length, the natural frequency of T14-carbon is obtained more than that of T6-carbon. The natural frequency of models increases as the square cross-sectional area in the constant length increases. Moreover, a slightly change is observed in the natural fre-quency of plate-like structures by increasing the width of the cross-section area.

کلمات کلیدی:

Three-dimensional metallic carbon (T6- and T14-carbon); Free vibration; Mo-lecular dynamics(MD) simulations.

لینک ثابت مقاله در پایگاه سیویلیکا: