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# A NONLOCAL TIMOSHENKO BEAM MODEL FOR FREE VIBRATION ANALYSIS OF CHIRAL SINGLE-WALLED CARBON NANOTUBES

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In this study, nonlocal Timoshenko beam theory has been implemented to investigate the free vibration response of chiral single-walled carbon nanotubes (SWCNTs). According to nonlocal Timoshenko vibration equation for SWCNTs, The analytical solution is derived and two solutions for vibration are obtained. Influence of nonlocal small-scale coefficient, the vibrational mode number, the chirality of carbon nanotube and aspect ratio of the (SWCNTs) on frequency of the SWCNTs are studied and discussed. The results indicate significant dependence of natural frequencies on the chirality of single-walled carbon nanotube with increase in the nonlocal small-scale coefficient, the vibrational mode number and the nanotube aspect ratio of length to diameter.

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