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Study of Poisson's Ratios of Graphene and Single-Walled Carbon Nanotubes Based on an Improved Molecular Structural Mechanics Model

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Summary

The Poisson's ratios of a single layered graphene sheet and single-walled carbon nanotubes (SWCNTs) are computed using an improved equivalent structural mechanics model where the bond angle variations are modeled by the flexible connections of framed structures. The accuracy of the results given by the present model is evaluated by comparing the predicted results with the experimental data and the theoretical and computational results reported in the literature. It is shown that the Poisson's ratios given by the present computational model agree with the experimental data. The present result shows that the Poisson's ratios of both graphene and SWCNTs are chirality depend.