

**AN ATOMISTIC MODEL-BASED CONTINUUM ANALYSIS
INCORPARATING THE FINITE TEMPERATURE EFFECT**

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We have developed a continuum theory that is based on the interatomic potential and accounts for the finite temperature effect. It is directly linked to the interatomic potential and atomic mass, and does not introduce any fitting parameters. We have studied the thermal expansion coefficient of carbon nanotubes, and our results agree very well with the available experimental results without any parameter fitting.