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Thermomechanical Effects and Nanoscale Ripples in Graphene

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Abstract : The relaxed state of graphene nanostructures due to externally applied tensile stress along both the armchair and zigzag directions are analyzed in detail. The results, obtained with the Finite Element Method (FEM), demonstrate that the amplitude of ripple waves in such nanostructures increases with temperature. Details of the multi-scale multi-physics computational procedure developed for this analysis are also provided.

Keywords : nanostructures, modeling, coupled processes, computer-aided design, nanotechnological applications
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