Buckling Analysis of Carbon Nanotube-Reinforced Composite Plates Resting on ElasticFoundation

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ABSTRACT

The buckling behavior of carbon nanotube-reinforced composite (CNTRC) plates resting on the Pasternak elastic foundation is investigated in this study. Tostrengthen the plates, four types of uni-axially aligned single-walled carbon nanotube (SWCNTs) distributions are investigated. This paper presents analytical answers derived from a mathematical formulation based onhyperbolic shear deformation plate theory. The suggested theory's accuracy is numerically tested by comparing the obtained results to some existing ones in the literature.The current study takes into account a number of important characteristics such as carbon nanotube volumefraction, spring constant factors, plate thickness and aspect ratios, etc. New buckling evaluations of CNTRC plates are provided and analyzed in depth using numeroushigher-order shear deformation theories.

Keywords: Buckling analysis; CNTRC plate; Elastic foundation; Plate theory.