

Free Vibration Characteristics of Sandwich Beams with a FGM Core and FG-CNTRC Facesheets

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ABSTRACT

The aim of this study is to investigate the free vibration characteristics of sandwich beams with a functionally graded materials (FGM) core and two functionally graded carbon nanotube-reinforced composite (FG-CNTRC) facesheets, based on finite element method (FEM). The FG core is assumed to be composed of metal and ceramic composite. The effective material properties of the FGM core and FG-CNTRC facesheets are obtained from the linear rule of mixture. A commercial midas-NFX program is employed to perform the parametric study considering various parameters such as the volume fraction of material, CNT distribution, geometry, and boundary conditions. The finite element model presented in this study is validated by comparison with existing analytical results in the literature. The results of this study are summarized together with the findings and insights obtained from the present study.

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