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## Stacking sequence and curing temperature effect on natural frequency of hybrid fiber reinforced composite laminate

Hakim Saeed Muhammed and Luay Muhammed Ali Ismaeel  
Al-Furat Al-Awsat Technical University, Iraq

In this work, a multi lamina hybrid fiber reinforced structure was statically and harmonically analyzed for the purpose of studying the effect of stacking sequence, curing limit upon induced stresses and natural frequency of free longitudinal in-plane vibrations. The effect of boundary conditions of the structure on the natural frequency under free longitudinal vibration due to tension was also studied. The laminate was suggested to be composed of 4 layers and subjected to a tensile force with thermal load represented by curing the structure at a temperature of 240°C, then it is cooled to a temperature of 23°C. Two stacking layouts are suggested (0°/90°/0°/90° and 0°/90°/90°/0°) in order to investigate their effects on the natural frequency. The software of FEA ANSYS v.14 is taken to manipulate the project data. A comparison between numerical results obtained from the software and theoretical ones obtained from the analytical solution based on Generalized Hooke's Law and classical lamination theory was made for the purpose of results verification. Good convergence was found between the two sets of results.

luay.m.63@gmail.com