

عنوان مقاله:

Effect of Nanofiller in Elastic Stress and Strain Distribution in Nanocomposite Cylinder

محل انتشار:

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خلاصه مقاله:

Nanocomposite cylinder can be exposed to the thermal and mechanical loading due to hot fluid that flows into them. In this manuscript, effect of adding SWCNTs on distribution of stress and strain in the wall of multi-layered three-phase cylinder pipe under combined thermomechanical loading and internal pressure studied. In this research to get thermal and mechanical Single Walled Carbon Nano Tubes (SWCNTs)/Glass Fiber/Epoxy nanocomposite cylinder properties using micromechanical relations for different weight fractions (wt. %). Also using classical lamination theory (CLT), stress-strain and equilibrium equations and also strain-displacement relations, distribution of radial, hoop and axial stresses and strains in the wall of three-phase nanocomposite cylinder pipe is obtained for different weight fraction (wt.%) of SWNTs. The results demonstrated that the addition of the SWCNTs to the epoxy can reduce radial, hoop and axial strains in the wall and also reducing radial, hoop and axial strains between two layers with different fiber angle. Furthermore effect the addition of the SWCNTs to the epoxy in distribution of radial, hoop and axial stress in the wall is different, so that the effect of reduction in axial and hoop stress depends on angle fiber of lay-up

کلمات کلیدی:

Elastic stress and strain-threephase composite- micromechanical model-lay-up - SWCNTs/GF/epoxy

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