

## عنوان مقاله:

EFFECTS OF MULT-WALLED CARBON NANOTUBES ON THE MECHANICAL PROPERTIES OF GLASS/POLYESTER COMPOSITES

## محل انتشار:

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## خلاصه مقاله:

Excellent mechanical properties of carbon nanotubes (CNTs) make them outstanding candidate reinforcements to enhance mechanical properties of conventional composites. The glass/polyester composites are widely used in many industries and applications. Improving the mechanical properties of such composites with addition of CNTs can increase their applications. In this research, multi-walled carbon nanotube (MWCNT) at different weight ratios (0.05, 0.1, 0.3, 0.5 wt.%) were added to chopped strand mat (CSM)/Polyester composites. Mechanical stirring with the aid of sonication technique were used to achieve a good dispersion state of MWCNTs in the polymeric matrix. The specimens were fabricated by the hand lay-up method. It is assumed that a high level of dispersion in the preparation stage may lead to better mechanical properties of the nanocomposite. Scanning electron microscopy (SEM) was employed to determine the dispersion state of carbon nanotubes in the matrix. Mechanical tests (tensile and flexural) were performed in order to evaluate the effects of adding MWCNT on CSM/Polyester composites. The results exhibit improvements in flexural strength while the values of tensile strength do not show significant changes. Although addition of filler at all above ratios increased the flexural strength, introducing only 0.05 wt.% MWCNT into the CSM/Polyester composites enhanced the flexural strength by 45%. Moreover, improvements in Young's and flexural moduli were observed.

## کلمات کلیدی:

Multi-walled carbon nanotube, Chopped strand mat, Polyester, Mechanical properties

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