

## عنوان مقاله:

A NOVEL METHOD TO DECREASE MICRO-RESIDUAL STRESSES OF FBROUS COMPOSITES BY ADDING CARBON NANOTUBE

## محل انتشار:

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## خلاصه مقاله:

Process-induced residual stresses, during the curing stage, arise in polymer matrix composites (PMC) as a result of a mismatch of mechanical properties of the resin and fibers. Thermal residual stress is one of the major factors affecting composite mechanical performance. Transverse cracks, deformation in non-symmetrical laminates and loss of strength of the components are some consequences of the existence of the residual stresses. The negative coefficient of thermal expansion and the high tensile modulus of carbon nanotubes (CNTs) can be utilized to counterbalance the process induced residual stresses in composites. In this work, the effects of adding CNT to the matrix offibrous composites in reducing the residual stresses of composites are studied in detail. The micromechanical models are used to model the effect of CNT in reducing the residual stresses in fibrous composites. The results show that by addition of CNT, enhancements in properties of matrix were obtained and lead to considerable decrease in micro residual stresses of matrix and fiber.

## کلمات کلیدی:

Residual stress, carbon nanotube, fibrous composite, polymer

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