عنوان مقاله:

(Stress Transfer Modeling in CNT Reinforced Composites using Continuum Mechanics (TECHNICAL NOTE

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خلاصه مقاله:

Because of the substantial difference in stiffness between matrix and nanotube in CNT composite, the stress transfer between them controls their mechanical properties. This paper investigates the said issue, analytically and numerically, in axial load using representative volume element (RVE). The analytical model was established based on the modified Cox's shear lag model with the use of some simplified assumptions. Some, in the developed shear lag model, the CNT assumes hollow fiber. Solving the governing differential equation, led the high shear stress in interface especially in the CNT cap. In addition, some finite element models were performed with different aspect ratios and the shear stress pattern especially in interface was calculated numerically. Despite some simplified assumptions that were performed with these two models such as elastic behavior and full connectivity, and the comparison of their results with other numerical models show adequate agreement.

کلمات کلیدی:
Nanotube, Continuum, FEM, RVE, Shear, Lag

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