عنوان مقاله:

Effects of interfacial properties variation on the overall behavior of the nanocomposites

محل انتشار:

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خلاصه مقاله:

The interface of a carbon nano-composite plays a large role in determining the effective response of the composite, since it is the medium through which load transfer occurs. The properties of the interface in hyperelastic matrix are different from linear elastic materials. Since the initial elastic stiffness of the hyperelastic material is in the order of MPa as against the order of GPa for the elastic case. Hyperelastic materials are described in terms of a strain energy potential, which defines the strain energy stored in the material per unit of reference volume (volume in the initial configuration) as a function of the strain at that point in the material. It is necessary to understand how the variation of interfacial properties affects the overall behavior of the composite. In this work, the interface of a uniaxially reinforced composite representative volume element (RVE) is modeled using the cohesive zone modeling (CZM) approach. A three parameter bilinear traction separation relationship is used to characterizethe interface and the effect of variation of these parameters on the response of the composite is studied. The matrix is modeled as a hyperelastic material. .The importance of each interfacial parameter on the effective behavior of the composite is investigated

کلمات کلیدی:

Interface, Cohesive Zone, Strain Energy,Hyperelastic