عنوان مقاله:

Viscoelastic Behavior of SMA Reinforced Polymers

محل انتشار:

کنفرانس دو سالانه بین المللی مکانیک جامدات تجربی (سال: 1398)

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خلاصه مقاله:

Viscoelastic behavior can be described for a wide variety of structural materials, including advanced polymeric composites. Recently, the viscoelastic behavior of polymers and polymer composites has attracted attention in numerous experimental and theoretical studies. In the present research, the effect of embedded shape memory alloy (SMA) wires on the viscoelastic properties of the epoxy polymer was investigated experimentally. Shape memory alloy reinforced polymer specimens were prepared and subjected to mechanical tests. Dynamic mechanical analysis (DMA) was utilized in order to study the temperature-dependent behavior of the SMA reinforced polymer. The variation of viscoelastic properties of SMA reinforced polymer including storage modulus, loss modulus and loss tangent, versus temperature were obtained experimentally. The results showed enhancement in the elastic modulus of the polymer by embedding SMA wires. In addition, embedding SMA wires within polymer leads to a decrease in the reduction of storage modulus at higher temperatures. Furthermore, in comparison to the neat resin, the loss tangent of SMA reinforced polymer increases at the activation temperatures of SMA

کلمات کلیدی:

Shape memory alloys, Viscoelastic behavior, Dynamic mechanical analysis