

عنوان مقاله:

Shape recovery capability of the shape memory alloy wires embedded in the carbon/epoxy composite laminates

محل انتشار:

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خلاصه مقاله:

Due to the shape memory effect of shape memory alloys, these materials can regain their original shape by heating after a considerable deformation. By putting SMA wires within host materials like composites and using their shape memory effect and recovery stress, internal stresses will be induced inside the host material. This paper includes a research about measuring the induced stress in SMA wire-reinforced hybrid composites (SMAHC). A numerical analysis in finite element software ABAQUS has been used to measure the induced stresses in host composites using the recovery stress effect of SMA wires. To model the thermo-mechanical behavior of SMA wires, a user subroutine code that presented by Laogudas is utilized. The host composite is a [45,-45]₃S Carbon/epoxy. Finally a series of pre-strained SMAHC is fabricated and tested and the results is compared with FE model to verify the numerical analysis

کلمات کلیدی:

Shape memory alloy hybrid composite, finite element, recovery stress, shape memory effect, shape recovery

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