## عنوان مقاله:

Buckling Behavior of Functionally Graded Nano Clay-Reinforced Composite Beams

## محل انتشار:

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## خلاصه مقاله:

In this paper, the buckling behavior of functionally graded simply supported nanocomposite beams reinforced by nano clay is studied. The specimens were prepared and the experimental tensile and buckling tests are carried out. The elastic modulus of epoxy/clay nanocomposite for functionally graded and uniformly distributed of nanoclay are estimated through a model based on the genetic algorithm approach. The results show that GA can be considered as an acceptable optimization research technique to identify Young's modulus of nanocomposites with maximum accuracy. For simply supported beam, the first order shear deformation beam theory is applied for displacement field and the governing equations are derived by using Hamilton principle. The influence of nanoparticles for functionally graded and uniform distribution on the buckling load of a beam is presented. Comparison study is conducted to assess efficacy and accuracy of the present analysis. A comparison for theoretical analysis with the experimental results demonstrated the high accuracy.

## کلمات کلیدی:

Buckling, Functionally graded nanocomposite, Epoxy, Genetic algorithm theory