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خلاصه مقاله:

This study attempts to shed light on the analysis of the static behavior of simply supported FG type property gradient material beams according to an original refined ۲D shear deformation theory. Young's modulus is considered to vary gradually and continuously according to a power-law distribution in terms of volume fractions of the constituent materials. The equilibrium equations are obtained by applying the principle of virtual work. The governing equilibrium equations obtained are thus solved by using the analytical model developed here and Navier's solution technique for the case of a simply supported sandwich beam. Moreover, Using the numerical results of the non-dimensional stresses and displacements are calculated and compared with those obtained by other theories. Two studies are presented, comparative and parametric, the objective of which is the first to show the accuracy and efficiency of the theory used and the second to analyze the mechanical behavior of the different types of beams under the effect of different parameters. Namely boundary conditions, the material index , the thickness ratio and the type of beam.

کلمات کلیدی:

Mechanical Behavior, beams,, Property Gradient Materials, Principle of virtual work, Navier' s solution

لینک ثابت مقاله در پایگاه سیویلیکا: