
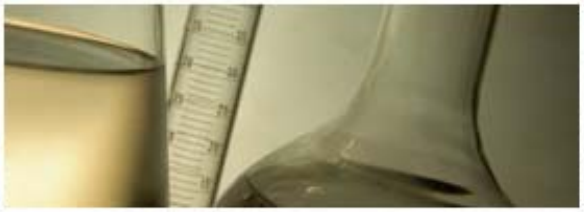

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Research Details :

Research Title : *Thermoelastic bending analysis of functionally graded sandwich plates*

Thermoelastic bending analysis of functionally graded sandwich plates

Descriptipn : The thermoelastic bending analysis of functionally graded ceramic-metal sandwich plates is studied. The governing equations of equilibrium are solved for a functionally graded sandwich plates under the effect of thermal loads. The sandwich plate faces are assumed to have isotropic, two-constituent material distribution through the thickness, and the modulus of elasticity, Poissons ratio of the faces, and thermal expansion coefficients are assumed to vary according to a power law distribution in terms of the volume fractions of the constituents. The core layer is still homogeneous and made of an isotropic ceramic material. Several kinds of sandwich plates are used taking into account the symmetry of the plate and the thickness of each layer. Field equations for functionally graded sandwich plates whose deformations are governed by either the shear deformation theories or the classical theory are derived. Displacement functions that identically satisfy boundary conditions are used to reduce the governing equations to a set of coupled ordinary differential equations with variable coefficients. The influences played by the transverse normal strain, shear deformation, thermal load, plate aspect ratio, side-to-thickness ratio, and volume fraction distribution are studied. Numerical results for deflections and stresses of functionally graded metal-ceramic plates are investigated.

Research Type : Article

Research Year : 2008

Publisher : JOURNAL OF MATERIALS SCIENCE Volume: 43 Issue: 8 Pages: 2574-2589

Added Date : Tuesday, June 17, 2008

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