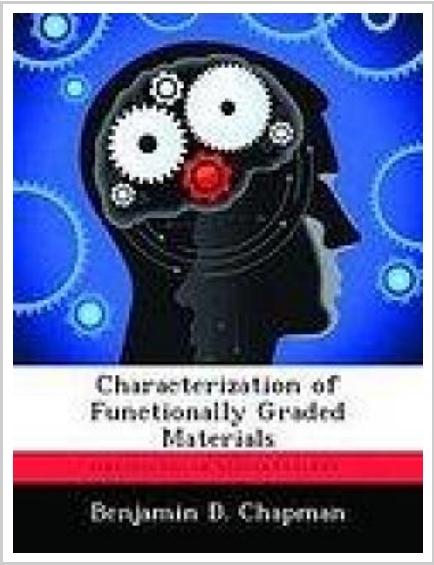

Characterization of Functionally Graded Materials

By Benjamin D. Chapman

Bibliioscholar Nov 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x7 mm. This item is printed on demand - Print on Demand Neuware - The purpose of this study was to characterize the behavior of a functionally graded material through experimentation and analytical modeling. Functionally graded materials are a ceramic metal composite which transitions from metal on one face to ceramic on the opposite face. Creating reliable models required verifying the material properties. This was accomplished through the use of a static modulus of elasticity test as well as a dynamic ping test. The natural frequencies from the dynamic test were compared with finite element models to determine which material properties most accurately represented the functionally graded material. It was found that the material properties established experimentally by Hill and Lin produced the best models. A fracture surface was examined to determine the failure criteria for the prediction of failure in a cyclic loading scenario. It was determined that the material would fail in a brittle manner and the maximum principle stresses should be used to predict failure. 116 pp. Englisch.

Reviews

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