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Abstract

The mixed mode fracture of specimens weakened by V- notches with end holes (VO- notch) made of W-Cu functionally graded material (W-Cu FGM) has been investigated in this paper. In experimental section, W-Cu FGM specimens were fabricated by powder metallurgy technique. A number of fracture tests were performed on VO-notched W-Cu FGM specimens under in-plane mixed mode for various notch tip radii, notch depths, and notch opening angles.

In theoretical section, a criterion based on the averaged value of strain energy density over a well-defined control volume was proposed to predict the fracture loads of VO- notched FGM specimens under mixed mode I+II. In addition, the effect of notch geometrical parameters (notch tip radius, notch depth, and notch opening angle) on fracture load was studied. This study demonstrates that SED works well on VO- notched FGM specimens under mixed mode I+II loading.

Keywords: Functionally graded materials; Tungsten; Copper; V-notches with end hole; Mixed mode; Strain energy density

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