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纤维增强陶瓷复合材料中桥接裂纹问题的等效杂质模型分析

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AN EQUIVALENT INCLUSION MODEL ANALYSIS OF BRIDGED PROBLEM IN FIBER REINFORCED CERAMIC COMPOSITES

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摘要

关键词： 陶瓷基复合材料   桥接裂纹   等效杂质方法   基体断裂强度

Abstract： Fiber reinforced ceramic matrix composites exhibit matrix cracking bridged by fibers during unidirectional tensile loading. The matrix crack is analyzed by using a method that the crack is regarded as an equivalent inclusion having discrete bridging fibers. The inclusion model and its eigenstrain are established. The matrix fracture strength for large cracks is derived from the Griffith energy criterion. The predicted values of matrix fracture strength of the present paper agree with experimentally measured values and another two theoretically predicted values.

Keywords： ceramic matrix composites   bridged crack   equivalent inclusion method   matrix fracture strength

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