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The temperature-dependent fracture models for fiber-reinforced ceramic matrix composites

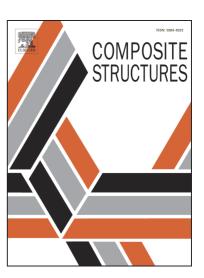
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The temperature-dependent fracture models for fiber-reinforced ceramic matrix

composites

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**Abstract** 

In this paper, based on a temperature-dependent fracture strength model and the theory of

composite materials, two temperature-dependent fracture strength models for unidirectional and

short random fiber reinforced ceramic matrix composites are developed. The effects of

temperature, fiber content, fiber distribution, and matrix strength on the strength of

fiber-reinforced ceramic matrix composites are included in the models. Furthermore, considering

the effects of oxidation reaction for some kinds of fiber and size effect of unidirectional fiber on

the strength of composites, a new temperature-dependent fracture strength model considering size

effect and oxidation of reinforcing fiber is established. And good agreement between model

predictions and experimental data indicates the applicability and rationality of our models. So the

models can be used to predict the temperature-dependent fracture strength of fiber-reinforced

ceramic matrix composites.

**Keywords:** Fiber, Ceramic-matrix composites, Temperature-dependent, Fracture strength, Model

1. Introduction

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