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Study of the Toughening by Crack Bridging in Mullite Alumina Zirconia Ceramics

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Abstract : Crack propagation behaviour of alumina mullite zirconia ceramic is investigated under monotonic and cyclic loading by means SENB bending method. This material show R-curve effects, i.e. an increase in crack growth resistance with increasing crack depth. The morphological study showed that the resistance of the crack propagation is mainly connected to the crack bridging. The value of bridging stress is in good agreement with the literature. Furthermore, cyclic-loading fatigue is caused by a decrease in the stress-shielding effect, due to degradation of bridging sites under cyclic loading.

Keywords : alumina mullite zirconia, R-curve, bridging, toughening, crack
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