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A Simple Method for Measurement of Shear Delamination Toughness in Environmental Barrier Coatings

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Abstract

A simple technique for measurement of delamination toughness in environmental barrier coatings (EBCs) under shear loading has been developed. The technique overcomes micro damage accumulation properties of CMC substrate and a delamination toughness with a phase angle of ~80 degrees could be obtained using a simple fixture. Demonstration of the present procedure is carried out using a BSAS/mullite+BSAS/Si standard EBC layer on a three-dimensional woven fabric SiC/SiC composite substrate. The delamination path suggests that it is possible to apply the method to wavy EBC coatings and also to thermal barrier coatings.

Keywords

Environmental barrier coatings (EBCs), Delamination, Toughness, SiC/SiC, Test method, Shear Loading

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