



Life Limiting Behavior in Interlaminar Shear of Continuous Fiber-Reinforced Ceramic Matrix Composites at Elevated Temperatures

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Life Limiting Behavior in Interlaminar Shear of Continuous Fiber-Reinforced Ceramic Matrix Composites at Elevated Temperatures

By Sung R Choi

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.Interlaminar shear strength of four different fiber-reinforced ceramic matrix composites was determined with double-notch shear test specimens as a function of test rate at elevated temperatures ranging from 1100 to 1316 C in air. Life limiting behavior, represented as interlaminar shear strength degradation with decreasing test rate, was significant for 2-D crossplied SiC/MAS-5 and 2-D plain-woven C/SiC composites, but insignificant for 2-D plain-woven SiC/SiC and 2-D woven Sylramic (Dow Corning, Midland, Michigan) SiC/SiC composites. A phenomenological, power-law delayed failure model was proposed to account for and to quantify the rate dependency of interlaminar shear strength of the composites. Additional stress rupture testing in interlaminar shear was conducted at elevated temperatures to validate the proposed model. The model was in good agreement with SiC/MAS-5 and C/SiC composites, but in poor to reasonable agreement with Sylramic SiC/SiC. Constant shear stress-rate testing was proposed as a possible means of life prediction testing methodology for ceramic matrix composites subjected to interlaminar shear at elevated temperatures when short lifetimes are expected.



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