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Effect of matrix modification on the interlaminar shear strength of glass fiber reinforced epoxy composites at cryogenic temperature

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In order to investigate the effect of the matrix variability on the interlaminar shear strength (ILSS) of the glass fiber reinforced composites at 77K, three kinds of modifiers were employed to modify the diethyl toluene diamine (DETD) cured diglycidyl ether of bisphenol F (DGEBF) epoxy resin system in this study. The woven glass fiber reinforced composites were fabricated by vacuum pressure impregnation (VPI) process. The ILSS at 77K was studied and the results indicated that introduction of modifiers used in this study can enhance the ILSS of composite at 77K and a maximum of 14.87% increase was obtained by addition of 10wt% IPBE into the epoxy matrix. Furthermore, scanning electron microscopy (SEM) was used to investigate the fracture mechanism and strengthening effect.

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