

عنوان مقاله:

Experimental analysis of delamination on mode III in composite materials and effects of adding nanoparticles on energy release rate

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خلاصه مقاله:

In this research fracture behavior of composite material was investigated in mode III. Test bars with the shape of ECT (Edge Crack Torsion) specimen were made to evaluate strain energy release rate by using compliance calibration method in mode III loading. Hand lay-up method has been used to make composite specimens with 24 layers of 2D woven glass fibers with 51% fiber volume fraction and ML506 epoxy resin as the matrix. Tests on these specimens were carried out on mode III and results were obtained. Then, another set of specimens were made by adding nanosilica particles to evaluate its influence on strain energy. In result the curve of strain energy release rate versus crack length have been drawn. Influence of different initial crack lengths have been evaluated. Results showed that by adding nanoparticles, the interlaminar fracture energy in the third mode enhanced about 23% compared to the neat composites.

کلمات کلیدی:

composite, delamination, Mode III, energy release rate, nanoparticles

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