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Prediction of quasi-static delamination onset and growth in laminated composites by Acoustic Emission

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Abstract

The main objective of this study is to determine the crack tip position during propagation of mode I delamination and also to evaluate interlaminar fracture toughness (G_{IC}) in glass/epoxy composite specimens. The crack tip location was identified using two methods: a) localization of the AE signal source and b) the cumulative AE energy. Interlaminar fracture toughness of the specimens was also determined using the ASTM standard methods and the AE-based methods. The AE-based methods results were in a close agreement with the results of ASTM standard. It was found that the novel AE-based methods are more applicable than conventional methods for characterization of the delamination.

Keywords: A. Glass fibres; B. Delamination; B. Fracture toughness; D. Acoustic emission

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