Accepted Manuscript

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PII: S1359-8368(15)00581-8

DOI: 10.1016/j.compositesb.2015.09.037

Reference: JCOMB 3804

To appear in: *Composites Part B*

Received Date: 10 November 2014

Revised Date: 17 September 2015

Accepted Date: 19 September 2015

Please cite this article as: Saeedifar M, Fotouhi M, Ahmadi najafabadi M, Toudeshky HH, Minak G, Prediction of quasi-static delamination onset and growth in laminated composites by Acoustic Emission, *Composites Part B* (2015), doi: 10.1016/j.compositesb.2015.09.037.

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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