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Enhancing Fatigue Life in Adhesively Bonded Joints Using Reduced Graphene Oxide Additive: Experimental and Numerical Evaluation

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Abstract

The present study aimed at exploring the effect of the addition of the reduced graphene oxide (RGO) as a reinforcement element on the fatigue behavior of adhesively bonded lap joints. Hence, two sets of specimens were produced with neat adhesive and adhesive-RGO composites and fatigue tests were conducted. Comparing the results showed that an impressive fatigue life enhancement of 130% occurred in high cycle fatigue range of the reinforced joints. Moreover, morphology study on the fractured surface indicated that the increase of surface roughness was responsible for the improvements. This phenomenon could extend the crack initiation and propagation period. Furthermore, a numerical study, along

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