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應用對稱曲形界面於增強複材單面搭接試片剪切強度探討

Application of symmetrically wrinkled interface on improving the shear strength of adhesive-bonded single-lap composites

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摘要

本研究在傳統複合材料製程 Seemann 真空灌注成型法中埋入了補強材料，透過真空壓力壓抑成形，製作出不平滑的表面，在製程中加入補強材料可保持材料的連續性，藉由此不平滑表面以結構膠對稱黏結，形成對稱曲形介面，透過此結構增強複合材料膠合試片的剪切強度，並根據 ASTM D5868 01 規範所指定的尺寸製作出簡易單搭接試片，執行拉伸試驗測試剪切強度，並且比較傳統接合法與此改良接合法之強度，初步結果顯示本研究採用之補強材料尼龍繩所建製出的對稱曲形介面可以提升複合材料膠合單搭接試片的剪切強度。

關鍵詞：複合材料、非平表面、SCRIMP、單搭接試片

Abstract

In this research, the enhanced material was embedded into the fiber in the Seemann Composite Resin Infused Molding Process (SCRIMP) and formed a wrinkled surface composite. This method could maintain the continuity of the composite material. The adhesive single-lap specimens were fabricated by following the ASTM D5868 01 and subjected to the tensile test to compare the shear strength of the conventional single-lap shear specimen and the improved symmetry wrinkled interface specimen. The results suggested that the wrinkled interface formed by embedded material, nylon wire, could successfully improve the shear strength of the adhesive single-lap joint.

Keywords: Composite material, Non-flat interface, SCRIMP, Adhesive single-lap joint.