

Flexure Response of Stitched CFRP Laminates

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The flexure response of stitched CFRP composites under static and impact loading was investigated in this paper. CFRP composites laminates were lay up with 24 plies of prepreg, and were stitched with Kevlar29 yarns using three different stitching patterns (see Fig.1). Other than the three different stitching patterns, two different stitching densities were also employed. The end-notch flexure (ENF) sample geometry was used. Typical loading-displacement curves obtained from the measurements were shown in Fig. 2. Obviously, the flexural properties of the non-stitched laminate was larger than the stitched laminates. For different stitched patterns, the degradation of the flexural properties was different. It seemed that the loading rates had little effect on the flexural modulus. Scanning electron microscopy showed that the failure processes of the non-stitched laminates was somewhat different that of the stitched laminates.

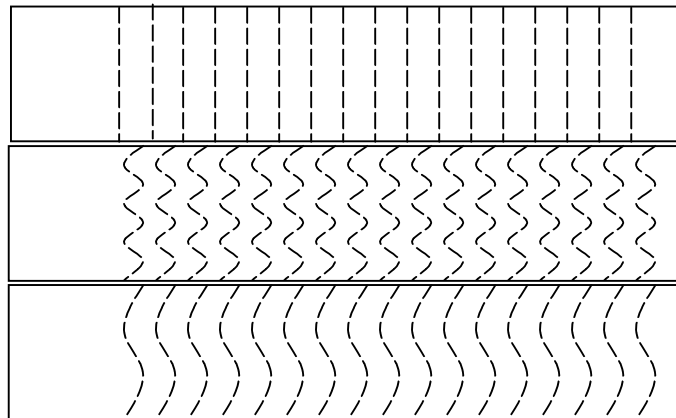


Fig.1 Diagram of three stitched patterns

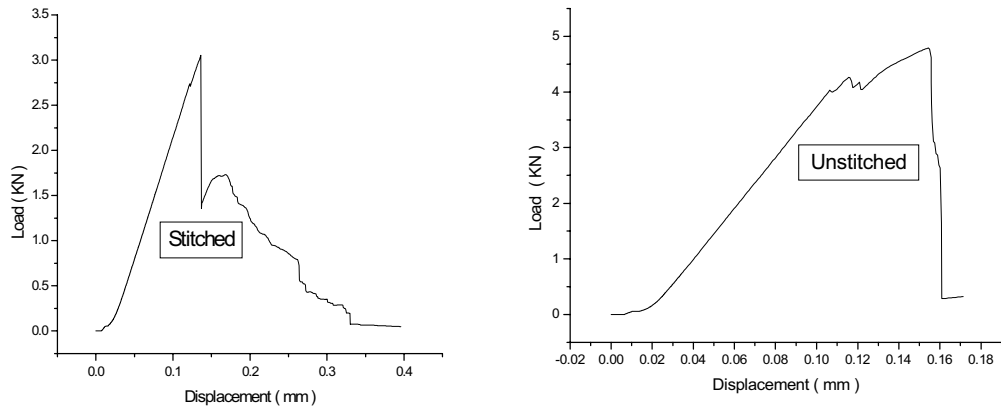


Fig. 2 The typical load-displacement curves for stitched and non-stitched laminates