

Vibration analysis of hybrid reinforced unsaturated polyester composites

ABSTRACT

This chapter reviews recent work on natural fiber–reinforced polyester hybrid composites. The vibration behavior of jute/roselle fiber–reinforced unsaturated polyester hybrid composites was also studied. All composite specimens were fabricated with the hand lay-up method, but with different layering sizes and sequences. A total of 12 types of jute (J)–roselle (S) woven fiber–reinforced unsaturated polyester resin hybrid composites were prepared, namely JJ, JS, SJ, SS, JJJ, SSS, SSJ, SJS, JSS, SJJ, JJS, and JSJ. The natural frequencies and damping properties obtained from experimental and numerical analyses through ANSYS finite element software were compared. The results showed that the varying layering sizes and layering sequences on the hybrid composites produced a significant effect on the natural frequency and damping ratio. Nevertheless, a high percentage of error (>20) was produced by the three-layer composites based on the numerical analysis.

Keyword: Natural fiber; Biocomposite; Hybrid composite; Natural frequency; Damping properties