

Experimental investigations on the mechanical, chemical, acoustical and morphological analysis of plant fibers reinforced hybrid composites

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Abstract:

This work aims to investigate the mechanical and sound absorption characteristics of industrial waste tea leaf fiber (WTLF), kenaf and E-glass fiber-reinforced hybrid epoxy composites through experimental studies. The WTLF and kenaf fibers were initially treated with 5% sodium hydroxide.

The other hand in this research work was analysed the mechanical as well as acoustic behaviour of *Sansevieria ehrenbergii* (snake grass) / *Camellia sinensis* (waste tealeaf) fibers with glass fiber (GF) – reinforcement to form the hybrid epoxy composites. Fibers of *S.ehrenbergii*/*C.sinensis* were chemically modified for their effective usage as reinforcement in hybrid composites. Five combinations of hybrid composites were fabricated using hand-operated compression molding techniques by changing the percentage weight of snake grass fiber (SGF) and waste tea leaf fiber (WTLF).

The mechanical properties of biodegradable industrial waste tea leaf fiber (WTLF), banana and flax fiber reinforced hybrid polymer composites using experimental approach have been. Banana fibers and WTLF were alkali treated with 5% NaOH solution. The hybrid composite laminates were manufactured using manually operated compression moulding machine with the volume fraction of 40:60 (Fiber: Matrix). As per ASTM standard, the mechanical characteristics were studied.