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Processing and Properties of Novel Rice Straw/Recycled Plastic Green Composites

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ABSTRACT

In the present study, natural fibers (jute, kenaf, and henequen) reinforced thermoplastic (poly(lactic acid) and polypropylene) and thermosetting (unsaturated polyester) matrix composites were well fabricated by means of a compression molding technique using all chopped fibers of about 10mm long. Prior to green composite fabrication, natural fiber bundles were surface-treated with tap water statistically by soaking and dynamically using ultrasonication. The interfacial shear strength, flexural and tensile properties, dynamic mechanical properties, and fracture surfaces were investigated for each green composite system. The result indicates that the properties of the resin with fibers were significantly improved by incorporating the natural fibers into the resin matrix and the untreated natural fiber composites were further improved by water treatment to the natural fibers used. Also the treatment method strongly influenced the property improvement of natural fiber-reinforced green composites. The results agreed with each other among the characteristics studied.

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