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Effect of Chemical Modifier on the Properties of Polypropylene (PP) / Coconut Fiber (CF) in Automotive Application

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Abstract : Chemical modifier (Acrylic Acid) is used as filler treatment to improve mechanical properties and swelling behavior of polypropylene/coconut fiber (PP/CF) composites by creating more adherent bonding between CF filler and PP Matrix. Treated (with chemical modifier) and untreated (without chemical modifier) composites were prepared in the formulation of 10 wt%, 20 wt%, 30 wt%, and 40 wt%. The mechanical testing indicates that composite with 10 wt% of untreated composite has the optimum value of tensile strength, and the composite with chemical modifier shows the tensile strength was increased. By increasing of filler loading, elastic modulus was increased while the elongation at brake was decreased. Meanwhile, the swelling test discerned that the increase of filler loading increased the water absorption of composites and the presence of chemical modifier reduced the equilibrium water absorption percentage.

Keywords : coconut fiber, polypropylene, acid acrylic, ethanol, chemical modifier, composites
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