

Effect of Surface Modification of Sisal Fibers on Water Absorption and Mechanical Properties of Polyaniline Composite

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This paper presents surface modification of sisal (*Agave Sisalana*) fibers by alkalization to tune up mechanical limitations of natural fibers reinforced polymer composites associated with poor fiber-polymer matrix compatibility. Upon surface treatment, the fibers were surface coated with polyaniline through *in situ* oxidative polymerization to further enhance resistance to water absorption by introducing hydrophobic polymer backbone. Based on the results from spectroscopic and microscopic analyses, surface modification through alkalization is an effective approach to remove lignin and hemicellulose from the surface of sisal fibers. It also enhanced fiber-polymer matrix compatibility assured by a significant increase in tensile strength. Polyaniline deposition on the surface of sisal fibers was successful to introduce hydrophobic polymer backbone to the system to enhance resistance to water absorption thereby increasing tensile strength significantly.