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THE EFFECT OF TREATMENT ON KENAF FIBER USING GREEN APPROACH AND THEIR REINFORCED EPOXY COMPOSITES

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Abstract

In this study we show the novel treatment (surface modification) of kenaf fiber using amino acids and the studies of kenaf fiber reinforced epoxy composites. The kenaf fiber was treated at room temperature for 24h, using two amino acids namely glutamic acid (acid) and lysine (base). Thermogravimetric analysis (TGA) of the treated kenaf fiber (glutamic acid treated and lysine treated) showed more weight loss than compared to untreated fiber. The tensile studies of the composites suggested improved mechanical properties in both the cases, glutamic acid treated and lysine treated kenaf fiber than compared to untreated samples. Dynamic mechanical analysis (DMA) of the composites suggested that the storage modulus, loss modulus and tanδ were most influenced by the chemical treatment. The morphological studies of the kenaf fibers before and after treatment were examined using scanning electron microscopy (SEM) and revealed that the chemical treatment for 24h, removed any impurity from thefibers surface. In addition, morphological studies of fractured mechanical testing composite samples using SEM were performed to understand the de-bonding of fiber/matrix adhesion. The results, confirmed that the lysine treatment is more effective than the glutamic acid treatment on kenaf fibers.

Key words: Kenaf fibers, Thermal properties, Polymer matrix, Composites and Mechanical properties.

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