

Characterization of thermal Properties of Highland Bamboo Fibres

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Abstract

Characterization of thermal properties of different ages highland bamboo fiber attributes extracted chemically and mechanically is the focus of this work. The sample were subjected to different analyses for each corresponding age (1year, 2years, and 3 years) and NaOH Concentration (untreated, 1%, 2%, and 3%) levels using thermogravimetric analysis (TGA), differential scanning calorimetric (DSC), differential thermogravimetric analysis (DTG), and differential thermal analysis (DTA) for thermal properties characterization. Scanning electron microscopy (SEM) for morphological studies and Fourier transform infrared spectroscopy (FTIR) for the identification of functional groups of the fibers. The surface appearance of the cell wall and microfibril aggregates were changed by alkali treatment. From the SEM results, 3% NaOH treated fiber resulted in more wrinkles on the surface of bamboo fibers when compared with the 1% and 2%NaOH Bamboo fiber. Using thermal analyse measurments, the study investigated weight loss increased as alkali concentration increased but the scenario functioned for proper concentration. The first Degradation stage is responsible for the biggest weight loss since it includes the disintegration of all of the fiber's primary components (cellulose, hemicellulose, and lignin).

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