

Characterization of silane treated Malaysian Yankee Pineapple AC6 leaf fiber (PALF) towards industrial applications

ABSTRACT

This research studied the effects of silane treatment at different soaking time: 1, 3, 5 h, on the properties of new variant Yankee's Pineapple AC6 leaf fiber (PALF). The properties of untreated and treated PALF was evaluated through several testing. The Si element was found on all treated fiber's surface through Energy-Dispersive X-ray, while significant peaks were clearly seen for these treated fibers at 1317.81 and 1100 cm^{-1} by Fourier Transform Infrared Spectroscopy. X-Ray Diffractor analyses showed small changes on the crystallinity of all treated fiber disregards the treatment and soaking time as compared to untreated fiber. Improvement on the degradation temperature of all treated fibers to 360 °C from 340 °C was seen from the thermogravimetric analysis. Maximum surface roughness and tensile strength were found for treated fibers at 3 h soaking time by atomic force microscope and single fiber testing respectively. The analyses suggested the potential Yankee's PALF to be used in composites for various industrial applications.

Keyword: Pineapple leaf fiber; Surface modification; EDX; SEM; TGA; FTIR