

The effects of different bamboo filler loading on HDPE/BF composites and rHDPE/BF composites: Flexural and morphology

Abstract

In this article, wood plastic composite (WPC) is a composite material made up from bamboo as filler (BF) and high-density polyethylene and recycle high density polyethylene (HDPE) plastic as matrix. This research was conducted in order to investigate the mechanical properties of HDPE/BF and rHDPE/BF composites with different filler loading (5 wt.%, 10 wt.%, 15 wt.% and 20 wt.%). From the morphology test by using Field Emission Scanning Electron Microscopy (FESEM), the bonding between filler and matrix to 10 wt.% show a positive effect and have a great bonding. The, Fourier Transform Infrared Spectroscopy (FTIR) used to analyze the functional group in the bamboo filler which contain lignin, cellulose and hemicellulose. The flexural test was conducted to study the mechanical properties of rHDPE/BF composites. Based on the flexural test result, the HDPE/BF and rHDPE/BF composites with 10 wt.% BF show the highest flexural result as decreasing filler loading will reduce the strength of the composites.