

Mechanical properties of oil palm shell composites

Abstract

The mechanical properties of oil palm shell (OPS) composites were investigated with different volume fraction of OPS such as 0%, 10%, 20%, and 30% using unsaturated polyester (UPE) as a matrix. The results presented that the tensile strength and tensile modulus of the UPE/OPS composites increased as the OPS loading increased. The highest tensile modulus of UPE/OPS was obtained at 30 vol% of OPS with the value of 8.50 GPa. The tensile strength of the composites was 1.15, 1.17, and 1.18 times higher than the pure UPE matrix for 10, 20, and 30 vol% of OPS, respectively. The FTIR spectra showed the change of functional group of composites with different volume fractions of OPS. SEM analysis shows the filler pull-out present in the composites which proved the poor filler-matrix interfacial bonding.