

Tensile, electrical conductivity, and morphological properties of carbon black–filled epoxy composites.

ABSTRACT

This work investigates the effect of carbon black content on the tensile, electrical, and morphological properties of epoxy matrix. Carbon black–filled epoxy composites were obtained by mixing the desired amount of carbon black from bamboo stem (BS-CB), oil palm empty fruit bunch (EFB-CB), and coconut shell (CNS-CB) with the epoxy resin. Tensile and electrical properties of carbon black from three different sources (BS-CB, EFB-CB, and CNS-CB) used to fill epoxy composite with 5% filler loading were measured and the results indicated improvement in tensile and electrical properties. The diffraction patterns of X-ray diffraction (XRD) indicated nonlinear crystalline amorphous structure of the CB.

Keyword: Carbon blacks; Electrical properties; Epoxy composites; Tensile properties; X-ray diffraction.