

Properties of low-density polyethylene/palm kernel shell composites: Effect of polyethylene co-acrylic acid

Abstract

Palm kernel shell (PKS)-filled low-density polyethylene (LDPE) composites was studied. The polyethylene co-acrylic acid (PEAA) was used as compatibilizer. The tensile properties, thermal analysis, water absorption, and morphology of LDPE/PKS composites were investigated. The results show that increasing of PKS loading have decreased the tensile strength and elongation at break but Young's modulus and water absorption of composites increased. The higher tensile properties (such as tensile strength and Young's modulus) and lower water absorption with addition of compatibilizer was due to the improvement in the filler-matrix interaction and adhesion of composites as evidence from scanning electron microscopy studies. The presence of PEAA also increased the crystallinity of LDPE/PKS composites.

Keywords: Low-density polyethylene, palm kernel shell, compatibilizer, composites