

The effects of recycled acrylonitrile butadiene rubber content and maleic anhydride modified polypropylene (PPMAH) on the mixing, tensile properties, swelling percentage and morphology of polypropylene/recycled acrylonitrile butadiene rubber/rice husk powder (PP/NBRr/RHP) composites

Abstract

The effect of recycled acrylonitrile butadiene rubber (NBRr) content and PPMAH as a compatibilizer on the properties of PP/NBRr/RHP composites were examined using a Haake Rheomix at 180°C, 60 rpm for 9 min. Results showed that higher stabilization torque, Young's modulus and tensile strength were obtained for PPMAH compatibilized composite as compared to uncompatibilized composites. However, for elongation at break (E_b) and swelling percentage of compatibilized composites exhibited lower values than uncompatibilized composites. The increase of NBRr content in both compatibilized and uncompatibilized composites resulted in higher stabilization torques, swelling percentage and elongation at break but lower tensile strength and Young modulus. Tensile fractured surfaces observed by scanning electron microscopy showed good adhesion between NBRr and PP matrix and better dispersion of RHP for the compatibilized composites.