Tensile and physical properties of linear low-density polyethylene-natural rubber composite: comparison between size and filler types

ABSTRACT

Linear Low-Density Polyethylene-Natural Rubber (LLDPE-NR) composites in the ratio of 70:20 were made with different loadings of nanosilica and micro-scale Palm Oil Fuel Ash (POFA). Linear Low-Density Polyethylene grafted with maleic anhydride (LLDPE-g-MAH) of 10 wt% was added as a compatibiliser. The composites were produced by using two-roll mill machine. The tensile properties of the composites were determined by carrying out tensile test. From the test, it was found that the tensile strength of LLDPE-NR decreased with increasing weight percentages of POFA in the composition. Tensile strength of LLDPE-NR increased with increasing nanosilica content of the composition. The water absorption test was done on all samples, and it was found that water absorption of LLDPE-NR nanocomposites decreased with increasing nanosilica content. However, water absorption of LLDPE-NR microcomposites increased with increasing POFA content.