

Properties of chicken feather fiber-filled low-density polyethylene composites: The effect of polyethylene grafted maleic anhydride

Abstract

The effects of polyethylene grafted maleic anhydride on tensile properties, morphology, thermal degradation, and swelling behavior of low density polyethylene/chicken feather fiber composite were studied. The LDPE/CFF composites were prepared using a Z-Blade mixer at 180°C and rotor speed of 50 rpm for 15 min. LDPE/CFF/PEgMAH composites exhibit higher tensile strength, Young's modulus, and final decomposition temperature, but lower mass swell percentage and elongation at break than LDPE/CFF composites. SEM morphology showed that the chicken feather fiber more widely dispersed in the LDPE matrix with the addition of polyethylene grafted maleic anhydride as a coupling agent. It was also found that the addition of PEgMAH offers better thermal stability in LDPE/CFF/PEgMAH composites than LDPE/CFF composites.

Keywords

Chicken feather fiber; Low-density polyethylene; Polyethylene-grafted maleic anhydride