Preparation and Characterization of Nano Composites HDPE Blend with Rice Husk Ash Nanoparticles

Eva Marlina Ginting[1]* , NurdinBukit[1], Erna Frida[2]

[1]Departement of Physics (Chemical-Physics Polymer)State University of Medan Indonesia   20211
[2]Quality University, Medan Indonesia

Abstract : The purpose of this research is to know the nano characteristic of high density polyethylene (HDPE) thermoplastic composite. with nanoparticle ash husk filler (RHA) particle size of 52.22 nm with compatible and non-compatible Polyethylene-grafted maleic anhydride (PE-g-MA) compatibilizers .The composite nano-making process was carried out in an internal mixer of laboplastomill, RHA nano with composition (0,2,4,6,8, and 10)% by weight. From the composite nano result analyzed the mechanical properties, Thermal, morphology and diffraction pattern. The results of tensile strength, elongation at break and elasticity modulus analysis increased with increasing RHA nano composition for non-compatible, whereas with the compatibility of tensile strength and increased elongation of elongation and elastic modulus, the results of mixed nano composite HDPE nano analysis with RHA were uniform and homogeneous. Similarly, XRD analysis results in the intercalation of HDPE thermoplastics with RHA nanoparticles while the thermal analysis of the TGA thermogram shows a decomposition temperature at 500 ° C. So the HDPE nano composite with RHA nano filler has good thermal stability properties.

Keywords : RHA, HDPE PE-g-MA, Mechanical properties of Thermal morphology , XRD.

*****