

**CHARACTERIZATION OF PA6-HDPE NANOCOMPOSITE WITH PRESENCE OF
COMPATIBILIZER**

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**This report is submitted in partial fulfillment of the requirements needed for award of Bachelor
in Chemical and Process Engineering (Hons.)**

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OCTOBER 2009

DECLARATION

“I hereby declare that this report is the result of my own work except for quotation and summaries which have been duly acknowledged.”

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19 NOVEMBER 2009

ABSTRACT

This thesis project to study the characterization of polymer blends. Today's polymer is development on new way blend two or more polymer/copolymer to produce new polymer that is chemically and mechanically strengthen up. In this report, the polymer blends of Polyamide (PA6) and High Density Polyethylene (HDPE) with presence of compatibilizer, PA6 and HDPE are two immiscible polymers to each other and almost impossible to have a good miscible polymer if these two polymer are extrude together. To overcome the problem regarding to immiscibility, additive agent or compatibilizer, High Density Polyethylene grafted with Maleic Annyhydrate (HDPE-g-MAH) is added to enhance the chemical bonding between PA6 and HDPE polymer. These three elements were being prepared with six different compositions to investigate the effect of compatibilizer to the new polymer blends. The samples were prepared by using twin screw extruder. Extrusion process was done by melting all three components for better mixing. Extruded polymers then were injected into injection moulding for testing and characterization purposes. The samples had been characterized by using Fourier Transform Infrared (FTIR) to observe the formation of new chemical bonds, Differential Scanning Calorimetry (DSC) to observe the thermal behavior of new polymer blends and Scanning Electron Microscopy (SEM) to investigate the surface morphology. There were three stages involved in this experiment which were extrusion, injection moulding and samples characterization. Prior to these three stages, the materials and samples were dried to avoid moisture absorption by PA6 component that could lead to errors.

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