

Synthesis and Properties of Clay/Polyurethane Nanocomposite Using the Clay modified with Polyol

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Clay / polyurethane nanocomposite was synthesized with the clay, which was modified with polyether polyol. In the clay modification by polyol, the clay having isocyanate group on the surface, which was synthesized for this study, was used for the reaction with polyether polyol. For preparation of the clay having isocyanate group on the surface, in the mixing speed of 3000 rpm, silanol group of the clay and NCO group of the PMDI were reacted in the excess DMF (dimethyl formamide) for 24 hours. After reaction, excess DMF was separated from the modified clay with suction and evaporation. Prepared clay having isocyanate group were reacted with the excess polyether polyol, again. FT-IR analysis of the modified clay by the polyol demonstrated that NCO characteristic peak observed in the FT-IR analysis of the clay having isocyanate group was disappeared. The clay / polyurethane nanocomposites were obtained from the reaction between PMDI and the polyol including the clay modified by the polyol. Also, the mechanical and thermal properties of the clay / polyurethane nanocomposite are presented.