CHAPTER V

CONCLUSION

Organoclay

Organoclay with various types and concentration loadings of surfactant were successfully prepared. FTIR, XRD and TGA results verified the intercalation of the surfactant into the clay structure. The intercalation of the surfactant into the interlayer spacing of clay was confirmed by the change in the basal spacing of organoclay. Interlayer spacing of orgnaoclay was strongly dependent on the size of the surfactant. The amount of the intercalated surfactant was determined by the weight loss from the TGA. The delamination of silicate layers was strongly dependent on the compatibility of the surfactant and MMA monomer.

PMMA/clay Nanocomposite

PMMA/clay nanocomposite was prepared by in *situ* polymerization of MMA monomer in the presence of organoclay with 1.0 mmol surface concentration loading. The results suggested the classification as an intercalated or exfoliated type. The appearance of the PMMA/clay nanocomposites can be related to the dispersion of the organoclay in the MMA monomer. PMMA-ODMHBNH was prepared by using ODMH-BNH, which shown the best compatibility with the MMA monomer, forming almost transparent suspension. The PMMA/clay nanocomposite sheets reduce clearly, when increase the content of organoclay in them. The resulting nanocomposites exhibited considerable improvements in surface hardness but reduce impact strength. The glass transition temperature of PMMA-ODMHBNH was found to be greater than that of the pure PMMA.