

CHAPTER V

CONCLUSIONS

MMT was higher CEC value than CEC value of BEN, more CEC value was more chance to ion exchange reaction resulting in higher surfactant content in the interlayer spacing. The basal spacing of organo-BEN was less than that of organo-MMT, further less packing of alkylammonium ions in the interlayer. Dialkyl tails structure (DMDS) was more effective to intercalate silicate layer than monoalkyl tail structure (TMS). Organoclays were modified with a co-intercalation monomer, methacrylic acid. They had slightly larger interlayer spacing than the ordinary organoclays only modified by alkylammoniumions.

Nanocomposites of organomodified nanoclays with DMDS, the structure of surfactant might interfere the grafting reaction. The increased T_d of PP/clay nanocomposites indicated that MMT and BEN had thermal stability effect in the PP matrix. MFI of PP/clays nanocomposites decreased when addition the modified organo-MMTs and the modified organo-BENs. The addition of clay did not change the crystal structure of PP. However MMT and BEN could act as nucleating agents for crystallization of PP. But the modified organo-MMT did not result in any significant change in the melting temperature of the PP matrix. The tensile strengths of PP/MMT nanocomposites were slightly higher than PP-PP/DCP. For PP/BEN nanocomposites, their tensile strengths were higher than PP-PP/DCP and PP/MMT nanocomposites because PP/BEN nanocomposites had better crystal structures and higher amount of crystal in PP matrix. The tensile modulus of PP/MMT nanocomposites were higher than PP-PP/DCP. For nanocomposites of BEN, their tensile moduli were lower than PP-PP/DCP due to many impurities in bentonite could act as stress concentrators.

Organoclays should be modified with higher level of MMA. The addition nanoclays at higher level should be investigated. Subsequently bentonites should be purified before the preparation of nanocomposites.