

## CHAPTER VI

### CONCLUSIONS & RECOMMENDATIONS

#### 6.1 CONCLUSIONS

From the present investigation, which involves the propylene polymerization by supported and modified Ziegler-Natta catalyst, a number of conclusions may be summarized as follows :

1. The suitable conditions that give the good results in the studied  $\text{MgCl}_2/\text{TiCl}_4\text{-AlEt}_3$  system in hexane are the conditions of Al/Ti mole ratio of 170 at  $\text{TiCl}_4$  concentration of 8.936 mmol/liter, pressure of propylene at 100 psi. and temperature of 90 °C. Hydrogen. increased catalyst activity at hydrogen/propylene molar ratio of 0.1.

2. Catalytic behaviors of Ziegler-Natta catalyst are affected by third component . This study found that the number of alkoxy groups in alkoxy silane compounds strongly affects the catalyst activity and isotacticity. The activity and isotacticity were decreased at high concentration of external electron donor (or third component).

3. Properties of supported catalyst was similar to unsupported catalyst but supported catalyst had higher activity and was more sensitive to the change of monomer and electron donor concentration due to its more isolated sites.

## 6.2 RECOMMENDATIONS

1. The pretreated catalyst by internal electron donor before combination with external electron donor and aluminum alkyl may increase both of activity and isotacticity which depend on both of selected base. This should be further studied.

2. The alcohol adduct method for preparation of supported catalyst gives smaller size and more uniform of magnesium chloride crystals than ballmilling method [15,16]; hence it increases the catalyst surface area. Although the alcohol adduct method is more difficult than ballmilling method but it should be a better method for catalyst preparation when used in conjunction with internal electron donor.