

CHAPTER VI

CONCLUSIONS & SUGGESTIONS

6.1 CONCLUSIONS

From the present investigation, which is related to the slurry polymerization of ethylene with Cp_2ZrCl_2 -TMA catalyst system on SiO_2 support modified with silane compound and MAO, a number of conclusions may be summarized as follows:

1. The optimum polymerization conditions of $\text{SiO}_2/\text{Cl}_2\text{Si}(\text{CH}_3)_2/\text{MAO}-\text{Cp}_2\text{ZrCl}_2/\text{TMA}$ catalyst system for the maximum catalytic activity are Al/Zr mole ratio of 3000, Cp_2ZrCl_2 catalyst concentration of 5.0×10^{-5} M and polymerization temperature of 60 °C.
2. The sequence of catalytic activity by different silane compounds to obtain the modified silica is $\text{SiCl}_4 > \text{Cl}_3\text{SiCH}_3 > \text{Cl}_2\text{Si}(\text{CH}_3)_2 > \text{ClSi}(\text{CH}_3)_3$.
3. Properties of produced polyethylene are the spherical morphology, melting temperature (T_m) in the range of 131.67-134.60 °C and narrow molecular weight distribution (MWD) between 1.41 and 1.68.

6.2 SUGGESTIONS

1. Further treatment of modified silica with other silane compounds or separating the active center from the support by a spacer unit should be investigated to improve the catalytic activity.
2. Other carriers with surface property appropriated for Cp_2ZrCl_2 to enhance the catalytic activity should be studied, e.g. TiO_2 , zeolite and polymer supports.
3. Other supported metallocene catalyst preparations to improve the catalytic activity should be attempted, e.g. the direct synthesis of metallocene on carriers.