

CHAPTER V

CONCLUSIONS

From the present work, it can be concluded that:

1. The ethylene consumption rate and productivity of polyethylene by $\text{Cp}_2\text{ZrCl}_2\text{-B}(\text{C}_6\text{F}_5)_3\text{-TEA}$ catalyst system decreased as zirconocene concentration increased at constant Al/Zr ratio.
2. The maximum productivity was obtained at Al/Zr ratio = 200 at temperature of 30°C, the maximum productivity was 3000 kgPE/mol-Zr*atm*h.
3. The increase in reaction temperature increased both ethylene consumption rate and productivity in the range of 20-30°C. Above 30°C, the productivity decreased due to the high rate of deactivation or termination.
4. The Mw and MWD were found to depend on both the reaction temperature and Al/Zr ratio.
5. Polyethylene produced at higher temperature had lower melting temperature and lower degree of crystallinity.
6. Changing Al/Zr ratio affected the crystallinity. As the Al/Zr increased, crystallinity decreased.