

## **CHAPTER V**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Conclusions**

1. Chlorinated compounds, used as an activator, have an effect on  $\text{TiCl}_4/\text{MgCl}_2 + \text{Al}(\text{C}_2\text{H}_5)_3$  catalytic system for ethylene polymerization.
2. Addition of  $\text{CHCl}_3$  or  $\text{CH}_3\text{CCl}_3$  at an optimum ratio per Ti (0.1 to 0.2) can improve catalyst deactivation by slowing the decay of activity. As a result, higher productivity is achieved.
3. In contrast, addition of  $\text{C}_6\text{H}_5\text{CH}_2\text{Cl}$  decreases activity and causes lower productivity.
4. Addition of activator at higher amounts than the optimum shows decreasing activity.
5. The polymer produced has the same quality as without the addition of activator, in terms of the molecular weight distribution (MWD).

## 5.2 Recommendations for Future Work

From the findings of this research, we should further study the effect of chlorinated compounds on copolymerization of ethylene and comonomer. The comonomer incorporation and its distribution along the polyethylene chain should be studied. Because in the vanadium catalytic system, the chlorinated compounds improve both of them. This is one of the desired properties of polyethylene polymer.

Moreover, further study in continuous reaction and continuous feeding of chlorinated compound to keep the ratio of activator per catalyst to be constant is interesting, since it is closed to the industrial environment.