Abstract

The purpose of this thesis is to prepare $MgCl_2$ supported Ti catalysts by chemical vapor deposition method, and to use the catalysts for propylene polymerization. Three different types of internal donors were used for milling with $MgCl_2$, including Diethyl- phthalate, Ethyl benzoate, and 2,2-Dimethoxypropane. Reaction conditions had strong effects on the polypropylene yield. The catalysts and the polymers were characterized with a variety of techniques, including BET, ICP-AES, SEM, DSC, XRD, FTIR and OM.

We found that the support dried at 250℃ had the largest surface area, pore radius, and pore volume. We also found that the catalysts with the CVD time of 2 hours had the best catalytic performances for propylene polymerization, when internal donor was ethyl benzoate. Reaction temperature had different influence for different internal donor, but the optimum temperature was between 40℃ and 55℃. At the stirring speed of 300 r.p.m, the reaction determining step was chemical reaction, (not mass transfer). The measurement of density, thermo property, X-ray diffraction, and FT-IR, all showed that the propylene polymerization

product was isotactic polypropylene, and the property of the isotactic

polypropylene meted the industrial standards.