

## LIST OF TABLES

TABLE	DESCRIPTION	PAGE
1.1	Recycling codes of major plastic resins	6
1.2	Chronology of development in Ziegler-Natta catalysis	11
2.1	Determination of 'dead volume' of the gas line	46
3.1	Synthesis and yield of chromium(III) monochloroacetate complex	56
3.2	Synthesis and yield of chromium(III) dichloroacetate complex	57
3.3	Synthesis and yield of chromium(III) trichloroacetate complex	58
3.4	Synthesis and yield of chromium(III) acetate complex	59
3.5	Comparison of Cr <sup>3+</sup> content obtained from titration with theoretical values	61
3.6	FT-IR band assignments of Cr(III) complexes	63
3.7	$\nu_{\text{asym}}(\text{COO}^-)$ , $\nu_{\text{sym}}(\text{COO}^-)$ and $\Delta\nu(\text{COO}^-)$ values of chromium(III) complexes	66
3.8	Decomposition of chromium(III) carboxylate complexes in nitrogen atmosphere	68
4.1	Kinetic of a typical ethylene polymerization reaction	80
4.2	Polyethylene yield accumulated during reaction	85
4.3	Correlation between pressure drop and polymer yield	88
4.4	Maximum initial catalytic activity at various Al/Cr ratios	96
4.5	Effect of various temperatures on maximum initial activity of ethylene polymerization	99
4.6	Catalytic activity and polyethylene yield obtained using a series of chromium(III) carboxylate complexes	104
4.7	Polymerization with Ti(NMe <sub>2</sub> ) <sub>n</sub> Cl <sub>4-n</sub> /AlEt <sub>3</sub> systems	107

4.8	FT-IR band assignments of polyethylene obtained at various Al/Cr molar ratios	110
4.9	$A_{730}/A_{720}$ ratio for polyethylene obtained at various Al/Cr molar ratios	112
4.10	ATR-IR band assignments of polyethylene at various Al/Cr molar ratios	114
4.11	$A_{730}/A_{720}$ ratio for polyethylene at various Al/Cr molar ratios obtained by ATR technique	115
4.12	DSC measurements of polyethylene at various Al/Cr molar ratios	117
4.13	IR analysis of the product obtained for propylene polymerization at temperature 3°C and Al/Cr molar ratio 59.7	124
5.1	Copolymer yield produced at different ethylene and propylene content	133
5.2	Effect of aging time between catalyst and cocatalyst	136
5.3	Effect of Al/Cr molar ratio on copolymer yield and average activity	140
5.4	IR band assignments for ethylene-propylene copolymers	144
5.5	IR analysis of ethylene-propylene copolymer	148
5.6	DSC analysis of ethylene-propylene copolymers prepared with different mol % monomer	152
5.7	DSC analysis for ethylene-propylene copolymers prepared at different aging time	158
6.1	Refluxing time and reagents ratios for optimum yield	163