

Studies on homo and copolymerizations of long-chained α -olefins over metallocene catalysts

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Metallocene catalysts, viz., $\text{rac-Et(Ind)}_2\text{ZrCl}_2$, $\text{rac-Me}_2\text{-Si(Ind)}_2\text{ZrCl}_2$ and $\text{Ph}_2\text{C(Flu)(Cp)ZrCl}_2$, were studied in homopolymerization of 1-octadecene and the first two were used in copolymerization of ethylene with 1-octadecene. They exhibited different activities and $\text{rac-Et(Ind)}_2\text{ZrCl}_2$ was the most active in the homopolymerization carried out at 70°C. At 30°C, the activities were practically identical. In the copolymerization runs, the catalysts were similarly active, and the Et-bridged catalyst was the more active. The copolymers prepared over $\text{rac-Me}_2\text{-Si(Ind)}_2\text{ZrCl}_2$ were found to have more comonomer incorporated. The composition of copolymerization products was found ($^{13}\text{C-NMR}$) to vary with the catalyst system. DSC thermograms showed poly-1-octadecene prepared over $\text{rac-Et(Ind)}_2\text{ZrCl}_2$ to vary in properties with polymerization temperature (Figs. 3-5). The homopolymer prepared at 70°C showed endotherms at 41°C and 53°C and that prepared at 30°C produced one broader peak at 67°C. With $\text{rac-C-Me}_2\text{Si}$