Dialkoxy-Substituted, C_1-Symmetric Metallocenes: Synthesis and Catalytic Behavior in the Propylene Polymerization Reaction

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The synthesis of a series of C_1-symmetric metallocene complexes *rac*-[1-(5,6-dialkoxy-2-methyl-1-η^5-indenyl)-2-(9-η^5-fluorenyl)ethane]zirconium dichlorides (alkyl: *n*-butyl, *n*-hexyl, *n*-octyl, *n*-decyl) is described. These complexes are versatile catalysts in the polymerization of propylene after *in situ* activation with triisobutylaluminum (TIBA) and $Ph_3C[B(C_6F_5)_4]$ in toluene and heptane solution. All catalysts show higher solubility and improved polymerization properties in industrially used hydrocarbon solvents (*e.g.* heptane). However, the molecular weights and isotacticity values of the resulting polypropylene materials are decreased compared to the ethoxy-bridged analogue *rac*-[1-(5,6-ethylenedioxy-2-methyl-η^5-indenyl)-2-(9-η^5-fluorenyl)ethane]zirconium dichloride. A possible explanation is based on enhanced interaction of the active catalyst centers with Al(III) scavenger molecules even at low Al : Zr ratios, leading to reversible chain transfer.

Key words: Metallocene Catalysis, Dialkoxy Substitution, Propylene Polymerization