Syntheses, structure, and reactivity of chiral titanium compounds: procatalysts for olefin polymerization.

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Streszczenie

Titanium complexes with chelating alkoxo ligands have been synthesised with the aim to investigate titanium active centres in catalytic ethylene polymerisation. The titanium complexes *cis*-[$TiCl_2(\eta^2$-maltolato$)_2$] (**1**, 89 %), and *cis*-[$TiCl_2(\eta^2$-guaiacolato$)_2$] (**2**, 80 %) were prepared by direct reaction of $TiCl_4$ with maltol and guaiacol in toluene. The addition of maltol to [Ti(O*i*Pr)$_4$] in THF results in the formation of species [Ti(O*i*Pr)$_2$(maltolato)$_2$] (**3**, 82 %). The titanium compound *cis*-[$Ti(OEt)_2(\eta^2$-maltolato$)_2$] (**4**, 74 %) was obtained by the transesterification reaction of species **3** with CH_3CO_2Et. When compound **4** is dissolved in THF a dinuclear species [$Ti_2(\mu$-OEt$)_2$(OEt$)_4(\eta^2$-maltolato$)_2$] (**5**, 45 %) is formed. Reaction of [Ti(O*i*Pr)$_4$] with crude guaiacol in THF yields a solid, which after recrystallisation from acetonitrile gives [$Ti_4(\mu$-O$)_4(\eta^2$-guaiacolato$)_8$]·4 CH_3CN (**6**, 55 %). In contrast, reaction of $TiCl_4$ with crude guaiacol in tetrahydrofuran affords [$Ti_2(\mu$-O$)Cl_2(\eta^2$-guaiacolato$)_4$] (**7**, 82 %). Crystallographic and electrochemical analyses of these complexes demonstrate that maltolato and guaiacolato ligands can be used as a valuable alternative for the cyclopentadienyl ring. These complexes have been shown to be active catalysts upon combination with the appropriate activator.

Słowa kluczowe

alkenes, Alkoxides, chirality, Polymerization, titanium

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