Homo-and heterometallic aluminium and titanium complexes of tridentate (OSO) ligand: synthesis, structure, and catalytic activity.

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Streszczenie

The tridentate (OSO-functions) biphenol, 2,2‘-thiobis{4-(1,1,3,3-tetramethylbutyl)phenol} (tbopH$_2$), reacts with AlMe$_3$ to give [Al$_2$(μ-tbop-κ^{3}O,S,O)$_2$Me$_2$] (**1**). Alcoholysis of **1** results in the formation of [Al$_2$(μ-OEt)$_2$(tbop-κ^{3}O,S,O)$_2$] (**2**). The reaction of **2** with TiCl$_4$ gives the trimeric complex [Ti$_3$(μ-OEt)$_2$(μ-tbop-κ^{3}O,S,O)$_2$Cl$_6$] (**3**)·C$_6$H$_{14}$. Alkylation of **3**·C$_6$H$_{14}$ with LiMe produces two dimeric complexes, [Ti$_2$(μ-tbop-κ^{3}O,S,O)$_2$Me$_4$] (**4**) and [Ti$_2$(μ-OE)$_2$(tbop-κ^{3}O,S,O)$_2$Me$_2$] (**5**)·Et$_2$O. Treatment of [Ti$_2$(μ-OEt)$_2$(tbop-κ^{3}O,S,O)$_2$(OEt)$_2$] with AlMe$_3$ and EtOH afforded the heterobimetallic species, [Ti$_2$Al$_2$(μ-OEt)$_6$(μ-tbop-κ^{3}O,S,O)$_2$(OEt)$_4$] (**6**). The structures of **1**–**6** were confirmed by NMR spectroscopy; complexes **1**, **3**·C$_6$H$_{14}$, **5**·Et$_2$O, and **6** were further investigated by X-ray crystallography. Compounds **3**–**6**, when supported on MgCl$_2$ and activated with aluminum alkyls, effectively polymerize ethene.

Słowa kluczowe

Catalysts, Titanium, Alkyls, Ligands, Aluminum

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