

Unexpected reactions between Ziegler-Natta catalyst components and structural characterization of resulting intermediates.

Autorzy

Piotr Sobota

Józef Utko

Tadeusz Lis

Łukasz John

Rafał Petrus

Anna Drąg-Jarząbek

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In this work, we investigated precursors and procatalysts with well-defined crystal structures and morphologies in Ziegler-Natta systems to improve our understanding of the nature of the active metal sites. Molecular cluster precursors such as $[\text{Mg}_4\text{Ti}_3(\mu_6\text{-O})(\mu_3\text{-OH})_3(\mu\text{-OEt})_9(\text{OEt})_3(\text{EtOH})_3\text{Cl}_3]$, $[\text{Mg}_4\text{Ti}_3(\mu_6\text{-O})(\mu_3\text{-OH})(\mu_3\text{-OEt})_2(\mu\text{-OEt})_9(\text{OEt})_3(\text{EtOH})_3\text{Cl}_3]$, and $[\text{Mg}_6\text{Ti}_4(\mu_6\text{-O})_2(\mu_3\text{-OH})_4(\mu\text{-OEt})_{14}(\text{OEt})_4(\text{EtOH})_2\text{Cl}_2]$ were prepared via simple elimination of the cyclopentadienyl ring from Cp_2TiCl_2 as CpH in the presence of magnesium metal and ethanol. Titanocene dichloride acts as both a source of titanium and a magnesium-chlorinating agent. The resulting novel complexes were characterized using single-crystal X-ray diffraction. In these compounds, $\text{Ti}(\text{OEt})_4$ molecules are grafted onto Mg_4 and Mg_6 ethoxide cubane-like surfaces; this strongly affects the procatalyst morphology, which is transferred to the polymer. $\text{Mg}_4(\text{OR})_8$ units act as carriers for the $\text{AlR}_3\text{co-catalyst}$, resulting in return of alkyl functions to the Ti center.

Adres publiczny

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Strona internetowa wydawcy

<https://www.acs.org/content/acs/en.html>