



Syntheses and structural characterization of vanadium and aluminum thiolates.

Autorzy

Zofia Janas

Lucjan B. Jerzykiewicz

Szymon Przybylak

Raymond L. Richards

Piotr Sobota

Rok wydania

2000

Czasopismo

Organometallics

Numer woluminu

19

Strony

4252-4257

DOI

10.1021/om000301h

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Stoichiometric reaction of $[\text{VCl}(\text{DIPP})_2(\text{THF})_2]$ (DIPP = 2,6-diisopropylphenoxide) with 2,2'-oxydiethanethiol $\text{O}(\text{CH}_2\text{CH}_2\text{SH})_2$ in CH_3CN yields two products: $[\text{V}^{\text{IV}}\{\text{O}(\text{CH}_2\text{CH}_2\text{S})_2\}_2]$, **1**, and $[\text{V}^{\text{II}}(\text{CH}_3\text{CN})_6]$ $[\text{V}^{\text{III}}\text{Cl}_2\{\text{O}(\text{CH}_2\text{CH}_2\text{S})_2\}_2]$, **2**. Compounds **1** and **2** were identified by conventional methods, including single-crystal X-ray diffraction for **2**. Compound **2** reacts with $\text{Li}(\text{DIPP})$ and $\text{Na}(\text{PyT})$ (PyT = pyridine-2-thiolate) in the presence of TMEN (TMEN = *N,N,N',N'*-tetramethylethylenediamine) to give $[\text{V}^{\text{II}}(\mu\text{-DIPP})_4\text{Li}_2(\text{THF})_4]$, **3**, $[\text{V}^{\text{III}}(\mu\text{-DIPP})_2\{\text{O}(\text{CH}_2\text{CH}_2\text{S})_2\}\text{Li}_4(\text{THF})_2]$, **4**, $[\text{V}^{\text{II}}(\text{PyT})_2(\text{TMEN})]$, **5**, and $[\text{V}^{\text{III}}(\mu\text{-PyT})_2\{\text{O}(\text{CH}_2\text{CH}_2\text{S})_2\}\text{Na}(\text{THF})_2]$, **6**. When combined with an aluminum activator and MgCl_2 , compound **2** forms an active catalyst for ethylene polymerization. The interaction of **2** with an excess of $\text{Al}(\text{CH}_3)_3$ causes $\{\text{O}(\text{CH}_2\text{CH}_2\text{S})_2\}^{2-}$ ligand abstraction from the vanadium center to give $[\text{V}_2(\mu\text{-O})\text{Cl}_4(\text{THF})_6]$, **7**, and the organoaluminum compound $[\text{Al}_2\{\mu,\eta^3\text{-}(\text{OCH}_2\text{CH}_2\text{SCH}_2\text{CH}_2\text{S})\}_2(\text{CH}_3)_2]$, **8**. The crystal structure of **8** showed it to be a dimer with aluminum atoms bridged by two alkoxo oxygen atoms from the ligand $\{\text{OCH}_2\text{CH}_2\text{SCH}_2\text{CH}_2\text{S}\}^{2-}$, formed by transformation of the starting $\{\text{O}(\text{CH}_2\text{CH}_2\text{S})_2\}^{2-}$ ligand under the influence of $\text{Al}(\text{CH}_3)_3$.

Słowa kluczowe

Catalysts, Vanadium, Anions, Ligands, Aluminum

Adres publiczny

<https://doi.org/10.1021/om000301h>

Strona internetowa wydawcy

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