



Synthesis, structure, and unusual reactivity of the first norbornene carbonyl complexes of tungsten.

Autorzy

Marcin Górski

Andrzej Kochel

Teresa Szymańska-Buzar

Rok wydania

2004

Czasopismo

Organometallics

Numer woluminu

23

Strony

3037-3046

DOI

10.1021/om0400043

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Two new norbornene complexes of tungsten(0), $W(CO)_5(\eta^2-C_7H_{10})$ (**1**) and *trans*- $W(CO)_4(\eta^2-C_7H_{10})_2$ (**2**), have been obtained and characterized by IR and NMR spectroscopy, and initial studies of their reactivity are reported here. The molecular structure of compound **1**, relatively unstable in solution, was established by single-crystal X-ray diffraction studies. Complex **1** can, depending on reaction conditions, give rise to different types of reactions: in a pure polychloromethane solution, it transforms to a species initiating the ring-opening metathesis polymerization of norbornene (ROMP), whereas in the presence of alcohol (ca. 1%), it leads to catalytic C–C bond formation with selective addition of polychloromethane to the olefinic bond of norbornene. The two-electron chemical oxidation of stable *trans*- $W(CO)_4(\eta^2-C_7H_{10})_2$ (**2**) by $SnCl_4$ gives a very labile norbornene complex of tungsten(II) (**3**). The latter compound decomposes in $CDCl_3$ solution to give chloronorbornane, whereas in benzene- d_6 or toluene- d_8 solution the products of the hydroarylation of norbornene are formed. The identities of the organometallic and organic products were established by IR, NMR, ESI-MS, and GC-MS studies.

Słowa kluczowe

Hydrocarbons, Ligands, Addition reactions, Tungsten, Nuclear magnetic resonance spectroscopy

Adres publiczny

<http://doi.org/10.1021/om0400043>

Strona internetowa wydawcy

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