



On rhodium complexes bearing H-spirophosphorane derived ligands : Synthesis, structural and catalytic properties.

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Rok wydania

2013

Czasopismo

Journal of Organometallic
Chemistry

Numer woluminu

743

Strony

179-186

DOI

10.1016/j.jorganchem.2013.06.020

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

We investigated the coordination properties of H-spirophosphoranes towards rhodium ion. Symmetrical phosphorus ligands: $\text{HP}(\text{OCH}_2\text{CH}_2\text{NH})_2$ **L1**, $\text{HP}(\text{OCH}_2\text{CMe}_2\text{NH})_2$ **L2**, $\text{HP}(\text{OCMe}_2\text{CMe}_2\text{O})_2$ **L3**, $\text{HP}(\text{OC}_6\text{H}_4\text{NH})_2$ **L4**, and unsymmetrical phosphorus ligands: $\text{HP}(\text{OCMe}_2\text{CMe}_2\text{O})(\text{OCH}_2\text{CMe}_2\text{NH})$ **L5**, $\text{HP}(\text{OCMe}_2\text{CMe}_2\text{O})(\text{OC}_6\text{H}_4\text{NH})$ **L6** were found to coordinate to rhodium precursor $[\text{Rh}(\text{CO})_2\text{Cl}]_2$ exclusively in protonated $\kappa^2\text{-P,E}$ ($\text{E} = \text{N, O}$) bidentate fashion, yielding complexes $[\text{Rh}(\text{CO})\text{ClL}]$ **1–6**. The complexes were characterised by spectroscopic methods. The molecular structures of the ligand **L6** complexes **3**, **5** and **6** were determined by single-crystal X-ray diffraction. The catalytic activity of the complexes was determined in hydroformylation reaction of 1-hexene. Complexes **1** and **2** appeared to be active in isomerisation reactions yielding 76 and 62% of 2-hexene. When used with six-fold excess of triphenylphosphite $\text{P}(\text{OPh})_3$ as a modified ligand, the most active catalyst **1** in hydroformylation reaction produced 66% of aldehydes and 22% of 2-hexene.

Słowa kluczowe

H-spirophosphorane ligands, Phosphorus ligands, Rhodium complexes, Hydroformylation reactions, Catalysis, X-ray structure

Adres publiczny

<http://dx.doi.org/10.1016/j.jorganchem.2013.06.020>

Strona internetowa wydawcy

<http://www.elsevier.com>