

Accepted Manuscript

Reactivity of Iron Complexes containing Monodentate Aminophosphine Ligands -
Formation of Four-Membered Carboxamido-Phospha-Metallacycles

§ zgí r § ztopcu, Berthold StÇger, Kurt Mereiter, Karl A. Kirchner



PII: S0022-328X(13)00212-X

DOI: [10.1016/j.jorganchem.2013.03.027](https://doi.org/10.1016/j.jorganchem.2013.03.027)

Reference: JOM 17937

To appear in: *Journal of Organometallic Chemistry*

Received Date: 12 February 2013

Revised Date: 13 March 2013

Accepted Date: 14 March 2013

Please cite this article as: § . § ztopcu, B. StÇger, K. Mereiter, K.A. Kirchner, Reactivity of Iron Complexes containing Monodentate Aminophosphine Ligands - Formation of Four-Membered Carboxamido-Phospha-Metallacycles, *Journal of Organometallic Chemistry* (2013), doi: 10.1016/j.jorganchem.2013.03.027.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Reactivity of Iron Complexes containing Monodentate Aminophosphine Ligands - Formation of Four-Membered Carboxamido-Phospha-Metallacycles

Özgür Öztöpcü,^a Berthold Stöger,^b Kurt Mereiter,^b Karl A. Kirchner^{a*}

^a Institute of Applied Synthetic Chemistry, Vienna University of Technology, Getreidemarkt 9, A-1060 Vienna, AUSTRIA

^b Institute of Chemical Technologies and Analytics, Vienna University of Technology, Getreidemarkt 9, A-1060 Vienna, AUSTRIA

Abstract

Treatment of $[\text{FeCp}(\text{CO})_2\text{Cl}]$ with 1 equiv of the amidophosphine ligands $\text{Li}[\text{R}_2\text{PNR}']$ ($\text{R} = \text{Ph}, i\text{Pr}, \text{R}' = i\text{Pr}, t\text{Bu}, \text{Cy}$) afforded complexes of the type $[\text{FeCp}(\text{CO})(\kappa^2(\text{C},\text{P})-(\text{C}=\text{O})-\text{N}i\text{Pr}-\text{PPh}_2)]$ (**1a**), $[\text{FeCp}(\text{CO})(\kappa^2(\text{C},\text{P})-(\text{C}=\text{O})-\text{N}t\text{Bu}-\text{PPh}_2)]$ (**1b**), and $[\text{FeCp}(\text{CO})(\kappa^2(\text{C},\text{P})-(\text{C}=\text{O})-\text{NCy}-\text{P}i\text{Pr}_2)]$ (**1c**) in 40-50% yields. Complex **1a** was also formed when $[\text{FeCp}(\text{CO})_2(\text{PPh}_2\text{NH}i\text{Pr})]^+$ (**2**) was reacted with 1 equiv of $\text{KO}t\text{Bu}$. These complexes feature a four-membered carboxamido-phospha-ferracycle as a result of an intramolecular nucleophilic attack of the amidophosphine ligand on coordinated CO. Upon treatment of **1a** with the electrophile $[\text{Me}_3\text{O}]\text{BF}_4$ the aminocarbene complex $[\text{FeCp}(\text{CO})(\kappa^2(\text{C},\text{P})=\text{C}(\text{OMe})-\text{N}i\text{Pr}-\text{PPh}_2)]^+$ (**3**) was obtained bearing an aza-phospha-carbene moiety. Upon treatment of *cis,trans,cis*- $[\text{Fe}(\text{CO})_2(\text{Ph}_2\text{PNH}i\text{Pr})_2(\text{Br})_2]$ (**4a**) and *cis,trans,cis*- $[\text{Fe}(\text{CO})_2(\text{Ph}_2\text{PNH}t\text{Bu})_2(\text{Br})_2]$ (**4b**) with $\text{KO}t\text{Bu}$ the carboxamido-phospha-ferracycles *trans*- $[\text{Fe}(\text{CO})_2(\kappa^2(\text{C},\text{P})-(\text{C}=\text{O})-\text{N}i\text{Pr}-\text{PPh}_2)(\text{Ph}_2\text{PNH}i\text{Pr})\text{Br}]$ (**5a**) and *trans*- $[\text{Fe}(\text{CO})_2(\kappa^2(\text{C},\text{P})-(\text{C}=\text{O})-\text{N}t\text{Bu}-\text{PPh}_2)(\text{Ph}_2\text{PNH}t\text{Bu})\text{Br}]$ (**5b**) were formed in moderate yield. Finally, representative structures were determined by X-ray crystallography.

Keywords: Iron, cyclopentadienyl, carbon monoxide, aminophosphines, nucleophilic attack, ferracycles

* Corresponding author. Tel.: +43 1 58801 163611; Fax.: +43 1 58801 16399;

E-mail: kkirch@mail.tuwien.ac.at (K. A. Kirchner)

Download English Version:

<https://daneshyari.com/en/article/7757440>

Download Persian Version:

<https://daneshyari.com/article/7757440>

[Daneshyari.com](https://daneshyari.com)