

Accepted Manuscript

Synthesis, characterization and electrocatalytic H₂ production of diiron complexes containing SeNC donors

Jin-Ping Li, Yao-Cheng Shi



PII: S0022-328X(18)30237-7

DOI: [10.1016/j.jorganchem.2018.04.007](https://doi.org/10.1016/j.jorganchem.2018.04.007)

Reference: JOM 20399

To appear in: *Journal of Organometallic Chemistry*

Received Date: 21 January 2018

Revised Date: 5 April 2018

Accepted Date: 6 April 2018

Please cite this article as: J.-P. Li, Y.-C. Shi, Synthesis, characterization and electrocatalytic H₂ production of diiron complexes containing SeNC donors, *Journal of Organometallic Chemistry* (2018), doi: 10.1016/j.jorganchem.2018.04.007.

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.

Synthesis, Characterization and Electrocatalytic H₂ Production of Diiron Complexes Containing SeNC Donors

Jin-Ping Li, Yao-Cheng Shi*

College of Chemistry and Chemical Engineering, Yangzhou University, Yangzhou 225002, P. R. China

Abstract: The three-component reactions of ArNHC(=Se)OCH₃, Et₃N and Fe₃(CO)₁₂ afford the [Et₃NH]⁺ salt of the (μ-ArN=COCH₃)Fe₂(CO)₆(μ-Se⁻) cluster anion. The Se-centered cluster anion reacts with CH₃I to give two pairs of isomers (μ-k²N,C-ArN=COR)Fe₂(CO)₆(μ-SeCH₃) (**1-e**, **1-a**, Ar = C₆H₅) and (μ-k²N,C-ArN=COR)Fe₂(CO)₆(μ-SeCH₃) (**2-e**, **2-a**, Ar = 4-ClC₆H₄). Furthermore, trapping the Se-centered cluster anion (μ-ArN=COR)Fe₂(CO)₆(μ-Se⁻) with PPh₂Cl offers (μ-k²N,C-ArN=COR)Fe₂(CO)₆(μ-k²Se,P-SePPh₂) (**3**, Ar = C₆H₅, **5**, Ar = 4-ClC₆H₄, R = CH₃; **4**, Ar = C₆H₅, **6**, Ar = 4-ClC₆H₄, R = CH₂Ph). Reactions of **1** with monophosphine L lead to the corresponding substituted complexes (μ-k²N,C-PhN=COCH₃)Fe₂(CO)₅(L)(μ-SeCH₃) (**7-e**, **7-a**, L = PPh₃; **8-e**, L = PPh₂Py). All the new complexes have been completely characterized by elemental analyses, IR, ¹H NMR, ¹³C NMR, and ³¹P NMR spectroscopy and structurally determined by X-ray crystallography. Electrochemical studies reveal that when using HOAc or TFA as a proton source, all of the complexes can catalyze H₂ production.

*To whom correspondence should be addressed. E-mail: ycshi@yzu.edu.cn

Download English Version:

<https://daneshyari.com/en/article/7755949>

Download Persian Version:

<https://daneshyari.com/article/7755949>

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