

This article was downloaded by:

On: 28 January 2011

Access details: *Access Details: Free Access*

Publisher *Taylor & Francis*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713618290>

## Hemilabile Phosphonate-Phoshane Complexes of Rhodium and Iridium - Synthesis and Catalytical Properties

Axel Weigt<sup>a</sup>; Stefan Bischoff<sup>a</sup>

<sup>a</sup> Institut für Angewandte Chemie Berlin-Adlershof, Berlin, Germany

**To cite this Article** Weigt, Axel and Bischoff, Stefan(1996) 'Hemilabile Phosphonate-Phoshane Complexes of Rhodium and Iridium -Synthesis and Catalytical Properties', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 111: 1, 50

**To link to this Article:** DOI: 10.1080/10426509608054679

**URL:** <http://dx.doi.org/10.1080/10426509608054679>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

## HEMILABILE PHOSPHONATE-PHOSPHANE COMPLEXES OF RHODIUM AND IRIUM - SYNTHESIS AND CATALYTICAL PROPERTIES

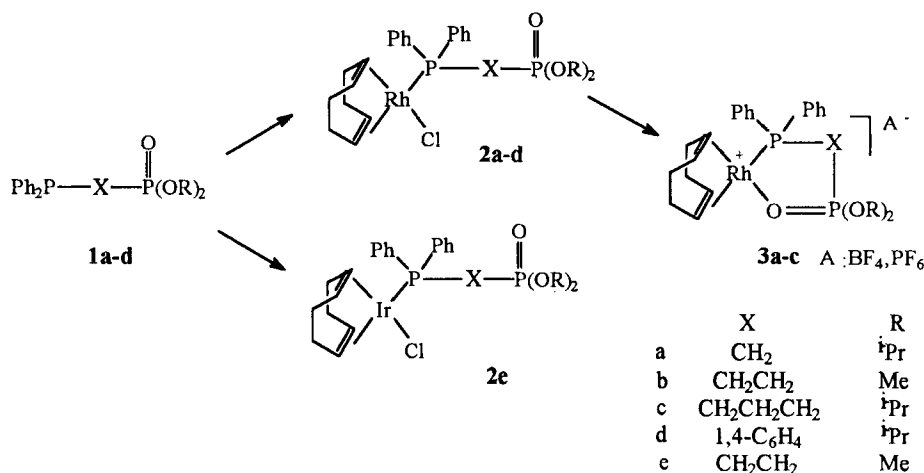
AXEL WEIGT AND STEFAN BISCHOFF

Institut für Angewandte Chemie Berlin-Adlershof, Rudower Chaussee 5, D-12489 Berlin, Germany

New phosphonate-phosphane ligands **1a-d**<sup>1</sup> were converted into the Rh and Ir complexes **2a-d** and **3a-c**. The open-chain Rh complexes **2a-d** are more effective catalysts for liquid-phase MeOH-carbonylation with respect to known bisphosphane and phosphane-monoxide phosphane complexes  $[\text{Rh}(\text{CO})\text{L}_1]_n$ ,  $[\text{Rh}(\text{cod})\text{L}_2]$  ( $\text{L}_1$ :  $\text{Ph}_2\text{P}(\text{CH}_2)_2\text{PPh}_2$ ,  $\text{Ph}_2\text{P}(\text{CH}_2)_3\text{PPh}_2$ ;  $\text{L}_2$ :  $\text{Ph}_2\text{P}(\text{CH}_2)_2\text{PPh}_2$ ).

While attempts of preparing stable complex-catalysts fixed on silica or alumina for slurry and vapour-phase reactions failed, active carbon was found widely superior concerning the leaching problem. Phosphonate-phosphane-Rh complexes **2a-c** are also able to act as hemilabile ligands on supported catalysts, as shown by catalytic measurements and IR-spectroscopic investigations. **2b** formed very stable monocarbonyl-species, which are easily converted into dicarbonyl-species with increasing CO partial pressure.

In case of Ir the phosphonate-phosphane ligands did not enhance the carbonylation activity compared with Rh complexes.



### REFERENCES

1. A. Weigt, S. Bischoff, *Phosphorus, Sulfur, and Silicon*, **102**, 91 (1995)