

This article was downloaded by:

On: 29 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>

### Complexes with a Thioalkyl-Bridged M-P-Bond from Metallo(Alkylthio)Phosphanes

Sandro Amann<sup>a</sup>; Wolfgang Malisch<sup>a</sup>

<sup>a</sup> Institut für Anorganische Chemie der Universität Würzburg, Würzburg, W., Germany

**To cite this Article** Amann, Sandro and Malisch, Wolfgang(1990) 'Complexes with a Thioalkyl-Bridged M-P-Bond from Metallo(Alkylthio)Phosphanes', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 51: 1, 346

**To link to this Article:** DOI: 10.1080/10426509008040875

**URL:** <http://dx.doi.org/10.1080/10426509008040875>

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.

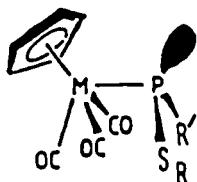
The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any 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.

# COMPLEXES WITH A THIOALKYL-BRIDGED M-P-BOND FROM METALLO(ALKYLTHIO)PHOSPHANES

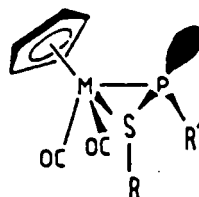
SANDRO AMANN and WOLFGANG MALISCH

Institut für Anorganische Chemie der Universität  
 Würzburg, Am Hubland, D-8700 Würzburg, W.-Germany

Metallation of alkylthio(chloro)phosphanes  $\text{ClP(R')S-R}$  ( $\text{R} = \text{i-Pr}, \text{tBu}; \text{R}' = \text{tBu}, \text{St-Bu}$ ) and  $\text{Cl}_2\text{P-S-tBu}$  with  $\text{Na[M(CO)}_3\text{Cp]}$  ( $\text{M} = \text{Cr}, \text{Mo}, \text{W}$ ) yields the metallo-(alkylthio)chloro-, metallo-bis(alkylthio)-, metallo-(alkylthio)(alkyl)phosphanes (1a-f) or the bis(metallo)(alkylthio)phosphane (1g) respectively.



1	a	b	c	d	e	f	g
R	tBu	tBu	tBu	tBu	tBu	tBu	tBu
R'	Cl	Cl	StBu	StBu	StBu	tBu	$\text{Cp(CO)}_3\text{W}$
M	Mo	W	Cr	Mo	W	W	W



2	a	b	c	d	e	f	g	h
R	tBu	tBu	tBu	tBu	iPr	tBu	tBu	tBu
R'	tBu	StBu	StBu	$\text{Cp(CO)}_3\text{W}$	tBu	tBu	$\text{Cp(CO)}_3\text{Mo}$	$\text{Cp(CO)}_3\text{W}$
M	W	Mo	W	W	Mo	Mo	Mo	Mo

Due to the bulkiness of the P-bonded non metal ligands the metallo-(alkylthio)phosphanes 1d-g can be easily decarbonylated either thermally or via reaction with  $\text{Ni(CO)}_4$  to give the metallacycles 2a-d. 2e,f / 2g,h are obtained directly from  $\text{Na[Mo(CO)}_3\text{Cp]}$  and the chlorophosphines / 1a,b. 2a-h represent a valence tautomer of the originally expected metal to phosphorus double bonded species  $\text{Cp(CO)}_2\text{M=P(R')SR}$ . The proposed structure of 2h is proved by reaction with  $\text{Li-S-iPr}$  yielding 2b. The combination of a thioalkyl ligand with a bulky amino- or phenoxy group preferentially yields the  $\text{M=P}$ -isomer. This fact is demonstrated by the generation of  $\text{Cp(CO)}_2\text{W=P(R)S-iPr}$  from  $\text{Cp(CO)}_2\text{W=P(R)Cl}$  ( $\text{R} = 2.2.6.6$  tetramethylpiperidyl, 2.6. di(tert.butyl)phenoxy) and  $\text{Li-S-iPr}$ .