

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>

## From New Zirconium-Phosphanide to Phosphinidene Complexes

Joachim Aust<sup>a</sup>; Klaus Merz<sup>a</sup>; Hans Pritzkow<sup>a</sup>; Matthias Driess<sup>a</sup>

<sup>a</sup> Chair of Inorganic Chemistry I, University of Bochum., Bochum, Germany

**To cite this Article** Aust, Joachim , Merz, Klaus , Pritzkow, Hans and Driess, Matthias(1999) 'From New Zirconium-Phosphanide to Phosphinidene Complexes', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 147: 1, 13

**To link to this Article:** DOI: 10.1080/10426509908053487

**URL:** <http://dx.doi.org/10.1080/10426509908053487>

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.

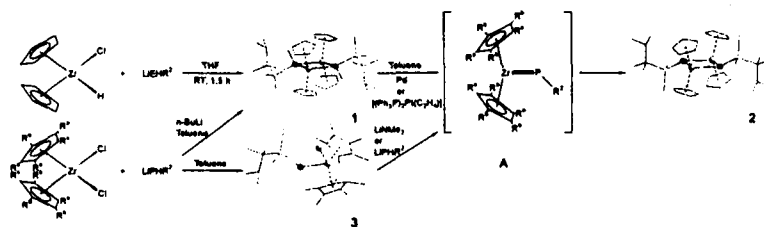
The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any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

## From New Zirconium-Phosphanide to Phosphinidene Complexes

JOACHIM AUST, KLAUS MERZ, HANS PRITZKOW and  
MATTHIAS DRIESS

*Chair of Inorganic Chemistry I, University of Bochum, D-44801 Bochum,  
Germany*

Lithiated primary silylphosphanes and -arsanes react with zirconocene-chloride-hydride to give planar  $Zr(III)_2-E_2$ -ringsystems ( $R = SiMe_2Thex$  (1),  $Si(i-Pr)_3$ ,  $SiF(t-Bu)ls$ ). However, the complexes can also be synthesized by conversion of zirconocene-dichloride with lithiated silylphosphanes. Reductive dehydrogenation of 1 through heating with Pd on activated charcoal or  $[(Ph_3P)_2Pt(C_2H_4)]$  in toluene leads to 2.



The new cycle 2 can be understood as the dimer of the respective Zr-phosphinidene complex A. Indeed, the  $^{31}P$ -NMR resonance signal in benzene at very low field indicates dissociation in solution, giving the Zr-P double bond monomer A. The conversion of decamethylzirconocene-dichloride with lithiated silylphosphane furnishes the compound 3. This Zr(IV)phosphide-chloride also offers access to the terminal phosphinidene A, simply by elimination of HCl through an auxiliary base. Further, compounds of the type A can be prepared directly by the reaction of the corresponding Zr-dichloride with the respective dilithium silylphosphanediides.

### References

- [1] M. Driess, J. Aust, K. Merz, H. Pritzkow, to be published.