

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>

Synthesis and Reactions of Phosphorus Substituted Acetylenes

Shigeru Sasaki^a; Yoshihiro Tanabe^a; Masaaki Yoshifuji^a

^a Department of Chemistry, Graduate School of Science, Tohoku University, Sendai, Japan

To cite this Article Sasaki, Shigeru , Tanabe, Yoshihiro and Yoshifuji, Masaaki(1999) 'Synthesis and Reactions of Phosphorus Substituted Acetylenes', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 147: 1, 371

To link to this Article: DOI: 10.1080/10426509908053665

URL: <http://dx.doi.org/10.1080/10426509908053665>

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.

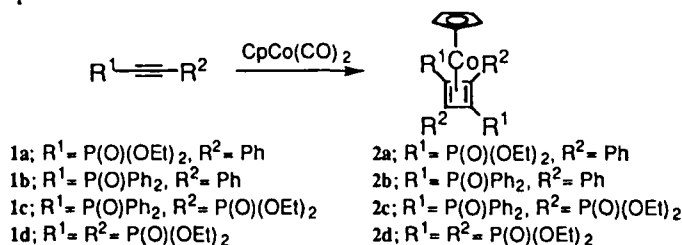
Synthesis and Reactions of Phosphorus Substituted Acetylenes

SHIGERU SASAKI, YOSHIHIRO TANABE and
 MASAOKI YOSHIFUJI

Department of Chemistry, Graduate School of Science, Tohoku University, Aoba,
 Sendai 980-8578, Japan

To construct phosphorus-functional group substituted π -electron systems, synthesis of acetylenes possessing phosphorus substituents and the reactions with CpCo(CO)_2 were investigated.

Acetylenes **1a**, **1b**, and **1c** were prepared from the corresponding alkynyl Grignard reagents and phosphorus chlorides. On the other hand, **1d** was synthesized by the Arbusov-type reaction of triethyl phosphite with dichloroacetylene [1]. Reactions of **1a**, **1b**, and **1d** with CpCo(CO)_2 (0.5–0.8 eq.) in refluxing toluene or xylene afforded cyclobutadiene complexes **2a** (δ_p 20.6), **2b** (δ_p 26.5), and **2d** (δ_p 16), respectively. These complexes were isolated in moderate yields and the structure of **2b** was confirmed by X-ray crystallographic analysis to indicate that the two diphenylphosphoryl groups are substituted in 1 and 3 positions of the cyclobutadiene ring. On the other hand, the reaction of acetylene **1c** under the similar conditions gave a mixture of several products and the corresponding cyclobutadiene complexes could not be isolated probably due to decomposition during chromatographic separation.



References

- [1] E.P. Kyba, S.P. Rines, P.W. Owens, and S.S.P. Chou, *Tetrahedron Lett.*, **22**, 1875 (1981).