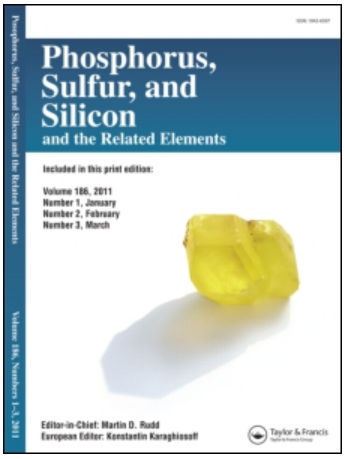


Phosphorus, Sulfur, and Silicon and the Related Elements
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713618290

A New Synthesis of Vinylidene Bis-phosphine Sulfides

Samuel O. Grim[a]; Mudlagiri B. Goli[a]
[a] Department of Chemistry and Biochemistry, University of Maryland, College Park, MD, USA

To cite this Article Grim, Samuel O. and Goli, Mudlagiri B.(1987) 'A New Synthesis of Vinylidene Bis-phosphine Sulfides', Phosphorus, Sulfur, and Silicon and the Related Elements, 30: 3, 772
To link to this Article: DOI: 10.1080/03086648708079264
URL: http://dx.doi.org/10.1080/03086648708079264

A New Synthesis of Vinylidene Bis-phosphine Sulfides

Samuel O. Grim* and Mudlagiri B. Goli

University of Maryland, College Park

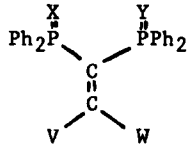
Department of Chemistry and Biochemistry
College Park, MD 20742 USA

1,1-Bis(diphenylphosphino)ethene, **1a**, was originally prepared by Colquhoun and McFarlane[1] by the reaction of lithium diphenylphosphide and vinylidene chloride. Subsequently, Schmidbaur et al.,[2] reported further novel chemistry of **1a** and its derivatives such as **1b** and **1c**.

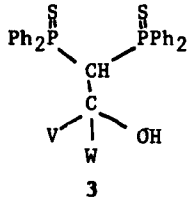
We now report a new synthesis of **1c** as well as some other new compounds described below, including a new type of stabilized enol. We have observed that the reaction of the anion $[Ph_2P(S)CHP(S)Ph_2]^-$, **2**, with formaldehyde produces **1c** in good yield, presumably by the rapid dehydration of the putative intermediate **3a**. In a similar fashion, benzaldehyde produces **1d** from the intermediate **3b**.

The reaction of **2** with methyl formate yields the stable enol **1e**, which presumably arises from the tautomerization of the less stable aldehyde **4a**. Similarly, **2** reacts with benzoyl chloride to produce the enol **1f** from the keto intermediate **4b**.

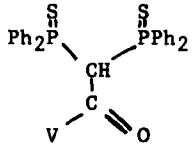
The scope of the reactions of **2** and its analogues with various organic reagents will be discussed. The compounds **1c**, **1d**, **1e** and **1f** have been characterized by infrared, NMR and mass spectra.



1



3



4

1a X=Y=lone pair; V=W=H
1b X=Y=O; V=W=H
1c X=Y=S; V=W=H
1d X=Y=S; V=Ph; W=H
1e X=Y=S; V=OH; W=H
1f X=Y=S; V=OH; W=Ph

3a V=W=H
3b V=Ph; W=H

4a V=H
4b V=Ph

1. I.J. Colquhoun and W. McFarlane, J. Chem. Soc., Dalton Trans. 1982, 1915.

2. H. Schmidbaur, R. Herr, G. Mueller and J. Riede, Organometallics 1985, 4, 1208.