

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>

Reactions of Dimethyl Heteroaroylphosphonates with Trialkyl Phosphite in the Presence of Proton Donors

D. Vaughan Griffiths^a; Jayne E. Harris^a

^a Department of Chemistry, Queen Mary and Westfield College, University of London, London, U. K.

To cite this Article Griffiths, D. Vaughan and Harris, Jayne E. (1999) 'Reactions of Dimethyl Heteroaroylphosphonates with Trialkyl Phosphite in the Presence of Proton Donors', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 147: 1, 99

To link to this Article: DOI: 10.1080/10426509908053530

URL: <http://dx.doi.org/10.1080/10426509908053530>

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.

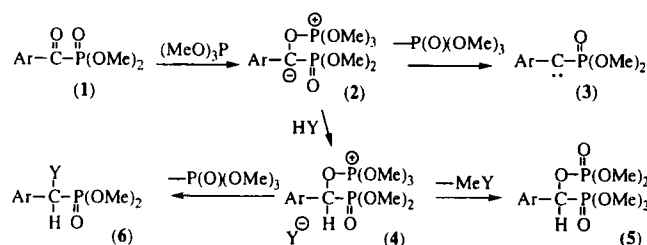
The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any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

Reactions of Dimethyl Heteroaroylphosphonates with Trialkyl Phosphite in the Presence of Proton Donors

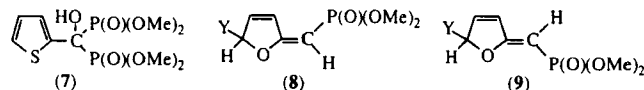
D. VAUGHAN GRIFFITHS and JAYNE E. HARRIS

Department of Chemistry, Queen Mary and Westfield College, University of London, London E1 4NS, U.K.

We have previously shown that substituted benzoylphosphonates (**1**; Ar = X-Ph) react with trimethyl phosphite to give anionic intermediates which in the absence of electrophiles decompose to give carbene intermediates (**3**). The nature of the subsequent reaction products depends on the type and position of the substituents on the aromatic ring.^[1] When proton donors are present the initially formed anionic intermediates (**2**) give the quasi-phosphonium salts (**4**) which usually decompose to give the phosphonate-phosphates (**5**), although for the case of (**1**; Ar = 4-MeOPh) formation of the phosphonates (**6**) was observed.



We have now extended our studies to heteroaroylphosphonates such as (**1**; Ar = furanyl and thienyl) and observe some interesting differences. For example, while the thenoyl system (**1**; Ar = 2-thienyl) gave phosphonates of type (**6**) with methanol and phenol, the bisphosphonate (**7**) was formed in the presence of 4-toluenesulfonic acid. In contrast, formation of phosphonates (**6**) was not observed for the furoyl system (**1**; Ar = 2-furanyl) with methanol or phenol. Instead we observed involvement of the furan ring system and the formation of the isomers (**8**) and (**9**), illustrating the consequences of the reduced aromaticity and increased diene character of the furan ring system.



References

- [1] D.V. Griffiths, J.E. Harris and B.J. Whitehead, *J. Chem. Soc. Perkin Trans. 1*, 2545, (1997) and references therein.