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

Photochemistry of Phosphonium Salts-Photolysis of 9-(Antryl)Methyl Triphenylphosphonium Chloride

T. M. S. Peranovich^a; M. E. R. Marcondes^a; V. G. Toscano^a ^a Universidade de São Paulo, Instituto de Quimica, SP, Brazil

To cite this Article Peranovich, T. M. S., Marcondes, M. E. R. and Toscano, V. G.(1990) 'Photochemistry of Phosphonium Salts-Photolysis of 9-(Antryl)Methyl Triphenylphosphonium Chloride', Phosphorus, Sulfur, and Silicon and the Related Elements, 51: 1, 314

To link to this Article: DOI: 10.1080/10426509008040848 URL: http://dx.doi.org/10.1080/10426509008040848

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.

PHOTOCHEMISTRY OF PHOSPHONIUM SALTS - PHOTOLYSIS OF 9-(ANTRYL)METHYL TRIPHENYLPHOSPHONIUM CHLORIDE

T.M.S.PERANOVICH, M.E.R.MARCONDES, and V.G.TOSCANO Universidade de São Paulo, Instituto de Quimica CEP 01498 - C.P. 20780, SP, Brazil

The photochemistry of phosphonium salts has been the subject of investigations with controversial results. While the photolysis of benzyltriphenylphosphonium (1) and carbetoximethyl triphenylphosphonium (2) salts showed homolysis of methylene phosphorus bond, 2-(pyrenil)methyl triphenylphosphonium salts vield heterolysis of that bond (3) and 1-(naphtyl) methyltriphenylphosphonium salts showed both heterolytic and homolitic cleavage of methylene-phosphorus bond (4). In order to contribute to the understanding of the photochemistry of these compounds, we have studied the photorreactivity of 9-(antryl)methyl triphenylphosphonium chloride. Isopropanol solution of this salt was degassed with argon for thirty minutes and irradiated with a medium pressure mercury lamp (Hanovia, 450w) and a pyrex filter. This photolysis yields around 25% of both triphenylphosphine and the photoproduct from heterolysis isopropyl 9-(antryl)methyl ether. No photoproducts of homolysis were detected. There are two possible ways for heterolysis to occur. It may occur either directly, with formation of the 9-antrylmethyl and triphenylphosphine, or indirectly, via initial homolytic cleavage followed by electron transfer from 9-antrylmethyl radical to the triphenylphosphinium radical cation:

$$ArCH_{2}-P\phi_{3}C1^{-} \xrightarrow{h\nu} ArCH_{2}^{+} + P\phi_{3} \xrightarrow{electron transfer} ArCH_{2}^{+} + P\phi_{3} \xrightarrow{\mu^{+}} ArCH_{2}^{-0}-CH(CH_{3})_{2}$$

It is clear that the effect of the nature of aromatic ring strongly influences the mechanism of the photoprocess. Comparative studies are underway in order to determine the influence of electronic and/or steric effects in that photoprocess.

- Griffin, C.E. and Kaufman, M.L.: Tet.Letters, 773 (1965).
 Nagac, Y.: Shima, K. and Sakurai; H.; Bull.Chem.Soc. Japan 45, 3122 (1972).
- Oliveira, M.E.C.: Pereira, et al.: J.Photoch. 31, 373 (1985).
- (4) Alonso, E.O., Marcondes, M.E.R. and Toscano, V.G.; Phosphorus and Sulfer and the Related Elements, 30, 737 (1987).