

This article was downloaded by:

On: 30 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 Reactivity of New Pentacoordinated Phosphoenolpyruvate Derivatives

Lydie Labaudiniere^a; Yves Leroux^a; Ramon Burgada^a

^a Laboratoire de Chimie des Organo-éléments, tour 44-45 Université P. & M. Curie, Paris Cédex

To cite this Article Labaudiniere, Lydie , Leroux, Yves and Burgada, Ramon(1987) 'Synthesis and Reactivity of New Pentacoordinated Phosphoenolpyruvate Derivatives', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 30: 3, 816

To link to this Article: DOI: 10.1080/03086648708079306

URL: <http://dx.doi.org/10.1080/03086648708079306>

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.

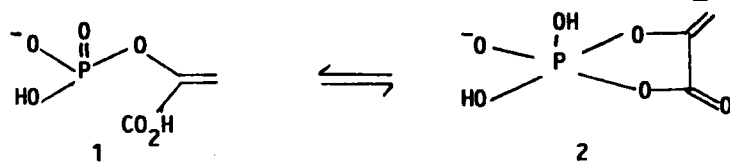
Synthesis and Reactivity of New Pentacoordinated Phosphoenolpyruvate Derivatives

Lydie LABAUDINIERE, Yves LEROUX and Ramon BURGADA*

Laboratoire de Chimie des Organo-éléments, tour 44-45

Université P. & M. Curie, 4 place Jussieu F-75252 PARIS Cédex 05

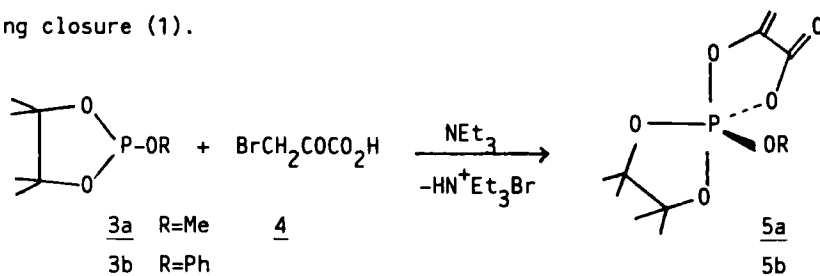
Pentaoxyphosphoranes are closely related as intermediates to the biologically important phosphate ester reactions. Thus, the hydrolysis of phosphoenolpyruvate 1, a strong phosphorylating agent, proceeds most probably via the formation of the cyclic acyloxyphosphorane 2.



To our knowledge, structures of type 2 have not yet been isolated. So, it becomes important to prepare well-defined species bearing such a ring.

This paper describes a quantitative method for the synthesis of pentaoxyphosphoranes 5ab bearing, for the first time, the requested ring.

The method involves the first step of a Perkow reaction followed by a ring closure (1).



The first step happens without any proton transfer process observed with α -ketoacids. Moreover, despite the elimination of Br⁻, no Arbuzov reaction takes place with R=Me, since it is the major reaction with trimethylphosphite. However, the presence of the dioxaphospholane ring in 3 facilitates the ring closure to give the spirophosphoranes 5. The hydrolysis, alcoholysis and aminolysis of 5 under mild conditions are then studied.