

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 Thermal Transformations of 1-Polyfluoro-Alkyl-2-Trialkylsilylethyl Esters of Phosphorus Acids

Leonid S. Zakharov^a; Galina N. Molchanova^a; Tat'yana M. Shcherbina^a; Pavel V. Petrovskii^a; Martin I. Kabachnik^a

^a Nesmeyanov Institute of Organoelement Compounds, Russian Academy of Sciences, Moscow, Russia

To cite this Article Zakharov, Leonid S. , Molchanova, Galina N. , Shcherbina, Tat'yana M. , Petrovskii, Pavel V. and Kabachnik, Martin I.(1999) 'Synthesis and Thermal Transformations of 1-Polyfluoro-Alkyl-2-Trialkylsilylethyl Esters of Phosphorus Acids', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 147: 1, 457

To link to this Article: DOI: 10.1080/10426509908053708

URL: <http://dx.doi.org/10.1080/10426509908053708>

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.

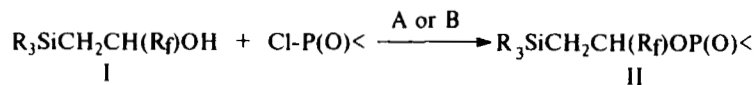
The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any 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 Thermal Transformations of 1-Polyfluoro-Alkyl-2-Trialkylsilylethyl Esters of Phosphorus Acids

LEONID S. ZAKHAROV, GALINA N. MOLCHANOVA, TAT'YANA
 M. SHCHERBINA, PAVEL V. PETROVSKII and MARTIN
 I. KABACHNIK

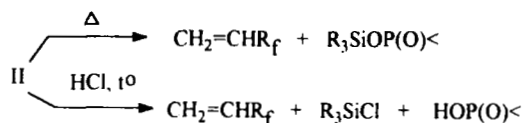
*Nesmeyanov Institute of Organoelement Compounds, Russian Academy of
 Sciences, Moscow, 117813 Russia*

We have studied the phosphorylation of 1-polyfluoroalkyl-2-trialkylsilylethanol
 (I) with phosphorus acids chlorides.



R = alkyl, R_f = polyfluoroalkyl; A = metal salt catalyst, t°; B = R₃N, CH₂Cl₂, 20°

We have considered the possibility to use POCl₃, MePOCl₂, monochlorophosphates and -phosphonates as phosphorylating agents. Reaction conditions, A or B, depend on the structure of the alcohol (I) and the nature of phosphorylating agent. In certain cases, the formation of pyrophosphates (both under conditions A and B) and products of thermal decomposition of phosphonates (II) has been observed (conditions A):



Thermal stability of the esters (II) has been studied and the dependence of their stability on the bulk of the polyfluoroalkyl group and the electron-withdrawing properties of substituents at phosphorus atom has been revealed. The possible mechanism of the thermal decomposition of this type of silicon-containing phosphorus esters is proposed.