

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 of Some Mixed Dialkyl Phosphites and their Use as Forerunners for Potential Chiral Phosphates

Gheorghe Ilia^a; Ludovic Kurunczi^a; Gheorghe Dehelean^a; Smaranda Iliescu^a; Lavinia Macarie^a

^a Romanian Academy, Institute of Chemistry, Timisoara, Romania

To cite this Article Ilia, Gheorghe , Kurunczi, Ludovic , Dehelean, Gheorghe , Iliescu, Smaranda and Macarie, Lavinia(1999) 'Synthesis of Some Mixed Dialkyl Phosphites and their Use as Forerunners for Potential Chiral Phosphates', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 147: 1, 191

To link to this Article: DOI: 10.1080/10426509908053576

URL: <http://dx.doi.org/10.1080/10426509908053576>

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 of Some Mixed Dialkyl Phosphites and their Use as Forerunners for Potential Chiral Phosphates

GHEORGHE ILIA, LUDOVIC KURUNCZI,
 GHEORGHE DEHELEAN, SMARANDA ILIESCU and
 LAVINIA MACARIE

Romanian Academy, Institute of Chemistry, Bv. Mihai Viteazul 24, 1900-Timisoara,
 Romania

Organophosphorus compounds containing a chiral centre at the P atom are of considerable interest from a stereochemical point of view. Accordingly, trialkyl phosphates $(RO)(R_1O)(R_2O)P(O)$ (4) were synthesized starting from dialkyl phosphites. Thus: direct hydrolysis of dialkyl phosphites $(RO)_2P(O)H$ (1) with tetraethylammonium hydroxide (20% aqueous solution), followed by extraction with dichloromethane affords the corresponding tetraethylammonium alkyl hydrogen phosphites (2). Good yields (η) of mixed dialkyl phosphites (3) were obtained on heating stoichiometric amounts of (2) and alkyl iodides in acetonitrile solution at 60°C, for 6 hrs. Mixed dialkyl phosphites (3) were used in synthesis of some trialkyl phosphates (4) by PTC (see scheme).

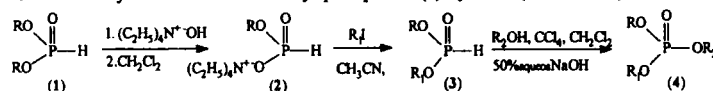


Table 1. Preparation of tetraethylammonium hydrogen phosphites (2), mixed dialkyl phosphites (3) and mixed trialkyl phosphates (4)

Product no.	R	R ₁	R ₂	³¹ P-NMR (δ, ppm)	Yield, %
2.a.	C ₂ H ₅	-	-	-	70
2.b.	<i>n</i> -C ₄ H ₉	-	-	-	90
3.a.	C ₂ H ₅	CH ₃	-	-4,3	49
3.b.	C ₂ H ₅	<i>n</i> -C ₄ H ₉	-	-6,6	73
3.c.	<i>n</i> -C ₄ H ₉	C ₂ H ₅	-	-6,6	68
4.a.	C ₂ H ₅	CH ₃	<i>n</i> -C ₃ H ₇	+0,89	68
4.b.	C ₂ H ₅	<i>n</i> -C ₄ H ₉	<i>n</i> -C ₃ H ₇	+1,00	80
4.c.	<i>n</i> -C ₄ H ₉	C ₂ H ₅	<i>n</i> -C ₃ H ₇	+1,00	65

The synthesised compounds were analysed by IR and ³¹P-NMR spectroscopy.

These syntheses shown:

- a new facile route for synthesis of mixed dialkyl phosphites;
- synthesis of mixed trialkyl phosphates, with three different radicals, by phase transfer catalysis;
- new possibilities for synthesis of chiral phosphorus compounds.