

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>

The Reaction of 1,2-Dithiole-3-thiones with Trivalent Phosphorus Compounds: Stereochemical and Spectroscopic Studies

Józef Drabowicz^a; Jerzy Łuczak^a; Marian Mikołajczyk^a; Carl Th. Pedersen^b

^a Polish Academy of Sciences, Poland ^b Odense University, Denmark

Online publication date: 27 October 2010

To cite this Article Drabowicz, Józef, Łuczak, Jerzy, Mikołajczyk, Marian and Pedersen, Carl Th. (2002) 'The Reaction of 1,2-Dithiole-3-thiones with Trivalent Phosphorus Compounds: Stereochemical and Spectroscopic Studies', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 177: 8, 2027 – 2028

To link to this Article: DOI: 10.1080/10426500213323

URL: <http://dx.doi.org/10.1080/10426500213323>

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.

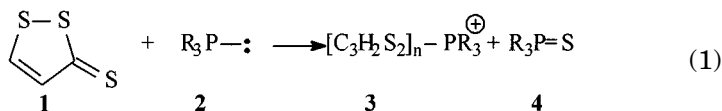
THE REACTION OF 1,2-DITHIOLE-3-THIONES WITH TRIVALENT PHOSPHORUS COMPOUNDS: STEREOCHEMICAL AND SPECTROSCOPIC STUDIES

Józef Drabowicz,^a Jerzy Luczak,^a Marian Mikołajczyk,^a
 Carl Th. Pedersen^b

Polish Academy of Sciences, Poland^a and Odense University,
 Denmark^b

(Received July 29, 2001; accepted December 25, 2001)

Pedersen¹ has reported that the reaction of 1,2-dithiole-3-thione **1** with trivalent organophosphorus compounds **2** afforded (beside the $[\text{C}_3\text{H}_2\text{S}_2]_n$ polymer terminated by an R_3P substituent **3**) almost quantitative yield of the corresponding $\text{R}_3\text{P}=\text{S}$ derivatives **4** (Eq. 1). This observation suggests a possibility of the use of the thione **1** as a sulfurating agent for trivalent organophosphorus compounds.



In order to determine the scope and limitation of this potentially new thionation procedure we carried out model stereochemical and spectroscopic studies using optically active methylphenyl-*n*-propylphosphine **5** and secondary *t*-butylphenylphosphine oxide **6** and a few achiral tri-coordinated organophosphorus compounds.

We found that the reaction of the thione **1** with trialkyl phosphites is rapid and very clean giving the corresponding thionophosphate in almost quantitative yield (³¹P-NMR assay). On the other hand triphenyl phosphite gave a complex mixture of phosphorus-containing products. Thionation of the dextrarotatory phosphine **5** using the thione **1** gave the corresponding, dextrarotatory phosphine sulfide with stereoselectivity close to 70%; traces of the corresponding oxide were detected

Address correspondence to Józef Drabowicz, Centre of Molecular and Macromolecular Studies, Polish Academy of Sciences, Sienkiewicza 112, 90-363 Łódź, Poland. E-mail: draj@bilbo.cbmm.lodz.pl

in the crude reaction products. The reaction between the levorotatory phosphine oxide **6** and the thione **1** gave the dextrarotatory enantiomer of t-butylphenylphosphinothioic acid with selectivity equal to 96.7%.

REFERENCE

- [1] C. Th. Pedersen, *Sulfur Letters*, **20**, 179 (1997).