

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>

t-Butyl Alcohol-Assisted Fission of the P-P Bonds in Red Phosphorus with Lithium in Liquid Ammonia

Lambert Brandsma^a; Nina Gusarova^b; Svetlana Arbuzova^b; Boris Trofimov^b

^a Utrecht University, Utrecht, The Netherlands ^b The Netherlands Institute of Organic Chemistry, Siberian Branch, Russian Academy of Sciences, Irkutsk, Russia

To cite this Article Brandsma, Lambert , Gusarova, Nina , Arbuzova, Svetlana and Trofimov, Boris(1996) '*t*-Butyl Alcohol-Assisted Fission of the P-P Bonds in Red Phosphorus with Lithium in Liquid Ammonia', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 111: 1, 175

To link to this Article: DOI: 10.1080/10426509608054804

URL: <http://dx.doi.org/10.1080/10426509608054804>

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.

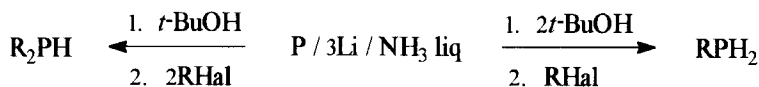
***t*-BUTYL ALCOHOL-ASSISTED FISSION OF THE P-P BONDS IN RED PHOSPHORUS WITH LITHIUM IN LIQUID AMMONIA**

LAMBERT BRANDSMA*, NINA GUSAROVA, SVETLANA
 ARBUZOVA, BORIS TROFIMOV

*Utrecht University, Padualaan 8, 3584 CH Utrecht, The Netherlands
 Institute of Organic Chemistry, Siberian Branch, Russian Academy of
 Sciences, 1, Favorsky Street, 664033 Irkutsk, Russia

Abstract A new method of the selective generation of mono- or diphosphide
 anions from red phosphorus by the system Li/NH₃ liq in the presence of *t*-BuOH
 has been developed.

The addition of one or two equivalent of *t*-butyl alcohol which is a mild proton
 donor to a mixture of red phosphorus, lithium and liquid ammonia drastically assists the
 fission of P-P bonds in the phosphorus molecule. As a result of subsequent alkylation
 the primary or secondary phosphines have been prepared in 65-85% yield [1, 2].



R = *n*-alkyl, PhCH₂, cycloalkyl; Hal = Cl, Br

Acknowledgement: The financial support of the Shell (Amsterdam) is gratefully
 acknowledged.

REFERENCES

1. L. Brandsma, J. A. van Doorn, R.-J. de Lang, N. K. Gusarova, B. A. Trofimov,
Mendeleev Commun., **1995**, 4.
2. S. N. Arbuzova, L. Brandsma, N. K. Gusarova, B. A. Trofimov, *Recl. Trav. Chim.
 Pays-Bas*, **113**, 575 (1994).