

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>

Highly Diastereoselective Synthesis of Anomeric β -O-Glycopyranosyl $\sigma^3\lambda^3$ -and $\sigma^4\lambda^5$ -Phosphorus Compounds

Ion Neda^a; Reinhard Schmutzler^a; Ulf Niemeyer^b; Bernhard Kutscher^b; Jürgen Engel^b

^a Institut für Anorganische und Analytische Chemie der Technischen Universität, Braunschweig, Germany ^b ASTA Medica AG, Frankfurt, Germany

To cite this Article Neda, Ion , Schmutzler, Reinhard , Niemeyer, Ulf , Kutscher, Bernhard and Engel, Jürgen(1999) 'Highly Diastereoselective Synthesis of Anomeric β -O-Glycopyranosyl $\sigma^3\lambda^3$ -and $\sigma^4\lambda^5$ -Phosphorus Compounds', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 147: 1, 279

To link to this Article: DOI: 10.1080/10426509908053620

URL: <http://dx.doi.org/10.1080/10426509908053620>

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.

Highly Diastereoselective Synthesis of Anomeric β -O-Glycopyranosyl $\sigma^3\lambda^3$ - and $\sigma^4\lambda^5$ -Phosphorus Compounds

ION NEDA^a, REINHARD SCHMUTZLER^a, ULF NIEMEYER^b,
 BERNHARD KUTSCHER^b and JÜRGEN ENGEL^b

^aInstitut für Anorganische und Analytische Chemie der Technischen Universität,
 Postfach 3329, D-38023 Braunschweig, Germany and ^bASTA Medica AG,
 Weismüllerstr. 45, D-60314 Frankfurt, Germany

A new method for the highly stereoselective synthesis of β -O- $\sigma^3\lambda^3$ and $\sigma^4\lambda^5$ phosphorus-substituted 2,3,4,6-tetrabenzylglucose is presented. The β -diastereoselective synthesis of the carbohydrates containing $\sigma^3\lambda^3$ and $\sigma^4\lambda^5$ phosphorus groups could be accomplished via two main synthetic routes. The first involves the addition of the $\sigma^3\lambda^3$ -phosphorus derivative 3 to the 2,3,4,6-tetrabenzylglucose derivative 1 ($\alpha:\beta = 1:1$) in toluene and triethylamine as a catalyst to provide the $\sigma^3\lambda^3$ phosphorus derivative 4 with practically 100% β -diastereoselectivity.

The second route involves the β -stereoselective formation of the $\sigma^3\lambda^3$ - and $\sigma^4\lambda^5$ -phosphorus-fluorine derivatives 7 and 8 by the reaction of the β -trimethylsilyl-glycoside 2 with $\text{ClP}(\text{F})_2$ or $\text{P}(\text{O})(\text{F})_3$ in the presence of PF_5 with loss of Me_3SiCl or Me_3SiF . The reaction of 2 with $\text{P}(\text{O})(\text{F})_3$ in the absence of PF_5 did not lead to the expected product 8. The use of 4, 7, 8 and other bis(2-chloroethyl)amino-substituted derivatives of phosphorus-containing carbohydrates as glycosyl donors in the glycosylation reaction is discussed.

