

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>

### Regioselective Substitutions of Unsymmetrical 1,2-Diols using Dioxaphospholanes: Applications to Carbohydrates

Laura Scarola<sup>a</sup>; Slayton A. Evans Jr.<sup>a</sup>

<sup>a</sup> Department of Chemistry, University of North Carolina, Chapel Hill, NC

**To cite this Article** Scarola, Laura and Evans Jr., Slayton A.(1999) 'Regioselective Substitutions of Unsymmetrical 1,2-Diols using Dioxaphospholanes: Applications to Carbohydrates', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 147: 1, 361

**To link to this Article:** DOI: 10.1080/10426509908053660

**URL:** <http://dx.doi.org/10.1080/10426509908053660>

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.

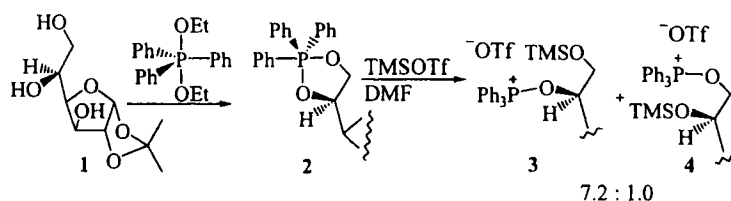
The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any 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.

## Regioselective Substitutions of Unsymmetrical 1,2-Diols using Dioxaphospholanes: Applications to Carbohydrates

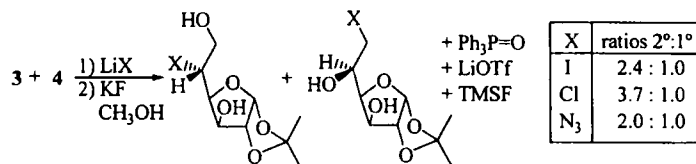
LAURA SCAROLA and SLAYTON A. EVANS, Jr.

Department of Chemistry, University of North Carolina, Chapel Hill,  
 NC 27599-3290

For several years, the method employing 1,3,2λ<sup>5</sup>-dioxaphospholanes to effect regioselective substitution of unsymmetrical 1,2-diols has been investigated.<sup>[1]</sup> As carbohydrates are an abundant source of diols, this study has been extended to the use of 1,2-*O*-isopropylidene-D-glucufuranose **1**. We have synthesized a single dioxaphospholane **2** and subsequently treated it with trimethylsilyltriflate to form oxyphosphonium ions **3** and **4**.



Ions **3** and **4** were then treated with nucleophiles to substitute at the primary or secondary position. Subsequent desilylation was performed by treatment with potassium fluoride.



Although a majority of secondary product was observed, the drop in regioselectivity from ions **3** and **4** to products was attributed to blocking of the secondary substitution site by the free hydroxyl group. Further studies focus on the role of this hydroxyl group.

### References

- [1] (a) A.M. Pautard and S.A. Evans, Jr. *J. Org. Chem.*, **53**, 2300 (1988). (b) I. Mathieu-Pelta and S.A. Evans, Jr. *J. Org. Chem.*, **57**, 3409 (1992).