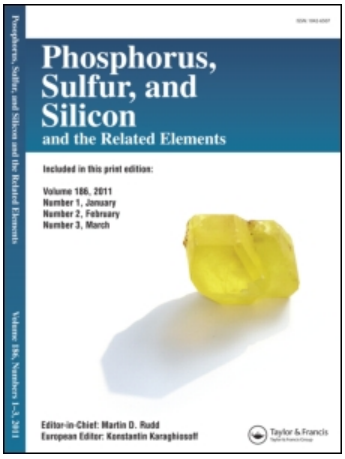


Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713618290

Highly Diastereoselective Deuteration of 2-*p*-Tolylsulfinyl Ethylbenzene at Benzylic Position

José L. García Ruano[a]; M. Teresa Aranda[a]
[a] Departamento de Química Orgánica,, Universidad Autónoma de Madrid, Madrid, Spain

To cite this Article Ruano, José L. García and Aranda, M. Teresa(2005) 'Highly Diastereoselective Deuteration of 2-*p*-Tolylsulfinyl Ethylbenzene at Benzylic Position', Phosphorus, Sulfur, and Silicon and the Related Elements, 180: 5, 1439 — 1440

To link to this Article: DOI: 10.1080/10426500590912989

URL: http://dx.doi.org/10.1080/10426500590912989

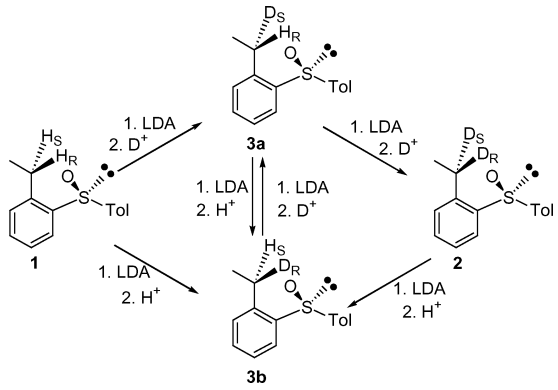
Phosphorus, Sulfur, and Silicon, 180:1439–1440, 2005

ISSN: 1042-6507 print / 1563-5325 online
DOI: 10.1080/10426500590912989

Highly Diastereoselective Deuteration of 2-*p*-Tolylsulfinyl Ethylbenzene at Benzylic Position

José L. García Ruano
M. Teresa Aranda
Departamento de Química Orgánica, Universidad Autónoma de Madrid, Madrid, Spain

The sulfinyl group has shown high efficiency for controlling the stereoselectivity in the reactions of the benzylic anion derived from 2-*p*-tolylsulfinyl ethylbenzene **1** with different electrophiles.[1] In this communication we describe the stereochemical behavior of benzylic anion under deuteration conditions, as well as the synthesis of the two possible monodeuteratated diastereoisomers.

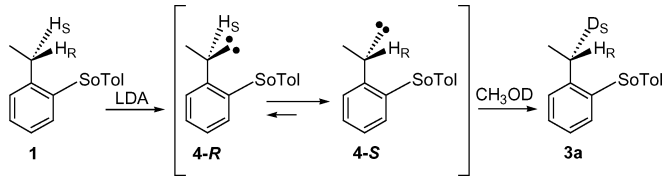


Sulfoxide **1** was deprotonated with lithium diisopropylamide (LDA) and reacted with CH_3OD to afford **3a** as the only monodeuterated isomer. Monoprotonation of compound **2** under similar conditions produces isomer**3b** instead. Monoprotonation of **3a** exclusively yields **3b** and monodeuteration of **3b** only affords **3a**. In contrast, reaction of **3a** with

Received July 9, 2004; accepted October 5, 2004.
We thank CICYT (Grant BQU2003-04012) for financial support.
Address correspondence to M. Teresa Aranda, Departamento de Química Orgánica, Universidad Autónoma de Madrid, Cantoblanco, 28049 Madrid, Spain. E-mail: mayte.aranda@uam.es

LDA and CH_3OD gives **2** whereas **3b** yields **1** upon reaction with LDA and CH_3OH.

The deprotonation is highly diastereoselective but the resulting carbanions are configurationally unstable and they invert their configuration immediately before reacting with the electrophile.



This inversion was demonstrated by Sn-Li exchange experiments because of the transmetallation and deuteration (or protonation) processes with retention of configuration.[2]

REFERENCES

[1] a) J. L. García Ruano, M. C. Carreño, M. A. Toledo, J. M. Aguirre, M. T. Aranda, and J. Fischer, *Angew. Chem., Int. Ed. Engl.*, **39,** 2736 (2000); b) J. L. García Ruano, J. Alemán, and J. F. Soriano, *Org. Lett.*, **5,** 4513 (2003).

[2] F. Hammerschmidt, A. Hanninger, and H. Völlenkle, *Chem. Eur. J.*, **3,** 1728 (1997).