

## Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:  
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### Diastereomerically Pure Spirocyclic Bis-Sulfinyl Oxiranes and their Application to the Asymmetric Synthesis of $\alpha$ -Amino Amides

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Published online: 17 Mar 2008.

To cite this article: Varinder K. Aggarwal , Juliet K. Barrell , Julia M. Worrall & Rikki Alexander (1999) Diastereomerically Pure Spirocyclic Bis-Sulfinyl Oxiranes and their Application to the Asymmetric Synthesis of  $\alpha$ -Amino Amides, Phosphorus, Sulfur, and Silicon and the Related Elements, 153:1, 337-338, DOI: [10.1080/10426509908546459](https://doi.org/10.1080/10426509908546459)

To link to this article: <http://dx.doi.org/10.1080/10426509908546459>

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## Diastereomerically Pure Spirocyclic Bis-Sulfinyl Oxiranes and their Application to the Asymmetric Synthesis of $\alpha$ -Amino Amides

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Optically pure spirocyclic bis-sulfinyl oxiranes **4** have been prepared and converted in a single step into  $\alpha$ -amino amides.

**Keywords:** Asymmetric oxidation; sulfinyl oxiranes; amino acids

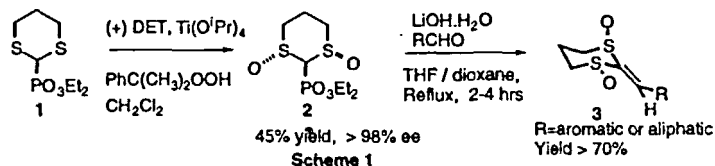
### INTRODUCTION

Stereospecific transformation of a general chiral precursor can provide a route into a wide range of  $\alpha$ -heterosubstituted carbonyl compounds. Herein we present our results using spirocyclic epoxides **4**.

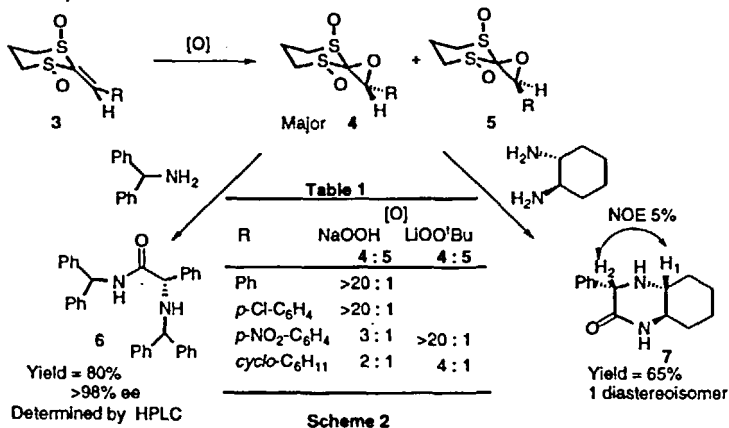
### RESULTS AND DISCUSSION

Spirocyclic epoxides **4** in diastereomerically pure form are versatile precursors to a range of  $\alpha$ -heterosubstituted carbonyl compounds. Synthesis of these molecules was envisaged by diastereoselective epoxidation of optically pure ketene thioacetals **3**. Asymmetric oxidation of **1**<sup>[1]</sup> using Modena oxidation conditions<sup>[2]</sup> yielded the required *trans*-

dioxide **2** in excellent enantiomeric excess. Wadsworth-Emmons reaction of **2** with a variety of aldehydes gave good yields of the ketene thioacetals **3**, (Scheme 1).



Epoxidation of the aromatic ketene thioacetals **3** using the nucleophilic oxidising agents<sup>[3]</sup> yielded essentially one diastereoisomer **4** (Scheme 2, Table 1).



Ring opening of the epoxide (R=Ph) using benzhydrylamine and (1*R*, 2*R*)-1,2-diaminocyclohexane yielded the amino amides **6** and **7** with complete control over the new stereocentre generated, Scheme 2.

#### Acknowledgements:

We would like to thank Celltech Therapeutics Ltd and Sheffield University for financial support.

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