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Preface

Oxiranyl and aziridinyl anions as reactive intermediates in synthetic organic chemistry

In the broad fields of theoretical, synthetic organic, bio-organic and medicinal chemistry, small heterocyclic rings constitute systems of central importance. Small ring heterocycles such as oxiranes and aziridines are very useful and interesting systems as they occur frequently in a number of natural and biologically active substances and as they are useful building blocks and versatile synthetic intermediates. Therefore, the development of efficient and stereoselective methods for elaboration of epoxides and aziridines is an inviting ongoing challenge. Very often, stereogenic centers within such strained heterocycles can be used to direct the stereochemical outcome of subsequent transformations. In addition, the reactions of these strained molecules have led to a wealth of new synthetic chemistry.

Reactions of epoxides and aziridines, such as nucleophilic ring openings and acid- and base-induced isomerizations have been amply studied. In contrast, the reactions of epoxides and aziridines as nucleophiles, via oxiranyl and aziridinyl anions, have been much less investigated, even though such reactions can provide a very direct way to assemble substituted epoxides and aziridines.

First studied in the 1950s and then in the 1970s metallated (especially lithiated) oxiranes have become a useful synthetic method in the 1990s thanks to the scientific contributions from many research groups including those who have contributed to this Tetrahedron Symposium-in-Print. A number of important target molecules have been prepared by this oxiranyl anion based methodology. All the work produced in this field up to 2002 has been reviewed in three reviews by Satoh, Mori and Hodgson. In contrast to the wide range of studies on the chemistry of oxiranyl anions, very limited work on aziridinyl anions had been carried out up to the middle of the 1990s. Several papers concerned with the generation and synthetic applications of aziridinyl anions have been published thereafter.

The contributed papers in this Symposium-in-Print cover aspects of the chemistry of oxiranyl and aziridinyl anions such as the methods of generation, chemical and configurational stability as well as the stereochemistry of their reactions and synthetic applications for the preparation of important target molecules such as natural products, new amino acids and heterocycles.

I wish to express my sincere and deep appreciation to all the authors and co-authors who contributed such interesting papers. Reading and editing their papers was a pleasure and particularly stimulating for future developments of our research activity. I thank all the reviewers who helped so much in the refereeing work. I wish also to thank Professors Richard Taylor and Harry Wasserman for the invitation to edit this special issue and for their helpful suggestions throughout the process of bringing it to publication. Finally, I hope that the readers of this special issue of *Tetrahedron* will enjoy the various articles and be stimulated by possibilities for their own research.

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