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Preface

Strained heterocyclic intermediates in organic synthesis

In the broad fields of theoretical, synthetic organic, bio-organic and medicinal chemistry, small heterocyclic rings constitute systems of central importance. The synthesis of strained heterocycles has provided a challenge, and the emergence of asymmetric approaches has increased the significance of these compounds. Because of the high reactivity of strained heterocycles, they have been employed extensively both as building blocks and as intermediates. Often, asymmetric centers within strained heterocycles can be used to direct the stereochemical outcome of subsequent transformations. In addition, the reactions of strained heterocycles, especially those proximal to other ring systems or to unsaturation, have led to a wealth of new chemistry. In bio-organic or medicinal chemistry, the pronounced reactivity or unusual bond angles inherent in small rings have proved beneficial in, among other things, identifying small molecule–protein interactions, protein tagging, delineating structure activity relationships and identifying/stabilizing secondary or tertiary structure. For these reasons, members of the organic chemistry community have prepared and/or exploited these rings widely and for a variety of purposes.

Although there have been two Symposia-in-Print on β-lactams, a key class of strained heterocyclic compounds, none has been focused on the more general area of strained heterocycles. This Symposium is devoted to 'Strained heterocyclic intermediates in organic synthesis'. Obviously, one issue of a journal cannot incorporate all of the exciting chemistry emanating from research groups active in this area. The contributors to this Symposium highlight the diversity in reactivity of some of the classes of strained heterocycles, with particular focus on oxiranes, oxetanes and aziridines. In addition, the contributors include individuals who range from investigators early in their independent careers, who are demonstrating fascinating, new directions in the chemistry of strained heterocycles, to those who have devoted much of their long and productive careers to exploring such systems.

I would like to express my deep appreciation to each contributor and to the reviewers who helped in completing this Symposium-in-Print. Particular appreciation is also due to Professor Harry Wasserman for his invitation to edit this issue and for his helpful suggestions throughout the process of bringing it to publication. I hope that readers of this special issue will enjoy these articles and be stimulated by possibilities for their own research.

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