

Preface

This volume of *Topics in Heterocyclic Chemistry* is focused on new and innovative metal-catalyzed reactions that effect formation of a carbon–heteroatom bond. The volume is composed of seven chapters, which have been written by a talented group of young scientists who have all made significant contributions to this field.

The first five chapters of this volume are centered on the construction of saturated heterocycles from alkenes bearing appended nitrogen or oxygen nucleophiles. The first chapter, entitled “Synthesis of Saturated Heterocycles via Metal-Catalyzed Alkene Carboamination or Carboalkoxylation Reactions,” which I have written, is focused on reactions of these substrates with various carbon electrophiles. These transformations generate both a carbon–carbon bond and a carbon–heteroatom bond and provide stereocontrolled access to a broad range of heterocycles.

In the second chapter, entitled “Synthesis of Saturated Heterocycles via Metal-Catalyzed Alkene Diamination, Aminoalkoxylation, or Dialkoxylation Reactions,” Chemler and Copeland outline reactions that generate two carbon–heteroatom bonds.

In the third chapter, entitled “Synthesis of Heterocycles via Palladium-Catalyzed Wacker-Type Oxidative Cyclization Reactions of Hydroxy- and Amino-Alkenes,” Zhang and Butt describe the synthesis and highlight the progress that has been made in this field in recent years.

In the fourth chapter, entitled “Synthesis of Saturated Heterocycles via Metal-Catalyzed Hydroamination or Hydroalkoxylation Reactions,” Julian provides a highly comprehensive look and includes a considerable amount of useful information about the mechanism of these transformations.

In the fifth chapter, entitled “Synthesis of Saturated Heterocycles via Metal-Catalyzed Allylic Alkylation Reactions,” Aponick and Ketcham outline recent progress made and illustrate the utility of these transformations for the construction of complex molecules.

The final two chapters in this volume are also largely centered on the reactivity of alkenes and alkynes in heterocycle-forming processes, but focus on different types of substrates as compared to the first five chapters. In the sixth chapter,

entitled “Synthesis of Saturated Heterocycles via Metal-Catalyzed Domino/One-Pot Reactions that Generate a C–N or C–O Bond,” Lautens, Keilitz, and Malik provide an update on recent developments in the synthesis.

In the seventh chapter, entitled “Synthesis of Saturated Heterocycles via Metal-Catalyzed Formal Cycloaddition Reactions that Generate a C–N or C–O Bond,” Waser rounds out the volume with a new look at the synthesis, which nicely illustrates the utility of strained molecules in heterocycle synthesis.

I would like to thank all of the contributing authors for providing interesting and insightful chapters, and I also appreciate the hard work of the staff at Springer (especially Anette Lindqvist and Tanja Jaeger). Finally, I am particularly grateful to series editor Bert Maes for the opportunity to organize this volume.

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that Generate One or More Carbon-Heteroatom Bonds

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