

Preface

The importance of heterocyclic chemistry is unquestioned in the chemical community. Heterocycles appear in compounds such as blockbuster drugs, organic materials, agrochemicals, or natural products. Amongst the vast variety of heterocycles it is generally acknowledged that nitrogen containing heterocycles are privileged scaffolds. Hence, their chemistry is a field of intense research in various aspects such as formation, application, and decoration. In the context of the latter subject, metalation reactions play an important role since they allow the introduction of various electrophiles and control of the regiochemistry depending on the base applied or directing groups present. Specifically, this volume is dedicated to the metalation of azines and diazines covering mainly research from the past 5–10 years.

We decided to cover only reactions using stoichiometric amounts of metal reagents since a separate volume on catalytic transformations is currently under preparation. Regarding the metal reagents, naturally lithiations and magnesiations play a prominent role, but it was our intention to cover also the new developments such as the use of ate-bases. Regarding the arrangement of chapters, we decided to make separate chapters according to the type of heterocycle. In case of pyridine and pyrimidine, we additionally divided the material according to the metal bases used, otherwise the chapters would have been too elaborate. So the content of the chapters is as follows: the first three chapters report on ring systems containing one nitrogen atom. Chapter 1 covers the reactions of pyridines, benzopyridines, and azapyridines with organolithiums and organomagnesiums. In this chapter also fundamental reaction pathways are outlined. In Chapter 2 the benzofused compounds quinolones and isoquinolines are treated, again their lithiation and magnesiation reactions. Chapter 3 moves on to other metal reagents discussing the metalation reactions of pyridines, quinolines, and isoquinolines with ate-bases and their alkali metal salt-modified congeners.

In the next chapters heterocycles containing two nitrogen atoms are treated. It starts with Chapter 4 where lithiations and Grignard reactions of pyrimidine and quinazoline are treated. Subsequently, Chapter 5 is dedicated to the reactions of the very same ring systems with other metal reagents such as borylation, stannylation,

zincation, or silylation. Chapter 6 covers all kinds of metalation reactions carried out on pyrazine and quinoxaline. The same topic is presented in Chapter 7 but on pyridazine, cinnoline, and phtalazine.

Of course many people have been involved in preparation and I am very grateful to all of them. Most importantly I would like to thank all the authors for doing an excellent job and in my belief making this volume an outstanding one in the series. Additionally, I would like to thank Tanja Jäger and Elizabeth Hawkins from Springer who dealt with many organizational issues which facilitated my work significantly. Finally, I would like to thank my family for their support and patience in the time composing this volume.

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Metalation of Azines and Diazines

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2013, VII, 272 p., Hardcover

ISBN: 978-3-642-35021-4