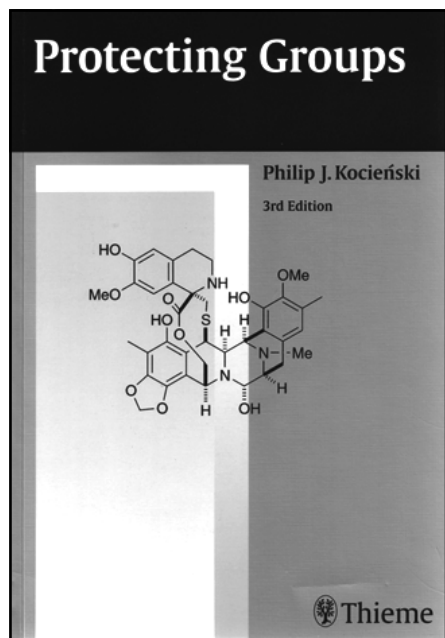


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PROTECTING GROUPS

P.J. Kocienski. *Protecting Groups*. 3rd Edition. Georg Thieme Verlag, Stuttgart, 2005, 668 pp. ISBN 3-13-135603-0



What would one with some experience in organic chemistry expect to find in a 668-page, third edition of a book, entitled *Protecting Groups*? How does one presume it to be organized? These questions become somewhat irrelevant after you have read Philip Kocienski's book because you come to realize that it takes much more than experience in organic synthesis to produce the book Prof. Kocienski did. This very impressive comprehensive monograph is in fact a most amazing compilation of well chosen examples of modern organic chemistry. The book convincingly demonstrates that the skillful selection, introduction and removal of protecting groups is very often the key to successful total synthesis of natural products and their analogues, of which there are many examples in the book. The number of references amounts to more

than 2000 with a priority given to examples from the recent literature.

The book is divided into 8 chapters and an epilogue. The first chapter holds a special place. On the one hand, it prepares the reader for what follows, by explaining the importance and peculiarities of protecting groups, defining the organizing principle of the book – the concept of orthogonal sets, as well as relay protection, temporary protection and mutual protection. On the other hand, you have often to go back to the first chapter in order to better understand what you are reading. Each of the remaining 7 chapters is dedicated to the groups used for the protection of the most common functional groups, respectively: carbonyl, diol, hydroxyl, thiol, carboxyl, phosphate, amino. It is noteworthy that as the author wittily remarks in the preface to the first edition, the focus is “on the most widely used protecting groups for the most common functional

groups used by most organic chemists most of the time". Thus, for instance, from the 350 protecting groups reported for the amino group, only 30 are discussed. All chapters are organized in the same way, which helps a lot to qualify the book as being "user-friendly": deprotection conditions (cleavage), methods of formation, references. The presence of NMR data for most of the protecting groups after they have been introduced into the molecule is very helpful. What I also appreciate very much is that each chapter ends by a list of references to reviews and papers concerning the respective protecting group, with emphasis given to literature covering the period 1990-2001, although the oldest, now classical papers have not been neglected. The number of schemes, which are really beautiful, is 1200, and the blue color introduced, indicating where the action takes place, is particularly important to an easier understanding especially in examples including molecules with more complex structures. I liked very much the table on the inside cover of the book where one can find which protecting groups are suitable for which functional group and where in the book this is discussed. This is very practical if one is in a hurry to quickly choose a protecting group for a particular case. May be this table would have been still more informative if it contained as well the conditions of deprotection, which are in the focus of the book. In this context, may be some charts in which the incompatibility of some common functional groups and their protections is included or charts in which the reactivity of the resulting protected functionalities toward some reagents and reaction conditions such as bases, acids, nucleophiles, temperature, solvents, etc. is summarized, would much facilitate a reader to better organize his/her experiments. All this is discussed in detail in the corresponding chapters, but charts and tables always help.

Another feature of the book that is worth mentioning, is that for many of the examples shown not only are the conditions (reagents, temperature, solvent, yield etc) of the reaction given, but the scale on which a certain reaction is carried out, as well. Finally, the last chapter, entitled "epilogue", of this most instructive and comprehensive book, ends with 25 problems from the recent literature, challenging the curiosity of the ambitious reader and providing him/her with the opportunity to find out for himself how much he/she has learnt about protecting groups and their application.

On the whole P. Kocienski's "Protecting Groups" is not only a thorough description of the tactics and art needed in using protecting groups, but also a work that demonstrates the scope and beauty of contemporary organic synthesis. It is a book which should be on the bench of synthetic chemists, both students and teachers, both at the start and the end of their career and I am certain that despite the fast movement of the field this book will still be useful for many generations of organic chemists to come.

P. J. Kocienski. *Protecting Groups*. 3rd Edition. Georg Thieme Verlag, Stuttgart, 2005, 668 pp. Illustrations (1200), tables, 8 chapters with references (soft-cover) ISBN 3-13-135603-0 [In English]

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A protecting group or protective group is introduced into a molecule by chemical modification of a functional group to obtain chemoselectivity in a subsequent chemical reaction. It plays an important role in multistep organic synthesis. In many preparations of delicate organic compounds, some specific parts of their molecules cannot survive the required reagents or chemical environments. Then, these parts, or groups, must be protected. For example, lithium aluminium hydride is a highly reactive but Protecting groups are a sad fact of synthetic chemistry. They are usually needed, but rarely desired. Many syntheses have stalled because of trouble putting on or removing protecting groups. 4 major classes: silyl ethers, ethers, esters, acetals Silyl Ethers. 4 basic questions to address when choosing a P.G.

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