

Book reviews

Protecting groups

Philip J. Kocienski

Georg Thieme, Stuttgart, 2000

xv + 260 pages. 99 DM (corrected edition)

ISBN 3-13-137002-5 (Stuttgart); 0-86577-993-7 (New York)

As the author quotes from Disraeli in the first chapter of this book, 'Protection is not a principle, but an expedient'. There will always be a need for the synthesis of new organic compounds for evaluation of their biological properties, for use as new materials, or to establish a scientific principle. Although, ideally, any synthesis should proceed in one step and give a 100% yield of the required substance, we have a long way to go to achieve this objective in the synthesis of most organic compounds. In the meantime, in the syntheses of complex, sensitive, multifunctional organic compounds, the use of protecting groups is a necessary strategy to control chemo- and regio-selectivity.

The author surveys the 50 or so most popular protecting groups currently used in organic synthesis. It is not intended to be a comprehensive review, since other books include many more, albeit less well-used, protecting groups. Rather, the emphasis is on those protecting groups that most synthetic organic chemists are likely to need to use on a fairly regular basis. The use of compatible protecting groups for the selective protection of multifunctional organic compounds, so-called orthogonal protection, is emphasized, with the identification, in the first chapter, of 12 orthogonal sets of protecting groups that are cleaved by base, acids, heavy metals, fluoride, reductive elimination using zinc, β -elimination, hydrogenolysis, oxidation, dissolving metal reduction, nucleophilic cleavage, allylic deprotection and by photolysis. The protection of alcohols, diols and carboxyl, carbonyl and amino groups is then discussed. In each chapter, after a brief introduction, protecting groups for each class of compounds are discussed with the emphasis on methods for their removal and introduction, which are illustrated by many examples taken from total syntheses. At the end of each chapter, as well as copious references to the original literature, there are comprehensive lists of recent reviews relevant to the protecting groups being discussed.

The most significant feature of this book is the presentation of protecting groups in the context of sympathetic discussions of natural product synthesis. The author demonstrates his deep understanding of synthetic organic chemistry and his appreciation of the pitfalls that can face anybody involved in the synthesis of complex organic molecules. For these reasons, the book makes a really good, pleasurable read and is full of tips

and helpful insights. As well as being a very useful reference source, this is a book you really could read from cover to cover.

The approach taken is designed to instruct the reader in the use of protecting groups, a didactic approach, and so is essential general reading for any graduate student or postdoctoral researcher with an interest in organic synthesis. It is, however, an invaluable source of reference for all synthetic organic chemists who need to use protecting groups in their research. It is recommended as an essential purchase for any practising synthetic chemist, and clearly must be purchased by all scientific libraries.

The first edition of this book was published in 1994 with literature coverage up to the end of 1992. This corrected edition is essentially the same book, and is not a second edition, but the lists of reviews and references to the secondary literature at the end of each chapter have been updated.

So, to summarize, this is a very enjoyable and informative book on the chemistry of protecting groups. By concentrating on the uses of the 50 or so most widely used protecting groups and their uses in complex natural product synthesis, the author has produced a fine, readable and informative monograph that is warmly recommended to all graduate students and researchers in organic synthesis.

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Metal-organic and organic molecular magnets

P. Day and A. E. Underhill (eds)

Royal Society of Chemistry, Cambridge, 2000

viii + 324 pages. £69.50

ISBN 0-85404-764-6

This is a book for those who already have a basic knowledge of magnetochemistry and the underlying physical principles; it is not for the uninitiated. The