

Preface to the new Edition

The first edition of *Protecting Groups* was published in 1994¹ and it was appreciated by undergraduates, graduate students and researchers alike as a critical and didactic complement to the encyclopaedic coverage provided by Greene and Wuts in their monumental *Protective Groups in Organic Synthesis*. In this new edition I have tried to maintain those elements that were popular in the first: the focus on a relatively small number of commonly used protecting groups, the emphasis on deprotection conditions, and the extensive use of schemes to aid visual retrieval of information. I have also carefully chosen the examples to give a snapshot of organic synthesis for the last decade albeit from the narrow perspective of protecting group chemistry. However, the differences are far more pronounced than the similarities. The book has been reorganised and thoroughly revised and updated. Two new chapters on thiol and phosphate protecting groups have been added and most of the schemes from the first edition have been replaced by more modern examples. The number of schemes has increased from 500 to 1200 and colour has been introduced as an aid to visual retrieval. The number of references has also swollen from 1200 to 2270 with emphasis given to literature covering the period 1990–2001. Finally an epilogue containing 25 problems of varying difficulty has been added for the delectation of the curious.

There is a Russian proverb that says you cannot step twice into the same river. These wise words should temper the expectations of anyone contemplating a new edition of a popular book. What worked well the first time may not be so welcome or apposite the second. It is for the reader to decide if time and the river have been kind.

Acknowledgements

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¹ A corrected edition with an update of the secondary literature appeared in 2000, so that this new edition is formally the 3rd Edition.

Preface to the First Edition

Theodora Greene's landmark book *Protective Groups in Organic Synthesis* (1981) contained over 500 protective groups for 5 common functional groups. By the time the second edition by Greene and Wuts appeared in 1991, the number of protecting groups had expanded by a further 206. The increase reflects several factors including the need to circumvent inherent limitations in the existing repertoire of protecting groups, the more stringent demands of recent complex targets, and the need to adapt protecting groups to new technologies such as solid phase synthesis. However, the comprehensive approach of Greene and Wuts brought an inevitable increase in bulk because of the inclusion of protecting groups that satisfy the esoteric requirements of rather specialised niches of marginal interest to the synthetic community at large. We felt the need for a critical survey of the subject, that focuses on the most widely used protecting groups, for the most common functional groups, used by most organic chemists, most of the time. By these utilitarian criteria, we narrowed the field to about 50 protecting groups which have earned an honoured place in the synthetic repertoire.

Our survey is organised by functional group and special emphasis is placed on *deprotection* conditions applied to complex structures where selectivity is a prime issue. Discussion of each protecting group is divided into three sections beginning with deprotection conditions, followed by methods of formation, and ending with some cursory NMR data to aid the reader in identifying the background clutter contributed by a protecting group. Obviously, the chemical shifts and coupling data can vary significantly from those quoted. At the end of each chapter is a list of reviews which further amplifies topics covered in the individual chapters. An asterisk in the text indicates that a pertinent review can be found at the end of the chapter.

Over 500 schemes are provided to aid visual retrieval. No attempt is made to analyse protecting group issues in any one class of compounds comprehensively or systematically; rather, the illustrations span a wide domain of organic synthesis including alkaloids, terpenoids, polyketides, β -lactams, polyether antibiotics, macrolides, peptides, carbohydrates, glycolipids, glycopeptides, and nucleosides. We give priority to examples gleaned from the recent literature (covered up to the end of 1992) that are amply documented in full papers. Wherever possible, transformations are accompanied by key experimental details such as solvent, temperature, reaction time, stoichiometry, yield, and scale. Transformations in which the scale has been specified have been abstracted from papers providing detailed experimental procedures. A hazard warning has been included for some reagents (e.g. phosgene and haloalkyl ethers) which require special precautions. However, the reader cannot assume

that the absence of a warning for any reagent, solvent, or product implies the need for any less vigilance or care.

I would like to thank the members of my research group who made valuable suggestions for improving the “user friendliness” of the book and for providing spectroscopic information. Dr. Stanislaw Marczak helped separate the wheat from the chaff during the early planning stages; Professor Ekkehard Winterfeldt suggested some examples and Dr. Ian Stevens provided valuable mechanistic information. Dr. Joe Richmond of Georg Thieme Verlag, Dr. Krzysztof Jarowicki, Dr. John Mellor and Dr. Georges Hareau read and corrected the entire manuscript and Sharon Casson kindly checked the references. Special thanks go to Professor Reinhard Hoffmann for providing some fascinating background information to Chapter 7 and Professor Horst Kunz for contributing many valuable insights, corrections, and encouragement.

By way of apology for errors of commission or omission, I would like to offer the following words from the Preface of Samuel Johnson’s Dictionary (London, 1755):

A large work is difficult because it is large, even though all its parts might singly be performed with facility; where there are many things to be done, each must be allowed its share of time and labour, in the proportion only which it bears to the whole; nor can it be expected, that the stones which form the dome of a temple, should be squared and polished like the diamond of a ring.

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