PROTECTIVE GROUPS IN ORGANIC SYNTHESIS

THIRD EDITION

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A WILEY-INTERSCIENCE PUBLICATION
JOHN WILEY & SONS, INC.

rary of Congress Cataloging in Publication Data:

tective groups in organic synthesis. — 3rd ed. / Theodora W.
reene and Peter G.M. Wuts.
p. cm.
Rev. ed. of: Protective groups in organic synthesis. 2nd ed. /
heodora W. Greene and Peter G. M. Wuts. c1991.
Includes index.
ISBN 0-471-16019-9 (cloth)
1. Organic compounds—Synthesis. 2. Protective groups (Chemistry)
. Greene, Theodora W., 1931– . II. Wuts, Peter G. M.
II. Greene, Theodora W., 1931– Protective groups in organic
ynthesis.
QD262. G665 1999
47.2—dc21 98-38182

nted in the United States of America.

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PREFACE TO THE THIRD EDITION

Organic synthesis has not yet matured to the point where protective groups are not needed for the synthesis of natural and unnatural products; thus, the development of new methods for functional group protection and deprotection continues. The new methods added to this edition come from both electronic searches and a manual examination of all the primary journals through the end of 1997. We have found that electronic searches of *Chemical Abstracts* fail to find many new methods that are developed during the course of a synthesis, and issues of selectivity are often not addressed. As with the second edition, we have attempted to highlight unusual and potentially useful examples of selectivity for both protection and deprotection. In some areas the methods listed may seem rather redundant, such as the numerous methods for THP protection and deprotection, but we have included them in an effort to be exhaustive in coverage. For comparison, the first edition of this book contains about 1500 references and 500 protective groups, the second edition introduces an additional 1500 references and 206 new protective groups, and the third edition adds 2349 new citations and 348 new protective groups.

Two new sections on the protection of phosphates and the alkyne-CH are included. All other sections of the book have been expanded, some more than others. The section on the protection of alcohols has increased substantially, reflecting the trend of the nineties to synthesize acetate-and propionate-derived natural products. An effort was made to include many more enzymatic methods of protection and deprotection. Most of these are associated with the protection of alcohols as esters and the protection of carboxylic acids. Here we have not attempted to be exhaustive, but hopefully, a sufficient number of cases are provided that illustrate the true power of this technology, so that the reader will examine some of the excellent monographs and review articles cited in the references. The Reactivity Charts in Chapter 10 are identical to those in the first edition. The chart number appears beside the name of each protective group when it is first introduced. No attempt was made to update these Charts, not only because of the sheer magnitude of the task, but because it is nearly impossible in

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HOAt, 7-aza-1-hydroxybenzotriazole; HATU (CAS Registry No. 148893-10-1), *N*-[(dimethylamino) (3*H*-1,2,3-triazolo(4,5-*b*)pyridin-3-yloxy)methylene]-*N*-methylmethanaminium hexafluorophosphate, previously known as *O*-(7-azabenzotriazol-1-yl)-1,1,3,3-tetramethyluronium hexafluorophosphate. [Note: Assignment of structure to HATU as a guanidinium species rather than as a uronium species, i.e., attachment of the $(Me_2NC{=}NMe_2)^+$ unit to N_3 of 7-azabenzotriazole 1-*N*-oxide instead of to the *O*, is based on X-ray analysis (ref. 33b)].

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