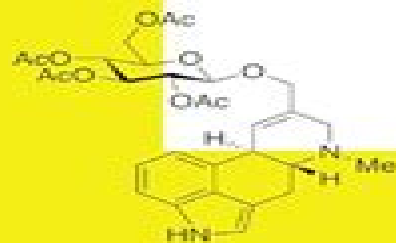


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# Protective Groups In Organic Synthesis

**Francis A. Carey, Richard J. Sundberg**



## Protective Groups In Organic Synthesis:

Protective Groups in Organic Chemistry J. McOmie, 2012-12-06 During the past decade there has been a great increase in the use of protective groups especially in the synthesis of large and complex organic molecules Perhaps the greatest activity has been in the peptide field where such triumphs as the total synthesis of insulin and of bovine ribonuclease molecular weight 13 700 have been achieved Correspondingly more protective groups have been devised for the protection of amino and imino groups than for any other functional group There are many reviews and books on the synthesis of peptides but there has been no general survey of protective groups since my 1 own review in 1963 At that time the five main methods for the removal of protective groups involved acid or base hydrolysis reduction oxidation or thermal elimination reactions Recent advances include the use of photo sensitive and metal ion sensitive protective groups and the attachment of functional groups to reactive polymers as a method of protection during the solid phase synthesis of peptides and polynucleotides Another interesting development is the design and use of protective groups with a built in safety catch which can be released by a specific chemical reaction so that an otherwise stable bond is made labile at the appropriate moment thereby allowing the protective group to be removed under very mild conditions My own interest in protective groups dates from 1944 when as a student I gave two lectures on the subject and produced an 11 page review including 70 references

Protective Groups in Organic Synthesis Theodora W. Greene, Peter G. M. Wuts, 1991-05-16 Contains 206 new groups and 1 500 new references representing full coverage of the literature from 1980 to 1989 In addition two new sections on the protection for indoles imidazoles and pyrroles and protection for the amide NH are included Most of the original material from the first edition has been retained including the indispensable Reactivity Charts *Greene's Protective Groups in Organic Synthesis* Peter G. M. Wuts, Theodora W. Greene, 2012-12-20 The Fourth Edition of Greene's Protective Groups in Organic Synthesis continues to be an indispensable reference for controlling the reactivity of the most common functional groups during a synthetic sequence This new edition incorporates the significant developments in the field since publication of the third edition in 1998 including New protective groups such as the fluorous family and the uniquely removable 2 methoxybenzenesulfonyl group for the protection of amines New techniques for the formation and cleavage of existing protective groups with examples to illustrate each new technique Expanded coverage of the unexpected side reactions that occur with protective groups New chart covering the selective deprotection of silyl ethers 3 100 new references from the professional literature The content is organized around the functional group to be protected and ranges from the simplest to the most complex and highly specialized protective groups **Protecting Groups in Organic Synthesis** James Ralph Hanson, 1999-01-01 Protective Groups in Organic Synthesis Theodora W. Greene, 2007 *Protecting Groups* Philip J. Kocienski, 2005 The didactic presentation of the material makes this book an essential bench top tool not only for specialists in organic chemistry but also for students and all those involved in the preparation of organic molecules Key Features A

critical survey of the most used protecting groups as used by organic chemists Organization based on functional groups hydroxyl diol carbonyl carboxyl amine Special emphasis placed on deprotection conditions applied to complex structures where selectivity is a prime issue Transformations accompanied by key experimental details Examples from the recent literature span a wide domain of organic synthesis Over 500 schemes aid visual retrieval End of chapter list reviews which amplify topics covered Protective Groups in Organic Chemistry John F. W. MacOmie, 1976 *Protecting Groups in Organic Synthesis* James Ralph Hanson, 1999 **Protecting Groups in Organic Synthesis** James R. Hanson, 1999

Greene's Protective Groups in Organic Synthesis, 2009 The Fourth Edition of Greene's Protective Groups in Organic Synthesis continues to be an indispensable reference for controlling the reactivity of the most common functional groups during a synthetic sequence This new edition incorporates the significant developments in the field since publication of the third edition in 1998 including New protective groups such as the fluorous family and the uniquely removable 2-methoxybenzenesulfonyl group for the protection of amines New techniques for the formation and cleavage of existing

**Protective Groups in Organic Synthesis** Theodora W. Greene, Peter G. M. Wuts, 1991-05-16 Contains 206 new groups and 1 500 new references representing full coverage of the literature from 1980 to 1989 In addition two new sections on the protection for indoles imidazoles and pyrroles and protection for the amide NH are included Most of the original material from the first edition has been retained including the indispensable Reactivity Charts **Greene's Protective Groups in Organic Synthesis, 2 Volume Set** Peter G. M. Wuts, 2025-05-13 Integral reliable and comprehensive guidance for chemists performing the complex syntheses required for the formation and cleavage of protective groups Organic synthesis is the preparation and creation of organic compounds for use in natural products pharmaceuticals and other molecules The synthesis of molecules having multiple functional groups often requires the use of protective groups to achieve site selectivity in a chemical reaction within a molecule bearing multiple sites of reactivity Protective groups are installed temporarily to prevent unwanted reactions at a particular site while transforming a different functional group Once they have served their function they are removed to expose the original group Without a thorough understanding of the methods required to install and remove them the design of a synthesis of a molecule having multiple functional groups in most cases is effectively impossible Greene's Protective Groups in Organic Synthesis 6th Edition is the definitive compilation of protective groups their classification and their application in a wide array of situations With a long tradition of comprehensive coverage organized on the basis of the functional group in need of protection and subsequent deprotection it is an essential reference and resource for all chemists involved in organic syntheses Now fully updated to reflect the current state of the art it remains an indispensable resource for generating life changing organic products This edition contains a new chapter on how protective groups effect reactivity and selectivity in carbohydrate chemistry Readers of the sixth edition of Greene's Protective Groups in Organic Synthesis will also find Methodology for planning selectivity in organic syntheses Detailed

discussion of all major functional groups including ethers amides and phenols A discussion of the impact of protective groups on reactivity in carbohydrates Greene's *Protective Groups in Organic Synthesis* is ideal for synthetic organic chemists or medicinal chemists in academia industry pharmaceuticals food agrochemicals and biotech or government agencies *The Organic Chemistry of Sugars* Daniel E. Levy, Peter Fügedi, 2005-09-21 Intrigued as much by its complex nature as by its outsider status in traditional organic chemistry the editors of *The Organic Chemistry of Sugars* compile a groundbreaking resource in carbohydrate chemistry that illustrates the ease at which sugars can be manipulated in a variety of organic reactions Each chapter contains numerous examples demonstrating *Protecting-Group-Free Organic Synthesis* Rodney A. Fernandes, 2018-05-25 Presents a comprehensive account of established protecting group free synthetic routes to molecules of medium to high complexity This book supports synthetic chemists in the design of strategies which avoid or minimize the use of protecting groups so as to come closer to achieving an ideal synthesis and back the global need of practicing green chemistry The only resource of its kind to focus entirely on protecting group free synthesis it is edited by a leading practitioner in the field and features enlightening contributions by top experts and researchers from across the globe The introductory chapter includes a concise review of historical developments and discusses the concepts need for and future prospects of protecting group free synthesis Following this the book presents information on protecting group free synthesis of complex natural products and analogues heterocycles drugs and related pharmaceuticals Later chapters discuss practicing protecting group free synthesis using carbohydrates and of glycosyl derivatives glycol polymers and glyco conjugates The book concludes with a chapter on latent functionality as a tactic toward formal protecting group free synthesis A comprehensive account of established protecting group free PGF synthetic routes to molecules of medium to high complexity Benefits total synthesis methodology development and drug synthesis researchers Supports synthetic chemists in the design of strategies which avoid or minimize the use of protecting groups so as to come closer to achieving an ideal synthesis and support the global need of practicing green chemistry Covers a topic that is gaining importance because it renders syntheses more economical *Protecting Group Free Organic Synthesis Improving Economy and Efficiency* is an important book for academic researchers in synthetic organic chemistry green chemistry medicinal and pharmaceutical chemistry biochemistry and drug discovery **Protective groups in organic synthesis**, 1986 **Organic Synthesis** Michael Smith, 2011-07-12 A reactions oriented course is a staple of most graduate organic programs and synthesis is taught either as a part of that course or as a special topic Ideally the incoming student is an organic major who has a good working knowledge of basic reactions stereochemistry and conformational principles In fact however many often most of the students in a first year graduate level organic course have deficiencies in their undergraduate work are not organic majors and are not synthetically inclined To save students much time catching up this text provides a reliable and readily available source for background material that will enable all graduate students to reach the same high level of proficiency in organic chemistry Produced over

many years with extensive feedback from students taking an organic chemistry course this book provides a reaction based approach The first two chapters provide an introduction to functional groups these are followed by chapters reviewing basic organic transformations e g oxidation reduction The book then looks at carbon carbon bond formation reactions and ways to disconnect a bigger molecule into simpler building blocks Most chapters include an extensive list of questions to test the reader s understanding There is also a new chapter outlining full retrosynthetic analyses of complex molecules which highlights common problems made by scientists The book is intended for graduate and postgraduate students scientific researchers in chemistry New publisher new edition extensively updated and corrected Over 950 new references with more than 6100 references in total Over 600 new reactions and figures replaced or updated Over 300 new homework problems from the current literature to provide nearly 800 problems to test reader understanding of the key principles

**Advanced Organic Chemistry** Francis A. Carey, Richard J. Sundberg, 2007-11-24 Since its original appearance in 1977 Advanced Organic Chemistry has maintained its place as the premier textbook in the field offering broad coverage of the structure reactivity and synthesis of organic compounds As in the earlier editions the text contains extensive references to both the primary and review literature and provides examples of data and reactions that illustrate and document the generalizations While the text assumes completion of an introductory course in organic chemistry it reviews the fundamental concepts for each topic that is discussed The two part fifth edition has been substantially revised and reorganized for greater clarity Among the changes Updated material reflecting advances in the field since 2001 s Fourth Edition especially in computational chemistry A companion Web site provides digital models for study of structure reaction and selectivity Solutions to the exercises provided to instructors online The control of reactivity to achieve specific syntheses is one of the overarching goals of organic chemistry Part B describes the most general and useful synthetic reactions organized on the basis of reaction type Together with Part A Structure and Mechanisms the two volumes are intended to provide the advanced undergraduate or beginning graduate student in chemistry with a sufficient foundation to comprehend and use the research literature in organic chemistry

**Introduction to Strategies for Organic Synthesis** Laurie S. Starkey, 2018-03-28 Bridging the Gap Between Organic Chemistry Fundamentals and Advanced Synthesis Problems Introduction to Strategies of Organic Synthesis bridges the knowledge gap between sophomore level organic chemistry and senior level or graduate level synthesis to help students more easily adjust to a synthetic chemistry mindset Beginning with a thorough review of reagents functional groups and their reactions this book prepares students to progress into advanced synthetic strategies Major reactions are presented from a mechanistic perspective and then again from a synthetic chemist s point of view to help students shift their thought patterns and teach them how to imagine the series of reactions needed to reach a desired target molecule Success in organic synthesis requires not only familiarity with common reagents and functional group interconversions but also a deep understanding of functional group behavior and reactivity This book provides clear explanations of such reactivities and

explicitly teaches students how to make logical disconnections of a target molecule This new Second Edition of Introduction to Strategies for Organic Synthesis Reviews fundamental organic chemistry concepts including functional group transformations reagents stereochemistry and mechanisms Explores advanced topics including protective groups synthetic equivalents and transition metal mediated coupling reactions Helps students envision forward reactions and backwards disconnections as a matter of routine Gives students confidence in performing retrosynthetic analyses of target molecules Includes fully worked examples literature based problems and over 450 chapter problems with detailed solutions Provides clear explanations in easy to follow student friendly language Focuses on the strategies of organic synthesis rather than a catalogue of reactions and modern reagents The prospect of organic synthesis can be daunting at the outset but this book serves as a useful stepping stone to refresh existing knowledge of organic chemistry while introducing the general strategies of synthesis Useful as both a textbook and a bench reference this text provides value to graduate and advanced undergraduate students alike

**CRC Handbook of Organic Photochemistry and Photobiology, Third Edition - Two Volume Set** Axel Griesbeck, Michael Oelgemöller, Francesco Ghetti, 2019-04-05 The only combined organic photochemistry and photobiology handbook As spectroscopic synthetic and biological tools become more and more sophisticated photochemistry and photobiology are merging making interdisciplinary research essential Following in the footsteps of its bestselling predecessors the CRC Handbook of Organic Photochemistry and Photochemistry: *Activating Agents and Protecting Groups* Anthony J. Pearson, William R. Roush, 1999-07-09 Recognising the need for a cost effective reference work that deals not only with the most popular reagents in synthesis but also reaches the widest possible audience of practising organic chemists the editors of The Encyclopedia of Reagents for Organic Synthesis EROS have developed a list of the most important and useful reagents employed in the field conveniently presented in four separate volumes The reagents included in this volume reflect the fact that protecting groups and activation procedures are often used in combination There are many instances in the synthesis of natural and unnatural products pharmaceuticals oligosaccharides and oligonucleotides etc where similar tactics must be employed to prevent undesired activation or reaction of functionality Accordingly the most important reagents used to protect amines alcohols carboxyl carbonyl and other reactive functional groups are included in this volume The list of activating agents includes well known reagents that activate functional groups for substitution or elimination reactions as well as less traditional examples e g HMPA used to activate enolates and alkyl lithium reagents to increase the nucleophilicity Each article contains all of the information found in EROS as well as expanded related reagents listings and additional references to enable the reader to quickly access a broad range of information that is beyond the scope of the reagent entries themselves This text will prove an invaluable resource

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