



Reaktionen in der Organischen Chemie 1

Alkane

Che

*nucleophile Substitutionen



primäre Substrate



sekundäre Substrate



Radikale

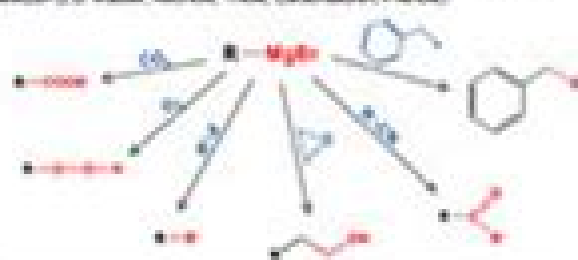
Radikale, die mindestens ein freies Elektronenpaar haben und oft negativ geladen sind (Anionen) bzw. eine starke negative Partialladung besitzen. Sie treten unter Verwendung eines Radikalengenerators wie katalytische Wirkung in einem geschlossenen System auf.

Substitution

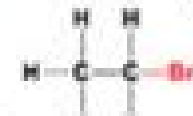
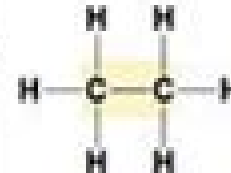
Radikalische

Reaktionen von Grignard-Verbindungen

Grignard-Verbindungen reagieren mit Substraten, welche einen Protonenakzeptor (z.B. Wasser, Alkohole, Thiole, Carbonsäuren, Ester).



Wichtig: Die radikalische Substitution findet bevorzugt an sekundären und tertiären Kohlenstoff-Atomen statt (abhängig von der Substitution der Kohlenstoffatome).



Halogenierung (radikalische Substitution)

Grignard-Synthese

Mercaptan-Synthese*

Hydroxy-Substitution*

Finkelstein-Reaktion* (halogenatom-Transfer)

Ammonolyse*

Kolbe-Nitrilsynthese*

als Nebenprodukt entstehen Isocyanide R-NC

Wurtz-Fittig-Reaktion



Eliminierung

Williamson-Ethersynthese*



Oxidation (Verbrennung)

Die radikalische Substitution funktioniert auch mit Cl_2 und I_2 . Fluor reagiert so heftig, dass zwischen der Substitution des Alkans steht.

Grignard-Verbindungen, die in der Reaktion eingesetzt werden, sind auf einer anderen Übersicht dargestellt.

Reaktionsmechanismen dieser Stoffgruppen sind auf einer anderen Übersicht dargestellt.

Radikale Und Radikationen In Der Organischen Synthese

Michael Brown



Radikale Und Radikationen In Der Organischen Synthese:

Radikale und Radikationen in der organischen Synthese Torsten Linker, Michael Schmittel, 1998 **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 Pho **Electron Paramagnetic Resonance** Marina Brustolon, Elio Giamello, 2009-02-25 This book offers a pragmatic guide to navigating through the complex maze of EPR ESR spectroscopy fundamentals techniques and applications Written for the scientist who is new to EPR spectroscopy the editors have prepared a volume that demystifies the basic fundamentals without weighting readers down with detailed physics and mathematics and then presents clear approaches in specific application areas The first part presents basic fundamentals and advantages of electron paramagnetic resonance spectroscopy The second part explores several application areas including chemistry biology medicine materials and geology A frequently asked questions section focuses on practical questions such as the size of sample etc It is an ideal hands on reference for chemists and researchers in the pharmaceutical and materials semiconductor industries who are looking for a basic introduction to EPR spectroscopy **Advances in Photochemistry** Douglas C. Neckers, Günther von Büнау, William S. Jenks, 2009-09-24 More than a simple survey of the current literature Advances in Photochemistry offers critical evaluations written by internationally recognized experts These pioneering scientists offer unique and varied points of view of the existing data Their articles are challenging as well as provocative and are intended to stimulate discussion promote further research and encourage new developments in the field This series provides photochemists a forum for critical authoritative evaluations of advances in every area of photochemistry including organic inorganic and biological topics Volume 26 continues to report recent advances with a significant up to date selection of papers by internationally recognized researchers Topics include Photochemistry of triarylmethane dye leuconitrites Structure and reactivity of organic intermediates as revealed by time resolved infrared spectroscopy Semiconductor photocatalysis for organic synthesis Photophysical probes of DNA sequence directed structure and dynamics Science of Synthesis: Catalytic Oxidation in Organic Synthesis Kilian Muñoz, 2018-03-23 The development of catalytic systems for the oxidation of organic compounds continues to be of great importance There is an ongoing and increasing demand for methods that are selective proceed under mild conditions and adhere to green chemistry principles Science of Synthesis Catalytic Oxidation in Organic Synthesis includes the latest developments in the field as well as selective coverage of more well established methods Systems based on metal catalysts organocatalysts and biomimetic oxidation are covered and there is a particular focus on asymmetric processes Scope limitations and mechanism of the reactions are discussed and key

experimental procedures are included Typical examples of target synthesis are often provided to show the utility and inspire further applications

Ion-Radical Organic Chemistry Zory Vlad Todres, 2008-10-20 Consolidating knowledge from a number of disciplines Ion Radical Organic Chemistry Principles and Applications Second Edition presents the recent changes that have occurred in the field since the publication of the first edition in 2003 This volume examines the formation transformation and application of ion radicals in typical conditions of organic synthesis Avoiding complex mathematics the author explains the principles of ion radical organic chemistry and presents an overview of organic ion radical reactions He reviews methods of determining ion radical mechanisms and controlling ion radical reactions Wherever applicable the text addresses issues relating to ecology and biomedical concerns as well as inorganic participants of the ion radical organic reactions After reviewing the nature of organic ion radicals and their ground state electronic structure the book discusses their formation the relationship between electronic structure and reactivity mechanism and regulation of reactions stereochemical aspects synthetic opportunities and practical applications Additional topics include electronic and optoelectronic devices organic magnets and conductors lubricants other materials and reactions of industrial or biomedical importance The book concludes by providing an outlook on possible future development in this field Researchers and practitioners engaged in active work on synthetic or mechanistic organic chemistry and its practical applications will find this text to be invaluable in both its scope and its depth

Synthetic Organic Photochemistry Axel G. Griesbeck, Jochen Mattay, 2004-11-30 With contributions from 24 international authorities Synthetic Organic Photochemistry offers a leading edge presentation of the most recent and in demand applications of photochemical methodologies Outlining a wide assortment of reaction types entailing cycloadditions cyclizations isomerizations rearrangements and other organic syntheses this

Streamlining Free Radical Green Chemistry V. Tamara Perchyonok, Ioannis Lykakis, Al Postigo, 2012 The environmental and health hazards created by industrial chemicals and consumer products must be minimized For safer products to be designed the relationships between structure and toxicity must be understood at the molecular level Green chemistry combined with free radical research has the potential to offer innovative solutions to such problems Some solutions are greener than others and many necessitate significant financial investment New technology will only be adopted if real benefit can be shown and sometimes adaptation of existing methods is the best option The efficiency of processes must be assessed not only in terms of the final yield but also cost environmental impact and waste toxicity This practical and concise guide showcases the sustainable methods offered by green free radical chemistry and summarizes the fundamental science involved It discusses the pros and cons of free radical chemistry in aqueous systems for synthetic applications All transformation steps are covered including initiation propagation and termination Useful background knowledge is combined with examples including industrial scale processes for pharmaceuticals and fine chemicals The book helps chemists to choose appropriate methods for achieving maximum output using a modern environmentally conscious approach It shows that armed

with an elementary knowledge of kinetics an understanding of the mechanistic and technical aspects and some common sense it is possible to harness free radicals for use in a broad range of applications Streamlining Green Free Radical Chemistry is aimed at chemists engineers materials scientists biochemists and biomedical experts as well as undergraduate and postgraduate students It encourages readers to question conventional methods and move towards the Benign by Design approach of the future References to further reading are provided at the end of each chapter

Semiconductor

Photocatalysis Horst Kisch, 2015-04-20 Focusing on the basic principles of semiconductor photocatalysis this book also gives a brief introduction to photochemistry photoelectrochemistry and homogeneous photocatalysis In addition the author one of the leading authorities in the field presents important environmental and practical aspects A valuable one stop source for all chemists material scientists and physicists working in this area as well as novice researchers entering semiconductor photocatalysis

Der Persistent Radical Effect in der organischen Synthese und in der Polymerchemie Christian Georg Wetter, 2004 *Tutorium Reaktivität und Synthese* Stefan Leisering, Christoph A Schalley, 2017-05-08 Das vorliegende Buch richtet sich an Studierende der Chemie die sich im Rahmen von Kursvorlesungen mit Synthesechemie und wichtigen Reaktionen der Organischen Chemie beschäftigen Ein Ziel des Tutoriums ist es die Aspekte Reaktivität und Synthese miteinander zu vernetzen Dabei wird eine Vielzahl organisch chemischer Reaktionen nach den grundlegenden Reaktionsmechanismen gegliedert und in Synthesen angewendet Zu Beginn des Buches wird das Konzept der Retrosynthese als Werkzeug der Syntheseplanung vorgestellt Anschließend werden unterschiedliche synthetisch wichtige Aspekte behandelt darunter Radikalreaktionen nukleophile Substitutionen Addition und Eliminierung Carbonylchemie und pericyclische Reaktionen Zahlreiche Übungsaufgaben wurden in den Text eingestreut und jedes Kapitel endet mit Trainingsaufgaben zu mechanistischen und synthesesplanerischen Aspekten die durch Online Lösungshinweise ergänzt werden *Deutsche Nationalbibliographie und Bibliographie der im Ausland erschienenen deutschsprachigen Veröffentlichungen*, 2001

Radicals in Organic Synthesis Philippe Renaud (Prof), Mukund P. Sibi, 2001-05-25 Over the past few years radical chemistry has witnessed a rapid development with the result for example that new methods for producing radicals now allow the targeted use of these reactive intermediate stages in organic synthesis This two volume work is an account of the progress being made The first volume covers basic methodologies for successfully carrying out radical reactions complete with a detailed discussion of the effectiveness and versatility of the individual methods Further the first volume also treats the characteristics of radicals where such information is necessary for the successful planning of synthesis The second volume concentrates on applications for radicals in synthesis Of particular use to those working in research are the numerous comparisons to classic methods of synthesis carefully collected from the editors and authors many years of experience in the field The vast amount of information contained in this work makes it an essential reference for every organic chemist working in industry and academia

Advances in Photochemistry, Volume 26 Douglas C.

Neckers, G?nther von B?nau, William S. Jenks, 2001-05-02 More than a simple survey of the current literature *Advances in Photochemistry* offers critical evaluations written by internationally recognized experts These pioneering scientists offer unique and varied points of view of the existing data Their articles are challenging as well as provocative and are intended to stimulate discussion promote further research and encourage new developments in the field This series provides photochemists a forum for critical authoritative evaluations of advances in every area of photochemistry including organic inorganic and biological topics Volume 26 continues to report recent advances with a significant up to date selection of papers by internationally recognized researchers Topics include Photochemistry of triarylmethane dye leuconitrites Structure and reactivity of organic intermediates as revealed by time resolved infrared spectroscopy Semiconductor photocatalysis for organic synthesis Photophysical probes of DNA sequence directed structure and dynamics **Koordinationschemie** Lutz H. Gade, 2012-05-22 Seit Alfred Werner seine Koordinationslehre vor etwas mehr als hundert Jahren formulierte hat sich die Komplexchemie der bergangsmetalle rasant zu einem der wichtigsten Forschungsgebiete der Anorganischen Chemie entwickelt Wie facettenreich die Koordinationschemie sein kann deutet sich schon an der Variabilit t der Verbindungen an zu denen so kleine Molek le wie Hexacarbonylchrom ebenso wie Metallenzyme geh ren Dieses Lehrbuch richtet sich an Studenten im Hauptstudium Alle wichtigen Aspekte der Koordinationschemie beispielsweise die Ligandenfeldtheorie die Bindungstheorie die Eigenschaften Reaktivit t und Strukturen der Komplexe die Reaktionsmechanismen und die spektroskopischen Untersuchungsmethoden sind enthalten Verschaffen Sie sich einen Einblick in dieses faszinierende Gebiet von den Anf ngen bis hin zu den modernsten Entwicklungen *Photochemie* Dieter W?hrle, Michael W. Tausch, Wolf-Dieter Stohrer, 2012-03-14 Kompakt interdisziplin r praxisorientiert so pr sentierte sich dieses facettenreiche Lehrbuch der Photochemie Das gut strukturierte und sehr verstandlich geschriebene Werk macht den Leser mit allen bedeutenden photochemischen Prozessen vertraut Reaktionen von Vinylcyclobutanen nach Einelektronenoxidation Juliane Grota, 2004 **Organosilicon Chemistry** Norbert Auner, Johann Weis, 1994 **Organosilicon Chemistry VI** Norbert Auner, Johann Weis, 2005-09-12 Like its highly successful predecessors this sixth volume brings together leading experts to provide a comprehensive and critical survey of the latest industrial and academic research A two volume compendium of first hand information vital for all experts working in the field Publisher s description Neue Methoden in der radikalischen Heterocyclensynthese Birgit Janza, 2006

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