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this is an organic chemistry reference work focusing on reactions that add a C1 unit to a substrate a comprehensive survey of industrial organic chemicals their useful properties and the economic rationale for the dominant synthetic pathways this practical guide explains where these organic building blocks of the chemical industry come from how to make them on a commercial scale how to price them and how to analyze trends in demand and production of any given material coverage ranges from how and why different processes originated to the latest developments in high value added specialty chemicals bols delivers an original and effective presentation that unravels secrets from carbohydrate chemistry he specifically describes which carbohydrates are best used in synthesis and how to obtain them the first half of this indispensable reference contains a dictionary like list of compounds that can be prepared in a few steps from commercially cheap carbohydrates the latter section describes which carbohydrates are commercially and inexpensively available along with the chemistry that can be used to convert them into useful building blocks an up to date and two volume overview of recent developments in the field of chemocatalytic and enzymatic processes for the transformation of renewable material into essential chemicals and fuels experts from both academia and industry discuss catalytic processes currently under development as well as those already in commercial use for the production of bio fuels and bio based commodity chemicals as such they cover drop in commodity chemicals and fuels as well as bio based monomers and polymers such as acrylic acid glycols polyesters and polyolefins in addition they also describe reactions applied to waste and biomass valorization and integrated biorefining strategies with its comprehensive coverage of the topic this is an indispensable reference for chemists working in the field of catalysis industrial chemistry sustainable chemistry and polymer synthesis chiral building blocks in asymmetric synthesis a comprehensive introduction to the important classes of chiral building blocks chirality the asymmetric quality found in certain chemical compounds plays an essential role in our world chiral compounds can be found in biology pharmaceutical compounds agrochemicals and fragrances the stereoselective preparation of these complex molecular constructions constitutes a challenge to this end modern asymmetric synthesis utilizes a variety of valuable and efficient reagents employed as chiral auxiliaries metal complexes and organocatalysts in stereoselective catalysis and enantiopure reactants termed as chiral building blocks in chiral building blocks in asymmetric synthesis the achievements in the fields of preparation of and applications of chiral blocks are presented in doing so the book comprehensively discusses the important classes of these reactants as the key for the asymmetric synthesis of chiral molecules as such it is an indispensable resource about synthetic methods as well as possible modifications and transformations of important classes of chiral compounds it also highlights the importance of their use as reactants and auxiliaries in the preparation of more sophisticated molecules or supramolecular systems in chiral building blocks in asymmetric synthesis readers will also find organization according to the most important compound classes e g amino acids binol and its derivatives terpenes and others with an emphasis on synthesis and application a focus on the use of chiral building blocks for the preparation of bioactive compounds and supramolecular assemblies chiral building blocks in asymmetric synthesis is a useful reference for organic chemists catalytic chemists chemists in industry medicinal chemists pharmaceutical chemists and the libraries that support them carbocyclic and heterocyclic cage compounds and their building blocks is the first independent supplement in the series the collection of essays presented is very much at the forefront of research in this active area and the topics discussed complement and evolve from the more general treatment in earlier volumes of the series furthermore it was appropriate to produce a collection of work at the cutting edge of the field where progress in heterocyclic cage compounds are discussed together in a single volume thus avoiding the organic versus organometallic barriers in an effort to raise more awareness concerning their similarities and differences since phosphalkynes serve as building blocks for a host of phosphorus carbon cage compounds discussion of the versatile chemistry of phosphalkynes is relevant likewise discussion of the versatile chemistry of phosphalkenes is appropriate since they function as synthetic precursors to phosphalkynes and are the products of electrophilic addition to phosphalkynes the two volume set on C1 building blocks in organic synthesis critically reviews the state of the art of a wide variety of reactions by which one carbon atom is added to an organic molecule forming a C-C bond in spite of the numerous classic reactions of this kind there has been enormous progress in recent years especially for those reactions involving catalytic methods introduction of substituted methyl groups is a major challenge and only very recently the first catalysts have been discovered that enable the introduction of fluoromethyl groups in aromatics john emsley s nature s building blocks was published in paperback in 2003 in this readable informative and fascinating guide to the elements are entries on each of the 100 odd chemical elements arranged alphabetically from actinium to zirconium each entry comprises an explanation of

where the element's name comes from followed by body element the role it plays in living things element of history how and when it was discovered economic element what it is used for environmental element where it occurs how much chemical element facts figures and narrative and element of surprise an amazing little known fact since publication of the first edition there have been a number of developments three new chemical elements have been named and validated darmstadtium roentgenium and copernicium and the section on transfermium elements has now been incorporated into the main part of the book economic uses of elements have grown and some quite rare elements such as scandium are now economically important along with updates to elements such as gold due to new roles in industry fully revised and updated for 2010 this browsable compendium holds a wealth of useful information weinsäure und Äpfelsäurederivate sind sehr nützliche bausteine für die asymmetrische synthese von großen organischen molekülen diese sog enantioselektiven synthesen sind von größter bedeutung in der naturstoff forschung sowie in der feinchemie und pharmazeutischen industrie dieses buch liefert einen genauen und umfassenden überblick über die chemischen eigenschaften und synthetischen anwendungen aller derivate der wein und äpfelsäure ideal für alle die auf diesem gebiet arbeiten auch für studenten es enthält hunderte chemischer reaktionen 50 große tabellen und 2 000 verweise eine erschöpfende behandlung von struktur eigenschaften und synthetischen anwendungen von 20 derivatklassen der wein und äpfelsäure 02 99 see the world one molecule at a time chemistry helps us understand not only the world around us but also our own bodies chemistry made simple makes it fun each chapter has practice problems with complete solutions that reinforce learning a glossary of chemical terms the modern periodic table and detailed illustrations throughout make this the best introduction to one of the most studied of all sciences topics covered include the scientific method the structure and properties of matter compounds laws of chemistry gases liquids and solids solutions electrochemistry the atmosphere biochemistry organic chemistry nuclear chemistry energy the environment look for these made simple titles accounting made simple arithmetic made simple astronomy made simple biology made simple bookkeeping made simple business letters made simple earth science made simple english made simple french made simple german made simple ingles hecho facil investing made simple italian made simple latin made simple learning english made simple mathematics made simple the perfect business plan made simple philosophy made simple physics made simple psychology made simple sign language made simple spelling made simple statistics made simple your small business made simple broadwaybooks com compounds labeled with carbon 14 and tritium are indispensable tools for research in biomedical sciences discovery and development of pharmaceuticals and agrochemicals preparation of compounds labeled with tritium and carbon 14 is a comprehensive authoritative and up to date discussion of the strategies synthetic approaches reactions techniques and resources for the preparation of compounds labeled with either of these isotopes a large number of examples are presented for the use of isotopic sources and building blocks in the preparation of labeled target compounds illustrating the range of possibilities for embedding isotopic labels in selected moieties of complex structures topics include formulation of synthetic strategies for preparing labeled compounds isotope exchange methods and synthetic alternatives for preparing tritiated compounds in depth discussion of carbon 14 building blocks and their utility in synthesis preparation of enantiomerically pure isotopically labeled compounds applications of biotransformations preparation of compounds labeled with tritium and carbon 14 is an essential guide to the specialist strategies and tactics used by chemists to prepare compounds tagged with theradioactive atoms carbon 14 and tritium readers will learn about molecules elements the grouping of elements metals and non metals both natural and man made compounds and the periodic table this book is an archival reference for the evolving field of biomaterials and their applications in society focusing on their composition properties characterization chemistry and applications in bioenergy chemicals and novel materials and biomaterials it has broad appeal due to the recent heightened awareness around bioenergy and biomass as potential replacements for petroleum feedstocks the book is divided into three parts cellulose based biomaterials chitin and chitosan biomaterials and hemicelluloses and other polysaccharides each chapter addresses a separate biomaterial discussing its chemical physical and biological attributes and hones in on each compound's intrinsic tunability for numerous chemical transformations in the current quest for a green economy and resources this book will help inspire scientists towards novel sources for chemicals materials and energy in the years to come the series topics in current chemistry collections presents critical reviews from the journal topics in current chemistry organized in topical volumes the scope of coverage is all areas of chemical science including the interfaces with related disciplines such as biology medicine and materials science the goal of each thematic volume is to give the non specialist reader whether in academia or industry a comprehensive insight into an area where new research is emerging which is of interest to a larger scientific audience each review within the volume critically surveys one aspect of that topic and places it within the context of the volume as a whole the most significant developments of the last 5 to 10 years are presented using selected examples to illustrate the principles discussed the coverage is not intended to be an exhaustive summary of the field or include large quantities of data but should rather be conceptual concentrating on the methodological thinking that will allow the non specialist reader to understand the information presented contributions also offer an outlook on potential future developments in the field in this captivating classroom

supplement students examine atoms the building blocks of nature topics covered include matter atomic structure electrons mendeleev the periodic table elements compounds solutions mixtures and more information is presented in fascinating passages and reinforced with a variety of activities a complete answer key is also included mark twain media publishing company specializes in providing captivating supplemental books and decorative resources to complement middle and upper grade classrooms designed by leading educators the product line covers a range of subjects including mathematics sciences language arts social studies history government fine arts and character mark twain media also provides innovative classroom solutions for bulletin boards and interactive whiteboards since 1977 mark twain media has remained a reliable source for a wide variety of engaging classroom resources isolated pyranones multifaceted building blocks for molecular diversity covers the latest findings on synthesis and chemical reactivity of highly functionalized pyran 2 ones and pyran 4 ones their reduced analogs and compounds derived from them through chemical reactions and their applications in drug discovery and material sciences it covers the mechanisms of the reaction and step by step formation of final products numerous pyranones from natural and synthetic origins as well as their derived products have shown diverse pharmacological activities and some are in clinical use the applications of these compounds are not limited to drug development and imaging agents and they are also used in material science as organic semiconductors liquid crystals organic light emitting diodes oleds organic catalysts solid state lasers photovoltaic and photoconductive devices the book is ideal for organic bioorganic physical material and natural product chemists working to generate diverse molecular entities through ring transformation reactions of pyranones and those working in material science to generate new chemical entities includes various synthetic methodologies for generating molecular diversity covers the applications of functionalized pyranones as substrates for generating new molecular entities such as arenes heteroarenes oligoarenes spiroarenes and condensed oligoarenes through base induced ring transformation substitution cyclization and cycloaddition reactions discusses numerous compounds derived from pyranones that are useful as organic semiconductors liquid crystals organic catalysts organic light emitting diodes oleds solid state lasers photovoltaic and photoconductive devices what links the taj mahal and our skeleton calcium the eiffel tower and our blood iron the salt on our fries and the street lamps that guide us home sodium forged in the big bang the elements and their resulting compounds went on to create our solar system the planet we live on the air we breathe the water we rely on and the proteins that would become life everything in the known universe is made up of one of the 118 elements of the periodic table and this book is your definitive illustrated guide every element is featured their vital statistics given their main compounds and uses explored and their fascinating histories told tartaric and malic acids in synthesis provides chemists with a concise yet comprehensive review of the chemical properties and synthetic applications of derivatives of tartaric and malic acids intended as a source of information and inspiration it contains a gold mine of ideas on the use of tartaric and malic acids in synthesis not only as chiral building blocks but as chiral ligands auxiliaries and resolving agents as well throughout the primary focus is on four carbon building blocks derived from tartaric and malic acids and their synthetically useful reactions tartaric and malic acids in synthesis is a valuable working resource for chemists involved in the design of enantioselective syntheses it is also an excellent supplementary text for graduate students of synthetic organic chemistry and natural products chemistry the periodic table nature s building blocks an introduction to the naturally occurring elements their origins and their uses addresses how minerals and their elements are used where the elements come from in nature and their applications in modern society the book is structured in a logical way using the periodic table as its outline it begins with an introduction of the history of the periodic table and a short introduction to mineralogy element sections contain their history how they were discovered and a description of the minerals that contain the element sections conclude with our current use of each element abundant color photos of some of the most characteristic minerals containing the element accompany the discussion ideal for students and researchers working in inorganic chemistry mineralogy and geology this book provides the foundational knowledge needed for successful study and work in this exciting area describes the link between geology minerals and chemistry to show how chemistry relies on elements from nature emphasizes the connection between geology mineralogy and daily life showing how minerals contribute to the things we use and in our modern economy contains abundant color photos of each mineral that bring the periodic table to life until now popular science has relegated the atom to a supporting role in defining the different chemical elements of the periodic table this bold new title places its subject center stage shining the spotlight directly onto the structure and properties of this tiniest amount of anything it is possible to identify the book covers a huge range of topics including the development of scientific thinking about the atom the basic structure of the atom how the interactions between atoms account for the familiar properties of everyday materials the power and mystery of the atomic nucleus and what the mysterious quantum realm of subatomic particles and their interactions can tell us about the very nature of reality sparkling text banishes an outdated world of dull chemistry as it brightly introduces the reader to what everything is made of and how it all works on the most fundamental level greek philosophers first hypothesized that matter was composed of atoms but the theory would not resurface again until the late 17th century the idea

that that atoms joined to form structures called molecules first appeared in the 19th century and helped explain why gases liquids and solids behave differently from one another in the 20th century subatomic particles were discovered electrons protons and neutrons and atomic structure was finally understood these breakthroughs led to the development of quantum theory and quantum mechanics this book details the inspiring and heroic discovery delving deeply into intriguing stories reviewing major scientific landmarks and introducing readers to the vivid men and women who helped discover and map the microscopic universe that is the atom supplemental content includes an activity spread a substantial and highly detailed timeline and a list of key people with mini biographies synthesis is at the core of organic chemistry in order for compounds to be studied be it as drugs materials or because of their physical properties they have to be prepared often in multistep synthetic sequences thus the target compound is at the outset of synthesis planning synthesis involves creating the target compound from smaller readily available building blocks immediately questions arise from which building blocks in which sequence by which reactions nature creates many highly complex natural products via reaction cascades in which an assortment of starting compounds present within the cell is transformed by specific for each target structure combinations of modular enzymes in specific sequences into the target compounds 1 2 to mimic this efficiency is the dream of an ideal synthesis 2 however we are at present so far from achieving such a one pot operation that actual synthesis has to be achieved via a sequence of individual discrete steps thus we are left with the task of planning each synthesis individually in an optimal fashion synthesis planning must be conducted with regard for certain specifications some of which are due to the structure of the target molecule and some of which relate to external parameters such as costs environmental compatibility or novelty we will not consider these external aspects in this context planning of a synthesis is based on a pool of information regarding chemical reactions that can be executed reliably and in high chemical yield improvements in bio based building blocks production through process intensification and sustainability concepts discusses new information on the production and cost of bio based building blocks from a technical point of view almost all industrial materials made from fossil resources can be substituted using bio based counterparts however the cost of bio based production in many cases exceeds the cost of petrochemical production in addition new products must be proven to perform at least as good as their petrochemical equivalents have a lower environmental impact meet consumer demand for environmentally friendly products factor in population growth and account for limited supplies of non renewables this book outlines the application of process intensification techniques which allow for the generation of clean efficient and economical processes for bio based chemical blocks production includes synthesis and process design strategies for intensified processes describes multi objective optimization applied to the production of bio based building blocks presents the controllability of processes where the production of bio based building blocks is involved provides examples using aspen and matlab introduces several sustainable indexes to evaluate production processes presents process intensification techniques to improve performance in productive processes the definitive guide to creating fluorine based compounds and the materials of tomorrow discovered as an element by the french chemist henri moissan in 1886 through electrolysis of potassium fluoride in anhydrous hydrogen fluoride le fluor or fluorine began its chemical history as a substance both elusive and dangerous with a slight pale yellow hue fluorine is at room temperature a poisonous diatomic gas resembling a spirit from a chemical netherworld fluorine is highly reactive difficult to handle yet very versatile as a reagent with the power to form compounds with almost any other element comprising 20 of pharmaceutical products and 30 of agrochemical compounds as well as playing a key role in electric cars electronic devices and space technology compounds containing fluorine have grown in importance across the globe learning how to safely handle fluorine in the preparation of innovative new materials with valuable new properties is of critical importance to chemists today bringing together the research and methods of leading scientists in the fluorine field efficient preparations of fluorine compounds is the definitive manual to creating and understanding the reaction mechanisms integral to a wide variety of fluorine compounds with sixty eight contributed chapters the book s extensive coverage includes preparation of elemental fluorine synthesis methods for exotic inorganic fluorides with varied applications introduction of fluorine into compounds via electrophilic and nucleophilic reactions direct fluorination of organic compounds with elemental fluorine efficient preparations of bioorganic fluorine compounds asymmetric fluorocyclization reactions preparations of rare earth fluorosulfides and oxyfluorosulfides the book offers methods and results that can be reproduced by students involved in advanced studies as well as practicing chemists pharmaceutical scientists biologists and environmental researchers the only chemical resource of its kind efficient preparations of fluorine compounds from its first experiment to its last is a unique window into the centuries old science of fluorine and the limitless universe of fluorine based compounds high throughput screening remains a key part of early stage drug and tool compound discovery and methods and technologies have seen many fundamental improvements and innovations over the past 20 years this comprehensive book provides a historical survey of the field up to the current state of the art in addition to the specific methods this book also considers cultural and organizational questions that represent opportunities for future success following thought provoking foreword and introduction from professor stuart schreiber and the editors chapters from

leading experts across academia and industry cover initial considerations for screening methods appropriate for different goals in small molecule discovery newer technologies that provide alternative approaches to traditional miniaturization procedures and practical aspects such as cost and resourcing within the context of their historical development authors explain common pitfalls and their solutions this book will serve as both a practical reference and a thoughtful guide to the philosophy underlying technological change in such a fast moving area for postgraduates and researchers in academia and industry particularly in the areas of chemical biology pharmacology structural biology and assay development what links the taj mahal and our skeleton the eiffel tower and our blood the street lamps that guide us home and the salt on our food the answers are calcium iron and sodium each one an element forged in the big bang and in supernovas the elements and their resulting compounds went on to create our solar system the planet we live on the air we breathe the water we rely on and the proteins that would become life this book provides need to know information on every one of the 118 known elements some like carbon oxygen and aluminium are familiar others like gadolinium and tellurium are not inside the book you will find the elements vital statistics their important compounds and applications and the fascinating histories of their discovery you will also find clear and concise explanations of what an element is how and why the elements are arranged in the periodic table and of the structure of atoms the building blocks of everything around you the intriguing story of the elements is your definitive illustrated guide to the elements it is authoritative accessible and filled with wonder the words combinatorial chemistry have different meanings to different people ranging from split and mix strategies to parallel synthesis using robots and embracing the whole range of preparative chemistry from organic molecules to catalyst ligands and even inorganic solids all of these activities have in common an attempt to expand the diversity of structure available to the chemist as well as the access to this diversity permitting the discovery of new and valuable biological acid material properties in this outstanding survey of combinatorial organic chemistry the authors obrecht who has established a new combinatorial chemistry company called polyphor and villalgardo have brought together the literature including that from 1998 and have concisely analysed the applications and achievements of this new field this work will be of value to all chemists engaged in preparative work both in industry and academe each chapter of phosphorus compounds advanced tools in catalysis and material sciences have been carefully selected by the editors in order to represent a state of the art overview of how phosphorus chemistry can provide solutions in various fields of applications the editors have assembled an international array of world renowned scientists and each chapter is written by experts in the fields of synthetic chemistry homogeneous catalysis dendrimers theoretical calculations materials science and medicinal chemistry with a special focus on the chemistry of phosphorus compounds phosphorus compounds advanced tools in catalysis and material sciences is of interest to a general readership ranging from advanced university course students to experts in academia and industry this book is an archival reference for the evolving field of biomaterials and their applications in society focusing on their composition properties characterization chemistry and applications in bioenergy chemicals and novel materials and biomaterials it has broad appeal due to the recent heightened awareness around bioenergy and biomass as potential replacements for petroleum feedstocks the book is divided into three parts cellulose based biomaterials chitin and chitosan biomaterials and hemicelluloses and other polysaccharides each chapter addresses a separate biomaterial discussing its chemical physical and biological attributes and hones in on each compound s intrinsic tunability for numerous chemical transformations in the current quest for a green economy and resources this book will help inspire scientists towards novel sources for chemicals materials and energy in the years to come this book provides an interdisciplinary integrative overview of environmental problem solving using mild reaction conditions green reagents waste free and energy efficient synthesis in both industry and academic world discussions include a broad integrated perspective on sustainability integrated risk multi scale changes and impacts taking place within ecosystems worldwide features this book serves as a reference book for scientific investigators who need to do greener synthesis of organic compounds drugs and natural products under mild reaction condition using green reagents eco friendly catalysts and benign reaction mediums over traditional synthetic processes which is a key driving force of scientists greener synthesis of multiple value added heterocycles opens up a new horizon towards the organic catalysis and for this purpose development of natural resources acts as an effective catalyst using environmentally friendly reaction medium e g acc wetsa websa have been used for the synthesis of some crucial heterocyclic scaffolds such as bisenols and 2 amino 4h pyrans tetraketones pyrans and biaryls this book can also be used as a textbook for graduate and post graduate level courses for students furthermore the problems with answers in book will add better understanding for students the pigment compendium dictionary is a comprehensive information source for scientists art historians conservators and forensic specialists drawn together from extensive analytical research into the physical and chemical properties of pigments this essential reference to pigment names and synonyms describes the inter relationship of different names and terms the dictionary covers the field worldwide from pre history to the present day from rock art to interior decoration from ethnography to contemporary art drawing on hundreds of hard to obtain documentary sources as well as modern scientific data each term is

discussed in detail giving both its context and composition comprehensive list of pigment names and synonyms pigments used worldwide from pre history to the present day contains information from hundreds of hard to obtain documentary sources virtual screening and drug docking volume 59 in the annual reports on medicinal chemistry series highlights new advances in the field with this new volume presenting interesting chapters on a variety of timely topics including can docking scoring functions guarantee success in virtual screening no dance no partner a tale of flexibility in docking and virtual screening handling imbalance data in virtual screening rational computational approaches to predict novel drug candidates against leishmaniasis virtual screening against mtb dna gyrase applications and success stories using filters in virtual screening a brief guide to minimize errors and maximize efficiency and more additional chapters in the new release include machine learning and deep learning strategies for virtual screening applications of the virtual screening to find the novel hiv 1 therapeutic agents and large scale screening of small molecules with docking strategies and its impact on drug discovery provides the authority and expertise of leading contributors from an international board of authors presents the latest release in the annual reports on medicinal chemistry series updated release includes the latest information on virtual screening and drug docking this volume discusses protocols that cover synthesis screening by selection and analysis of dna encoded chemical libraries del chapters in this book focus on methods used to practice del technology and include solution phase library synthesis using a variety of chemistries dna encoding of chemical structure design preparation and analysis of target proteins and tool compounds screening of soluble protein targets by affinity selection del qpcr preparative pcr and dna sequence analysis computational methods used to analyze selections and choose compounds for resynthesis and analysis of hit compounds written in the highly successful methods in molecular biology series format chapters include introductions to their respective topics lists of the necessary materials and reagents step by step readily reproducible laboratory protocols and tips on troubleshooting and avoiding known pitfalls cutting edge and comprehensive dna encoded chemical libraries methods and protocols is a valuable resource for scientists interested in del technology for drug discovery and will contribute to the continued advancement in this important field an assessment of the known properties of natural products and their model compounds to determine their usefulness in biological and medical experimentation as well as in synkinetics the reversible synthesis of noncovalent compounds it explores new techniques such as cryoelectron and scanning force microscopy and solid state nmr spectroscopy of

C-1 Building Blocks in Organic Synthesis 2014-03-12 this is an organic chemistry reference work focusing on reactions that add a C1 unit to a substrate

Organic Building Blocks of the Chemical Industry 1989-11-09 a comprehensive survey of industrial organic chemicals their useful properties and the economic rationale for the dominant synthetic pathways this practical guide explains where these organic building blocks of the chemical industry come from how to make them on a commercial scale how to price them and how to analyze trends in demand and production of any given material coverage ranges from how and why different processes originated to the latest developments in high value added specialty chemicals

Carbohydrate Building Blocks 1996 bols delivers an original and effective presentation that unravels secrets from carbohydrate chemistry he specifically describes which carbohydrates are best used in synthesis and how to obtain them the first half of this indispensable reference contains a dictionary like list of compounds that can be prepared in a few steps from commercially cheap carbohydrates the latter section describes which carbohydrates are commercially and inexpensively available along with the chemistry that can be used to convert them into useful building blocks

Building Blocks of the Universe 1961 an up to date and two volume overview of recent developments in the field of chemocatalytic and enzymatic processes for the transformation of renewable material into essential chemicals and fuels experts from both academia and industry discuss catalytic processes currently under development as well as those already in commercial use for the production of bio fuels and bio based commodity chemicals as such they cover drop in commodity chemicals and fuels as well as bio based monomers and polymers such as acrylic acid glycols polyesters and polyolefins in addition they also describe reactions applied to waste and biomass valorization and integrated biorefining strategies with its comprehensive coverage of the topic this is an indispensable reference for chemists working in the field of catalysis industrial chemistry sustainable chemistry and polymer synthesis

Chemicals and Fuels from Bio-Based Building Blocks 2016-05-16 chiral building blocks in asymmetric synthesis a comprehensive introduction to the important classes of chiral building blocks chirality the asymmetric quality found in certain chemical compounds plays an essential role in our world chiral compounds can be found in biology pharmaceutical compounds agrochemicals and fragrances the stereoselective preparation of these complex molecular constructions constitutes a challenge to this end modern asymmetric synthesis utilizes a variety of valuable and efficient reagents employed as chiral auxiliaries metal complexes and organocatalysts in stereoselective catalysis and enantiopure reactants termed as chiral building blocks in chiral building blocks in asymmetric synthesis the achievements in the fields of preparation of and applications of chiral blocks are presented in doing so the book comprehensively discusses the important classes of these reactants as the key for the asymmetric synthesis of chiral molecules as such it is an indispensable resource about synthetic methods as well as possible modifications and transformations of important classes of chiral compounds it also highlights the importance of their use as reactants and auxiliaries in the preparation of more sophisticated molecules or supramolecular systems in chiral building blocks in asymmetric synthesis readers will also find organization according to the most important compound classes e.g. amino acids binol and its derivatives terpenes and others with an emphasis on synthesis and application a focus on the use of chiral building blocks for the preparation of bioactive compounds and supramolecular assemblies chiral building blocks in asymmetric synthesis is a useful reference for organic chemists catalytic chemists chemists in industry medicinal chemists pharmaceutical chemists and the libraries that support them

Chiral Building Blocks in Asymmetric Synthesis 2022-08-05 carbocyclic and heterocyclic cage compounds and their building blocks is the first independent supplement in the series the collection of essays presented is very much at the forefront of research in this active area and the topics discussed complement and evolve from the more general treatment in earlier volumes of the series furthermore it was appropriate to produce a collection of work at the cutting edge of the field where progress in heterocyclic cage compounds are discussed together in a single volume thus avoiding the organic versus organometallic barriers in an effort to raise more awareness concerning their similarities and differences since phosphalkynes serve as building blocks for a host of phosphorus carbon cage compounds discussion of the versatile chemistry of phosphalkynes is relevant likewise discussion of the versatile chemistry of phosphalkenes is appropriate since they function as synthetic precursors to phosphalkynes and are the products of electrophilic addition to phosphalkynes

C-1 Building Blocks in Organic Synthesis 1 1999-04-15 the two volume set on C1 building blocks in organic synthesis critically reviews the state of the art of a wide variety of reactions by which one carbon atom is added to an organic molecule forming a C-C bond in spite of the numerous classic reactions of this kind there has been enormous progress in recent years especially for those reactions involving catalytic methods introduction of substituted methyl groups is a major challenge and only very recently the first catalysts have been discovered that enable the introduction of fluoromethyl groups in aromatics

Carbocyclic and Heterocyclic Cage Compounds and Their Building Blocks: Synthesis, Structure, Mechanism, and Theory 2014-05-14 john

emsley's nature's building blocks was published in paperback in 2003 in this readable informative and fascinating guide to the elements are entries on each of the 100 odd chemical elements arranged alphabetically from actinium to zirconium each entry comprises an explanation of where the element's name comes from followed by body element the role it plays in living things element of history how and when it was discovered economic element what it is used for environmental element where it occurs how much chemical element facts figures and narrative and element of surprise an amazing little known fact since publication of the first edition there have been a number of developments three new chemical elements have been named and validated darmstadtium roetgenium and copernicium and the section on transfermium elements has now been incorporated into the main part of the book economic uses of elements have grown and some quite rare elements such as scandium are now economically important along with updates to elements such as gold due to new roles in industry fully revised and updated for 2010 this browsable compendium holds a wealth of useful information

Science of Synthesis: C-1 Building Blocks in Organic Synthesis Vol. 1 2011-08-25 weinsäure und Äpfelsäurederivate sind sehr nützliche bausteine für die asymmetrische synthese von großen organischen molekülen diese sog enantioselektiven synthesen sind von größter bedeutung in der naturstoff forschung sowie in der feinchemie und pharmazeutischen industrie dieses buch liefert einen genauen und umfassenden Überblick über die chemischen eigenschaften und synthetischen anwendungen aller derivate der wein und Äpfelsäure ideal für alle die auf diesem gebiet arbeiten auch für studenten es enthält hunderte chemischer reaktionen 50 große tabellen und 2 000 verweise eine erschöpfende behandlung von struktur eigenschaften und synthetischen anwendungen von 20 derivatklassen der wein und Äpfelsäure 02 99

Nature's Building Blocks 1999-02-17 see the world one molecule at a time chemistry helps us understand not only the world around us but also our own bodies chemistry made simple makes it fun each chapter has practice problems with complete solutions that reinforce learning a glossary of chemical terms the modern periodic table and detailed illustrations throughout make this the best introduction to one of the most studied of all sciences topics covered include the scientific method the structure and properties of matter compounds laws of chemistry gases liquids and solids solutions electrochemistry the atmosphere biochemistry organic chemistry nuclear chemistry energy the environment look for these made simple titles accounting made simple arithmetic made simple astronomy made simple biology made simple bookkeeping made simple business letters made simple earth science made simple english made simple french made simple german made simple ingles hecho facil investing made simple italian made simple latin made simple learning english made simple mathematics made simple the perfect business plan made simple philosophy made simple physics made simple psychology made simple sign language made simple spelling made simple statistics made simple your small business made simple broadwaybooks com

Tartaric and Malic Acids in Synthesis 2010-04-21 compounds labeled with carbon 14 and tritium are indispensable tools for research in biomedical sciences discovery and development of pharmaceuticals and agrochemicals preparation of compounds labeled with tritium and carbon 14 is a comprehensive authoritative and up to date discussion of the strategies synthetic approaches reactions techniques and resources for the preparation of compounds labeled with either of these isotopes a large number of examples are presented for the use of isotopic sources and building blocks in the preparation of labeled target compounds illustrating the range of possibilities for embedding isotopic labels in selected moieties of complex structures topics include formulation of synthetic strategies for preparing labeled compounds isotope exchange methods and synthetic alternatives for preparing tritiated compounds in depth discussion of carbon 14 building blocks and their utility in synthesis preparation of enantiomerically pure isotopically labeled compounds applications of biotransformations preparation of compounds labeled with tritium and carbon 14 is an essential guide to the specialist strategies and tactics used by chemists to prepare compounds tagged with theradioactive atoms carbon 14 and tritium

Chemistry Made Simple 2009-03-12 readers will learn about molecules elements the grouping of elements metals and non metals both natural and man made compounds and the periodic table

Preparation of Compounds Labeled with Tritium and Carbon-14 2007 this book is an archival reference for the evolving field of biomaterials and their applications in society focusing on their composition properties characterization chemistry and applications in bioenergy chemicals and novel materials and biomaterials it has broad appeal due to the recent heightened awareness around bioenergy and biomass as potential replacements for petroleum feedstocks the book is divided into three parts cellulose based biomaterials chitin and chitosan biomaterials and hemicelluloses and other polysaccharides each chapter addresses a separate biomaterial discussing its chemical physical and biological attributes and hones in on each compound's intrinsic tunability for numerous chemical transformations in the current quest for a green economy and resources this book will help inspire scientists towards novel sources for chemicals materials and energy in the years to come

Elements and Compounds 2012-03-14 the series topics in current chemistry collections presents critical reviews from the journal

topics in current chemistry organized in topical volumes the scope of coverage is all areas of chemical science including the interfaces with related disciplines such as biology medicine and materials science the goal of each thematic volume is to give the non specialist reader whether in academia or industry a comprehensive insight into an area where new research is emerging which is of interest to a larger scientific audience each review within the volume critically surveys one aspect of that topic and places it within the context of the volume as a whole the most significant developments of the last 5 to 10 years are presented using selected examples to illustrate the principles discussed the coverage is not intended to be an exhaustive summary of the field or include large quantities of data but should rather be conceptual concentrating on the methodological thinking that will allow the non specialist reader to understand the information presented contributions also offer an outlook on potential future developments in the field

Polysaccharide Building Blocks 2018-07-09 in this captivating classroom supplement students examine atoms the building blocks of nature topics covered include matter atomic structure electrons mendeleev the periodic table elements compounds solutions mixtures and more information is presented in fascinating passages and reinforced with a variety of activities a complete answer key is also included mark twain media publishing company specializes in providing captivating supplemental books and decorative resources to complement middle and upper grade classrooms designed by leading educators the product line covers a range of subjects including mathematics sciences language arts social studies history government fine arts and character mark twain media also provides innovative classroom solutions for bulletin boards and interactive whiteboards since 1977 mark twain media has remained a reliable source for a wide variety of engaging classroom resources

Polymer Synthesis Based on Triple-bond Building Blocks 2014 isolated pyranones multifaceted building blocks for molecular diversity covers the latest findings on synthesis and chemical reactivity of highly functionalized pyran 2 ones and pyran 4 ones their reduced analogs and compounds derived from them through chemical reactions and their applications in drug discovery and material sciences it covers the mechanisms of the reaction and step by step formation of final products numerous pyranones from natural and synthetic origins as well as their derived products have shown diverse pharmacological activities and some are in clinical use the applications of these compounds are not limited to drug development and imaging agents and they are also used in material science as organic semiconductors liquid crystals organic light emitting diodes oleds organic catalysts solid state lasers photovoltaic and photoconductive devices the book is ideal for organic bioorganic physical material and natural product chemists working to generate diverse molecular entities through ring transformation reactions of pyranones and those working in material science to generate new chemical entities includes various synthetic methodologies for generating molecular diversity covers the applications of functionalized pyranones as substrates for generating new molecular entities such as arenes heteroarenes oligoarenes spiroarenes and condensed oligoarenes through base induced ring transformation substitution cyclization and cycloaddition reactions discusses numerous compounds derived from pyranones that are useful as organic semiconductors liquid crystals organic catalysts organic light emitting diodes oleds solid state lasers photovoltaic and photoconductive devices

C-1 Building Blocks in Organic Synthesis 1 2015-01-01 what links the taj mahal and our skeleton calcium the eiffel tower and our blood iron the salt on our fries and the street lamps that guide us home sodium forged in the big bang the elements and their resulting compounds went on to create our solar system the planet we live on the air we breathe the water we rely on and the proteins that would become life everything in the known universe is made up of one of the 118 elements of the periodic table and this book is your definitive illustrated guide every element is featured their vital statistics given their main compounds and uses explored and their fascinating histories told

The Atom, Grades 6 - 12 2022-04-27 tartaric and malic acids in synthesis provides chemists with a concise yet comprehensive review of the chemical properties and synthetic applications of derivatives of tartaric and malic acids intended as a source of information and inspiration it contains a gold mine of ideas on the use of tartaric and malic acids in synthesis not only as chiral building blocks but as chiral ligands auxiliaries and resolving agents as well throughout the primary focus is on four carbon building blocks derived from tartaric and malic acids and their synthetically useful reactions tartaric and malic acids in synthesis is a valuable working resource for chemists involved in the design of enantioselective syntheses it is also an excellent supplementary text for graduate students of synthetic organic chemistry and natural products chemistry

Isolated Pyranones 2016-03 the periodic table nature s building blocks an introduction to the naturally occurring elements their origins and their uses addresses how minerals and their elements are used where the elements come from in nature and their applications in modern society the book is structured in a logical way using the periodic table as its outline it begins with an introduction of the history of the periodic table and a short introduction to mineralogy element sections contain their history how they were discovered and a description of the minerals that contain the element sections conclude with our current use of each element abundant color photos of some of the most characteristic minerals containing the element accompany the discussion ideal

for students and researchers working in inorganic chemistry mineralogy and geology this book provides the foundational knowledge needed for successful study and work in this exciting area describes the link between geology minerals and chemistry to show how chemistry relies on elements from nature emphasizes the connection between geology mineralogy and daily life showing how minerals contribute to the things we use and in our modern economy contains abundant color photos of each mineral that bring the periodic table to life

The Definitive Illustrated Guide to the Elements 1999 until now popular science has relegated the atom to a supporting role in defining the different chemical elements of the periodic table this bold new title places its subject center stage shining the spotlight directly onto the structure and properties of this tiniest amount of anything it is possible to identify the book covers a huge range of topics including the development of scientific thinking about the atom the basic structure of the atom how the interactions between atoms account for the familiar properties of everyday materials the power and mystery of the atomic nucleus and what the mysterious quantum realm of subatomic particles and their interactions can tell us about the very nature of reality sparkling text banishes an outdated world of dull chemistry as it brightly introduces the reader to what everything is made of and how it all works on the most fundamental level

Tartaric and Malic Acids in Synthesis 2020-11-18 greek philosophers first hypothesized that matter was composed of atoms but the theory would not resurface again until the late 17th century the idea that that atoms joined to form structures called molecules first appeared in the 19th century and helped explain why gases liquids and solids behave differently from one another in the 20th century subatomic particles were discovered electrons protons and neutrons and atomic structure was finally understood these breakthroughs led to the development of quantum theory and quantum mechanics this book details the inspiring and heroic discovery delving deeply into intriguing stories reviewing major scientific landmarks and introducing readers to the vivid men and women who helped discover and map the microscopic universe that is the atom supplemental content includes an activity spread a substantial and highly detailed timeline and a list of key people with mini biographies

The Periodic Table: Nature's Building Blocks 2018-09-06 synthesis is at the core of organic chemistry in order for compounds to be studied be it as drugs materials or because of their physical properties they have to be prepared often in multistep synthetic sequences thus the target compound is at the outset of synthesis planning synthesis involves creating the target compound from smaller readily available building blocks immediately questions arise from which building blocks in which sequence by which reactions nature creates many highly complex natural products via reaction cascades in which an assortment of starting compounds present within the cell is transformed by specific for each target structure combinations of modular enzymes in specific sequences into the target compounds 1 2 to mimic this efficiency is the dream of an ideal synthesis 2 however we are at present so far from achieving such a one pot operation that actual synthesis has to be achieved via a sequence of individual discrete steps thus we are left with the task of planning each synthesis individually in an optimal fashion synthesis planning must be conducted with regard for certain specifications some of which are due to the structure of the target molecule and some of which relate to external parameters such as costs environmental compatibility or novelty we will not consider these external aspects in this context planning of a synthesis is based on a pool of information regarding chemical reactions that can be executed reliably and in high chemical yield

The Atom 2012-07-15 improvements in bio based building blocks production through process intensification and sustainability concepts discusses new information on the production and cost of bio based building blocks from a technical point of view almost all industrial materials made from fossil resources can be substituted using bio based counterparts however the cost of bio based production in many cases exceeds the cost of petrochemical production in addition new products must be proven to perform at least as good as their petrochemical equivalents have a lower environmental impact meet consumer demand for environmentally friendly products factor in population growth and account for limited supplies of non renewables this book outlines the application of process intensification techniques which allow for the generation of clean efficient and economical processes for bio based chemical blocks production includes synthesis and process design strategies for intensified processes describes multi objective optimization applied to the production of bio based building blocks presents the controllability of processes where the production of bio based building blocks is involved provides examples using aspen and matlab introduces several sustainable indexes to evaluate production processes presents process intensification techniques to improve performance in productive processes

Atoms and Molecules 2009-01-07 the definitive guide to creating fluorine based compounds and the materials of tomorrow discovered as an element by the french chemist henri moissan in 1886 through electrolysis of potassium fluoride in anhydrous hydrogen fluoride the fluorine or fluorine began its chemical history as a substance both elusive and dangerous with a slight pale yellow hue fluorine is at room temperature a poisonous diatomic gas resembling a spirit from a chemical netherworld fluorine is highly reactive difficult to handle yet very versatile as a reagent with the power to form compounds with almost any other element

comprising 20 of pharmaceutical products and 30 of agrochemical compounds as well as playing a key role in electric cars electronic devices and space technology compounds containing fluorine have grown in importance across the globe learning how to safely handle fluorine in the preparation of innovative new materials with valuable new properties is of critical importance to chemists today bringing together the research and methods of leading scientists in the fluorine field efficient preparations of fluorine compounds is the definitive manual to creating and understanding the reaction mechanisms integral to a wide variety of fluorine compounds with sixty eight contributed chapters the book s extensive coverage includes preparation of elemental fluorine synthesis methods for exotic inorganic fluorides with varied applications introduction of fluorine into compounds via electrophilic and nucleophilic reactions direct fluorination of organic compounds with elemental fluorine efficient preparations of bioorganic fluorine compounds asymmetric fluorocyclization reactions preparations of rare earth fluorosulfides and oxyfluorosulfides the book offers methods and results that can be reproduced by students involved in advanced studies as well as practicing chemists pharmaceutical scientists biologists and environmental researchers the only chemical resource of its kind efficient preparations of fluorine compounds from its first experiment to its last is a unique window into the centuries old science of fluorine and the limitless universe of fluorine based compounds

Elements of Synthesis Planning 2021-09-14 high throughput screening remains a key part of early stage drug and tool compound discovery and methods and technologies have seen many fundamental improvements and innovations over the past 20 years this comprehensive book provides a historical survey of the field up to the current state of the art in addition to the specific methods this book also considers cultural and organizational questions that represent opportunities for future success following thought provoking foreword and introduction from professor stuart schreiber and the editors chapters from leading experts across academia and industry cover initial considerations for screening methods appropriate for different goals in small molecule discovery newer technologies that provide alternative approaches to traditional miniaturization procedures and practical aspects such as cost and resourcing within the context of their historical development authors explain common pitfalls and their solutions this book will serve as both a practical reference and a thoughtful guide to the philosophy underlying technological change in such a fast moving area for postgraduates and researchers in academia and industry particularly in the areas of chemical biology pharmacology structural biology and assay development

Improvements in Bio-Based Building Blocks Production Through Process Intensification and Sustainability Concepts 2014-03-12 what links the taj mahal and our skeleton the eiffel tower and our blood the street lamps that guide us home and the salt on our food the answers are calcium iron and sodium each one an element forged in the big bang and in supernovas the elements and their resulting compounds went on to create our solar system the planet we live on the air we breathe the water we rely on and the proteins that would become life this book provides need to know information on every one of the 118 known elements some like carbon oxygen and aluminium are familiar others like gadolinium and tellurium are not inside the book you will find the elements vital statistics their important compounds and applications and the fascinating histories of their discovery you will also find clear and concise explanations of what an element is how and why the elements are arranged in the periodic table and of the structure of atoms the building blocks of everything around you the intriguing story of the elements is your definitive illustrated guide to the elements it is authoritative accessible and filled with wonder

Small Ring Compounds in Organic Synthesis VI 1998 the words combinatorial chemistry have different meanings to different people ranging from split and mix strategies to parallel synthesis using robots and embracing the whole range of preparative chemistry from organic molecules to catalyst ligands and even inorganic solids all of these activities have in common an attempt to expand the diversity of structure available to the chemist as well as the access to this diversity permitting the discovery of new and valuable biological acid material properties in this outstanding survey of combinatorial organic chemistry the authors obrecht who has established a new combinatorial chemistry company called polyphor and villalgardo have brought together the literature including that from 1998 and have concisely analysed the applications and achievements of this new field this work will be of value to all chemists engaged in preparative work both in industry and academe

Coordination Compounds as Synthetic Building-blocks 2012-10-11 each chapter of phosphorus compounds advanced tools in catalysis and material sciences have been carefully selected by the editors in order to represent a state of the art overview of how phosphorus chemistry can provide solutions in various fields of applications the editors have assembled an international array of world renowned scientists and each chapter is written by experts in the fields of synthetic chemistry homogeneous catalysis dendrimers theoretical calculations materials science and medicinal chemistry with a special focus on the chemistry of phosphorus compounds phosphorus compounds advanced tools in catalysis and material sciences is of interest to a general readership ranging from advanced university course students to experts in academia and industry

Efficient Preparations of Fluorine Compounds 2016-12-05 this book is an archival reference for the evolving field of biomaterials

and their applications in society focusing on their composition properties characterization chemistry and applications in bioenergy chemicals and novel materials and biomaterials it has broad appeal due to the recent heightened awareness around bioenergy and biomass as potential replacements for petroleum feedstocks the book is divided into three parts cellulose based biomaterials chitin and chitosan biomaterials and hemicelluloses and other polysaccharides each chapter addresses a separate biomaterial discussing its chemical physical and biological attributes and hones in on each compound's intrinsic tunability for numerous chemical transformations in the current quest for a green economy and resources this book will help inspire scientists towards novel sources for chemicals materials and energy in the years to come

High Throughput Screening Methods 2014 this book provides an interdisciplinary integrative overview of environmental problem solving using mild reaction conditions green reagents waste free and energy efficient synthesis in both industry and academic world discussions include a broad integrated perspective on sustainability integrated risk multi scale changes and impacts taking place within ecosystems worldwide features this book serves as a reference book for scientific investigators who need to do greener synthesis of organic compounds drugs and natural products under mild reaction condition using green reagents eco friendly catalysts and benign reaction mediums over traditional synthetic processes which is a key driving force of scientists greener synthesis of multiple value added heterocycles opens up a new horizon towards the organic catalysis and for this purpose development of natural resources acts as an effective catalyst using environmentally friendly reaction medium e.g. acetic acid, water, and acetic acid have been used for the synthesis of some crucial heterocyclic scaffolds such as bisenols and 2-amino-4H-pyran, tetraketones, pyrans and biaryls this book can also be used as a textbook for graduate and post graduate level courses for students furthermore the problems with answers in book will add better understanding for students

The Intriguing Story of the Elements 2010 the pigment compendium dictionary is a comprehensive information source for scientists art historians conservators and forensic specialists drawn together from extensive analytical research into the physical and chemical properties of pigments this essential reference to pigment names and synonyms describes the inter relationship of different names and terms the dictionary covers the field worldwide from pre history to the present day from rock art to interior decoration from ethnography to contemporary art drawing on hundreds of hard to obtain documentary sources as well as modern scientific data each term is discussed in detail giving both its context and composition comprehensive list of pigment names and synonyms pigments used worldwide from pre history to the present day contains information from hundreds of hard to obtain documentary sources

An Investigation of Naphthalenediimides as Central Building Blocks in Model Compounds for Scanning Tunneling Microscope Induced Light Emission Experiments and Förster Resonance Energy Transfer Studies 1998-10-02 virtual screening and drug docking volume 59 in the annual reports on medicinal chemistry series highlights new advances in the field with this new volume presenting interesting chapters on a variety of timely topics including docking scoring functions guarantee success in virtual screening no dance no partner a tale of flexibility in docking and virtual screening handling imbalance data in virtual screening rational computational approaches to predict novel drug candidates against leishmaniasis virtual screening against mtb dna gyrase applications and success stories using filters in virtual screening a brief guide to minimize errors and maximize efficiency and more additional chapters in the new release include machine learning and deep learning strategies for virtual screening applications of the virtual screening to find the novel hiv-1 therapeutic agents and large scale screening of small molecules with docking strategies and its impact on drug discovery provides the authority and expertise of leading contributors from an international board of authors presents the latest release in the annual reports on medicinal chemistry series updated release includes the latest information on virtual screening and drug docking

Solid-Supported Combinatorial and Parallel Synthesis of Small-Molecular-Weight Compound Libraries 2011-06-10 this volume discusses protocols that cover synthesis screening by selection and analysis of dna encoded chemical libraries del chapters in this book focus on methods used to practice del technology and include solution phase library synthesis using a variety of chemistries dna encoding of chemical structure design preparation and analysis of target proteins and tool compounds screening of soluble protein targets by affinity selection del qpcr preparative pcr and dna sequence analysis computational methods used to analyze selections and choose compounds for resynthesis and analysis of hit compounds written in the highly successful methods in molecular biology series format chapters include introductions to their respective topics lists of the necessary materials and reagents step by step readily reproducible laboratory protocols and tips on troubleshooting and avoiding known pitfalls cutting edge and comprehensive dna encoded chemical libraries methods and protocols is a valuable resource for scientists interested in del technology for drug discovery and will contribute to the continued advancement in this important field

Phosphorus Compounds 2012-03-20 an assessment of the known properties of natural products and their model compounds to determine their usefulness in biological and medical experimentation as well as in synkinetics the reversible synthesis of noncovalent

compounds it explores new techniques such as cryoelectron and scanning force microscopy and solid state nmr spectroscopy of

Polysaccharide Building Blocks 2022-05-30

Greener Synthesis of Organic Compounds 2004

The Pigment Compendium 2022-11-23

Virtual Screening and Drug Docking 2022-09-09

DNA-Encoded Chemical Libraries 2000-01-03

Molecular and Supramolecular Chemistry of Natural Products and Their Model Compounds

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