



Multicomponent Reactions

Minjie Lin

Multicomponent Reactions:

Multicomponent Reactions Raquel P. Herrera, Eugenia Marqués-López, 2015-03-30 Addressing a dynamic aspect of organic chemistry this book describes synthetic strategies and applications for multicomponent reactions including key routes for synthesizing complex molecules. Illustrates the crucial role and the important utility of multicomponent reactions MCRs to organic syntheses. Compiles novel and efficient synthetic multicomponent procedures to give readers a complete picture of this class of organic reactions. Helps readers to design efficient and practical transformations using multicomponent reaction strategies. Describes reaction background applications to synthesize complex molecules and drugs and reaction mechanisms.

Multicomponent Reactions Jieping Zhu, Hugues Bienaymé, 2006-03-06 In the very first book on this hot topic the expert editors and authors present a comprehensive overview of these elegant reactions. From the contents: Organoboron compounds, Free radical mediated multicomponent coupling reactions, Applications in drug discovery, Metal catalyzed reactions, Total synthesis of natural products, Asymmetric isocyanide based reactions, The Biginelli reaction, Asymmetric isocyanide based reactions, The Domino Knoevenagel Hetero Diels Alder Reaction and related transformations, Catalytic asymmetric reactions, Algorithm based methods for discovering novel reactions, Post condensation modifications of the Passerini and Ugi reactions. An essential reference for organic and catalytic chemists and those working in organometallics both in academia and industry.

Multicomponent Reactions in Organic Synthesis Jieping Zhu, Qian Wang, Meixiang Wang, 2014-10-15 Comprehensive and up to date this book focuses on the latest advances in the field such as newly developed techniques, more environmentally benign processes, broadened scopes and completely novel MCRs. In addition to carbene promoted MCRs and frequently applied metal catalyzed MCRs it also covers recently developed catalytic enantioselective variants as well as MCR in drug discovery and for the synthesis of heterocyclic molecules and macrocycles. Edited by the leading experts and with a list of authors reading like a who's who in multicomponent reaction chemistry this is definitely a must have for every synthetic organic chemist as well as medicinal chemists working in academia and pharmaceutical companies.

Synthesis of Heterocycles via Multicomponent Reactions I Romano V. A. Orru, Eelco Ruijter, 2010-05-12 Contents: L. Banfi, A. Basso, R. Riva, Synthesis of Heterocycles Through Classical Ugi and Passerini Reactions Followed by Secondary Transformations Involving One or Two Additional Functional Groups; V. A. Chebanov, K. A. Gura, S. M. Desenko, Aminoazoles as Key Reagents in Multicomponent Heterocyclizations; Y. Huang, K. Khouri, A. D. mling, Piperazine Scaffolds by Multicomponent 3 Reactions; The Piperazine Space; 4 in MCR Chemistry; 5 Deep MCR Piperazine Space; N. Elders, E. Ruijter, V. G. Nenajdenko, R. V. A. Orru, Acidic Isocyanides in Multicomponent Chemistry; A. Cukalovic, J. C. M. R. Monbaliu, C. V. Stevens, Microreactor Technology as an Efficient Tool for Multicomponent Reactions; L. A. Wessjohann, C. R. B. Rhoden, D. G. Rivera, O. Eichler, Vercillo, Cyclic Peptidomimetics and Pseudopeptides from Multicomponent Reactions; M. del Mar Sanchez Duque, C. Allais, N. Isambert, T. Constantieux, J. Rodriguez, Diketo Building Blocks for MCRs Based Syntheses of Heterocycles.

Multicomponent Reactions Raquel P. Herrera,Eugenia Marqués-López,2015-04-27 Addressing a dynamic aspect of organic chemistry this book describes synthetic strategies and applications for multicomponent reactions including key routes for synthesizing complex molecules Illustrates the crucial role and the important utility of multicomponent reactions MCRs to organic syntheses Compiles novel and efficient synthetic multicomponent procedures to give readers a complete picture of this class of organic reactions Helps readers to design efficient and practical transformations using multicomponent reaction strategies Describes reaction background applications to synthesize complex molecules and drugs and reaction mechanisms **Multicomponent Reactions** Ph.D. Ameta,Anshu Dandia,2017-09-20 This timely book provides a succinct summary of methods for the synthesis of bioactive heterocycles using a multicomponent reaction MCR approach The majority of pharmaceuticals and biologically active agrochemicals are heterocycles while countless additives and modifiers used in industrial applications are heterocyclic in nature With the recent introduction of high throughput biological evaluation the importance of MCRs for drug discovery has been recognized and considerable efforts have been focused especially on the design and development of multi component procedures for the generation of various bioactive heterocycles due to their significant therapeutic potential

Isocyanide-based Multicomponent Reactions Jonathan G. Rudick,Alexander Dömling,Shabnam Shaabani,2020-02-20 This eBook is a collection of articles from a Frontiers Research Topic Frontiers Research Topics are very popular trademarks of the Frontiers Journals Series they are collections of at least ten articles all centered on a particular subject With their unique mix of varied contributions from Original Research to Review Articles Frontiers Research Topics unify the most influential researchers the latest key findings and historical advances in a hot research area Find out more on how to host your own Frontiers Research Topic or contribute to one as an author by contacting the Frontiers Editorial Office frontiersin.org about contact **Multicomponent Reactions towards Heterocycles** Erik Van der Eycken,Upendra K. Sharma,2021-11-22 Presents a wide ranging overview of essential topics and recent advances in MCR chemistry Heterocycles are a central component in natural product chemistry pharmaceuticals agrochemicals and material science New synthetic methodologies integrating the sequencing of multicomponent reactions MCRs are today being used for the rapid synthesis of diversified heterocycles in just one step Multicomponent Reactions towards Heterocycles presents an up to date summary MCR chemistry with a focus on the conjugation between modern synthetic methodologies and MCRs Featuring contributions by leaders in the field this comprehensive resource highlights applications of MCRs in natural products and intermediate synthesis discusses current trends and future prospects in MCR chemistry outlines novel multicomponent procedures and more The authors provide the practical information required for designing new reaction strategies and mechanisms covering topics including MCR based green synthetic methods cyclization and cycloaddition reactions heterocycle multicomponent syntheses in a continuous flow catalytic alkynoyl generation MCR synthesis of saturated heterocycles and C H functionalization and multicomponent reactions Provides a thorough overview of

heterocycles as input in multicomponent reactions Discusses recent advances in the field of MCR chemistry and progress in the synthesis and functionalization of heterocycles Demonstrates the use of MCRs to simplify synthetic design and achieve complexity and diversity in novel bioactive molecules Highlights examples of multicomponent polymerizations target oriented synthesis and applications of MCR in medicinal chemistry Explains the methodology of using on resin MCRs to produce heterocycle compounds Illustrating the key role of MCRs towards heterocycles in natural product synthesis drug discovery organic synthesis and other applications Multicomponent Reactions towards Heterocycles is required reading for synthetic chemists in academia and industry alike

Science of Synthesis: Multicomponent Reactions Vol. 2, 2014-05-14

The two volumes Science of Synthesis Multicomponent Reactions critically review the state of the art of domino sequential and consecutive multicomponent reactions in what is a highly dynamic field They serve as the basis for practical application to reach the goals of diversity oriented synthesis reaction design and novel synthetic concepts As is typical for the Science of Synthesis series the reference work on multicomponent reactions presents the best synthetic methods as judged by experts in the field and includes typical and general experimental procedures The volume Reactions Involving an alpha beta Unsaturated Carbonyl Compound as Electrophilic Component covers the following topics Michael Additions Wittig Reactions Cycloadditions Reactions Involving an alpha beta Unsaturated Carbonyl Compound as Electrophilic Component with Electron Deficient Alkynes as Electrophiles Reactions with Cycloaddition as the Key Step Boron Mediated Multicomponent Reactions Silicon Mediated Multicomponent Reactions Free Radical Mediated Multicomponent Reactions Metal Mediated Multicomponent Reactions

Multicomponent Reactions Ph.D. Ameta, Anshu Dandia, 2017-09-20 This timely book provides a succinct summary of methods for the synthesis of bioactive heterocycles using a multicomponent reaction MCR approach The majority of pharmaceuticals and biologically active agrochemicals are heterocycles while countless additives and modifiers used in industrial applications are heterocyclic in nature With the recent introduction of high throughput biological evaluation the importance of MCRs for drug discovery has been recognized and considerable efforts have been focused especially on the design and development of multi component procedures for the generation of various bioactive heterocycles due to their significant therapeutic potential

Synthesis of Heterocycles via Multicomponent Reactions I Romano V. A. Orru, Eelco Ruijter, 2010-07-20 Contents L Banfi A Basso R Riva Synthesis of Heterocycles Through Classical Ugi and Passerini Reactions Followed by Secondary Transformations Involving One or Two Additional Functional Groups V A Chebanov K A Gura S M Desenko Aminoazoles as Key Reagents in Multicomponent Heterocyclizations Y Huang K Khoury A D mling Piperazine Scaffolds by Multicomponent 3 Reactions The Piperazine Space 4 in MCR Chemistry 5 Deep MCR Piperazine Space N Elders E Ruijter V G Nenajdenko R V A Orru Acidic Isocyanides in Multicomponent Chemistry A Cukalovic J C M R Monbaliu C V Stevens Microreactor Technology as an Efficient Tool for Multicomponent Reactions L A Wessjohann C R B Rhoden D G Rivera O Eichler Vercillo Cyclic Peptidomimetics and Pseudopeptides from Multicomponent

Reactions M del Mar Sanchez Duque C Allais N Isambert T Constantieux J Rodriguez Diketo Building Blocks for MCRs Based Syntheses of Heterocycles **Recent Advances in Applications of Name Reactions in Multicomponent Reactions**

Majid M. Heravi, Vahideh Zadsirjan, 2020-05-29 Recent Advances in Applications of Name Reactions in Multicomponent Reactions is an ideal reference for researchers and postgraduate students studying organic chemistry as well as synthetic organic chemists working on the development of novel methodologies for the synthesis of various heterocyclic systems especially drug design and discovery in both academia and industry. The book reviews recent applications of name reactions in multicomponents for the synthesis of heterocycles and examines recent advances in applications of significant name reactions such as Ugi and Passirini Click Knoevenagel Michael Diels Alder Aldol Mannich Heck Huisgen and Suzuki in MCRs. These reactions can be used in the synthesis of a wide variety of novel heterocycles with different sizes and heteroatoms as well as in the total synthesis of natural products in order to decrease the number of synthetic steps. Since chiral inductions are necessary for most of these sequential name reactions their asymmetric catalyzed reactions are also described. Includes the synthesis of many heterocycles which is ideal for synthetic organic chemists engaged in the synthesis of heterocyclic systems. Covers the recent advances of asymmetric synthesis of a wide range of heterocycles in satisfactory enantioselectivities ees or distereoselectivities des. Reviews the synthesis of a wide variety of interesting heterocycles by using a combination of different and versatile name reactions via MCRs **Multicomponent Reactions**, 2015

Synthesis of Heterocycles via Multicomponent Reactions II Romano V. A. Orru, Eelco Ruijter, 2010-07-26 G raldine Masson Luc Neuville Carine Bughin Aude Fayol Jieping Zhu Multicomponent Syntheses of Macrocycles Thomas J J M ller Palladium Copper Catalyzed Alkyne Activation as an Entry to Multicomponent Syntheses of Heterocycles Rachel Scheffelaar Eelco Ruijter Romano V A Orru Multicomponent Reaction Design Strategies Towards Scaffold and Stereochemical Diversity Nicola Kielland Rodolfo Lavilla Recent Developments in Reissert Type Multicomponent Reactions Jitender B Bariwal Jalpa C Trivedi Erik V Van der Eycken Microwave Irradiation and Multicomponent Reactions Irini Akritopoulou Zanze Stevan W Djuric Applications of MCR Derived Heterocycles in Drug Discovery **Multicomponent Reactions**, 2015 **Pot, Atom, and Step Economy (PASE) Synthesis** Wei Zhang, Wen-Bin Yi, 2019-08-01 This book emphasizes the atom economy aspect of multicomponent reactions. It describes how this methodology has been applied to several named reactions. Among the twelve principles of green chemistry atom economy addresses synthetic efficiency. A multicomponent reaction can be defined as an energy cost and time efficient method for organic synthesis. Instead of making one or two bonds in a chemical transformation multicomponent reactions generate several chemical bonds in a single operation. This book presents a series of detailed reaction mechanisms that beautifully illustrate this principle. Multicomponent reactions are widely applied to the preparation of complex and diverse molecular structures in academic and industrial research laboratories. As such this book is targeted at researchers involved in green organic chemistry **Multicomponent Reactions, Workbench Edition** Thomas J.

J. Müller, 2014-03-12 The two volumes *Science of Synthesis Multicomponent Reactions* critically review the state of the art of domino sequential and consecutive multicomponent reactions in what is a highly dynamic field. They serve as the basis for practical application to reach the goals of diversity oriented synthesis reaction design and novel synthetic concepts. The following topics are covered: Biginelli Reaction, Strecker Reaction, Hantzsch Pyridine Synthesis, Mannich Reaction, Petasis Reaction, Willgerodt Kindler Reaction, Kabachnik Fields Reaction, Passerini Reaction, Ugi Reaction, Gewald Reaction, Vol 1 Michael Additions, Wittig Reactions, Cycloadditions Reactions Involving an Unsaturated Carbonyl Compound as Electrophilic Component with Electron Deficient Alkynes as Electrophiles, Reactions with Cycloaddition as the Key Step, Boron Mediated Multicomponent Reactions, Silicon Mediated Multicomponent Reactions, Free Radical Mediated Multicomponent Reactions, Metal Mediated Multicomponent Reactions, Vol 2.

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Patrick Theato, 2015-07-06 The series *Advances in Polymer Science* presents critical reviews of the present and future trends in polymer and biopolymer science. It covers all areas of research in polymer and biopolymer science including chemistry, physical chemistry, physics, material science. The thematic volumes are addressed to scientists whether at universities or in industry who wish to keep abreast of the important advances in the covered topics. *Advances in Polymer Science* enjoys a longstanding tradition and good reputation in its community. Each volume is dedicated to a current topic and each review critically surveys one aspect of that topic to place it within the context of the volume. The volumes typically summarize the significant developments of the last 5 to 10 years and discuss them critically, presenting selected examples explaining and illustrating the important principles and bringing together many important references of primary literature. On that basis, future research directions in the area can be discussed. *Advances in Polymer Science* volumes thus are important references for every polymer scientist as well as for other scientists interested in polymer science as an introduction to a neighboring field or as a compilation of detailed information for the specialist. Review articles for the individual volumes are invited by the volume editors. Single contributions can be specially commissioned. Readership: Polymer scientists or scientists in related fields interested in polymer and biopolymer science at universities or in industry, graduate students.

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Multi-component Reactions in Molecular Diversity Jean-Philippe Goddard,Max Malacria,Cyril Ollivier,2020-04-28

While very useful for studying syntheses of molecular diversity multi component reactions also offer rapid access to a variety of complex molecules that are relevant for biological applications Multi component Reactions in Molecular Diversity analyzes these reactions whether they are realized by organometallic ionic or even radical processes It highlights popular methods based on monotype reactions cascade tandem domino and their efficiency and academic industrial domain are illustrated This book also investigates the most efficient ways to prepare complex molecules Multi component reactions are in tune with the concepts of atom and steps economy which are of prior importance in all the reported processes from the laboratory to the pilot scale The essential criteria for green chemistry are also examined in the book in detail

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