1. Record Nr. UNINA9910877122603321 Autore Ishikawa Tsutomu **Titolo** Superbases for organic synthesis: guanidines, amidines and phosphazenes and related organocatalysts / / editor, Tsutomu Ishikawa Chichester, UK, : John Wiley & Sons, 2009 Pubbl/distr/stampa **ISBN** 1-282-69052-3 9786612690525 0-470-74085-X 0-470-74086-8 Descrizione fisica 1 online resource (346 p.) Disciplina 541.395 547.2 Soggetti **Amidines** Guanidines Phosphazo compounds Organic bases Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Description based upon print version of record. Note generali Nota di bibliografia Includes bibliographical references and index. Superbases for Organic Synthesis: Guanidines, Amidines, Phosphazenes Nota di contenuto and Related Organocatalysts; Contents; Preface; Acknowledgements; Contributors; 1. General Aspects of Organosuperbases; References; 2. Physico-Chemical Properties of Organosuperbases; 2.1 Introduction; 2.2 Proton Sponges; 2.2.1 'Classical' Proton Sponges; 2.2.2 Proton Sponges with Other Aromatic Backbones; 2.2.3 Polycyclic Proton Sponges; 2.3 Amidines; 2.4 Guanidines; 2.5 Phosphazenes; 2.6 Guanidinophosphazenes; 2.7 Other Phosphorus Containing Superbases : Verkade's Proazaphosp hatranes; 2.8 Theoretical Methods 2.9 Concluding RemarksReferences; 3. Amidines in Organic Synthesis; 3.1 Introduction; 3.2 Preparation of Amid ines; 3.2.1 Alkylation of Amidines; 3.2.2 Condensation of 1,2-Diamine; 3.2.3 Coupling of Imines (Isoamarine Synthesis); 3.2.4 Modification of Amide Derivatives; 3.2.5 Multi-Component Reaction; 3.2.6 Oxidative Amidination; 3.2.7

Oxidative Cyclization to Bisamidine; 3.2.8 Ring Opening of Aziridine;

3.3 Application of Amidines to Organic Synthesis; 3.3.1

Acetoxybromination; 3.3.2 Aldol -Like Reaction; 3.3.3 Azidation; 3.3.4 Aziridination; 3.3.5 Baylis-Hillman Reaction 3.3.6 Cycloaddition3.3.7 Dehydrohalogenation; 3.3.8 Deprotection; 3.3.9 Deprotonation; 3.3.10 Displacement Reaction; 3.3.11 Horner-Wadsworth-Emmons Reaction; 3.3.12 Intramolecular Cyclization; 3.3.13 Isomerization; 3.3.14 Metal -Mediated Reaction; 3.3.15 Michael Reaction; 3.3.16 Nef Reaction; 3.3.17 Nucleophilic Epoxidation; 3.3.18 Oxidation: 3.3.19 Pudovik-phospha-Brook Rearrangemen t; 3.3.20 [1,4]-Silyl Transfer; 3.3.21 Tandem Reaction; 3.4 Amidinium Salts: Design and Synthesi s: 3.4.1 Catalyst: 3.4.2 Molecular Recognition: 3.4.3 Reagent Source; 3.5 Concluding Remarks; References 4. Guanidines in Organic Synthesis 4.1. Introduction: 4.2. Preparation of Chiral Guanidines; 4.2.1 Polysubstituted Acyclic and Monocyclic Guanidines; 4.2.2 Monosubstituted Guanidines (Guanidinylation); 4.2.3 Bicyclic Guanidines: 4.2.4 Preparation Based on DMC Chemistry: 4.3 Guanidines as Synthetic Tools; 4.3.1 Addition; 4.3.2 Substitution; 4.3.3 Others; 4.4 Guanidinium Salt; 4.4.1 Guanidinium Ylide; 4.4.2 Ionic Liquid: 4.4.3 Tetramethylguanidinium Azide (TMGA): 4.5 Concluding Remarks; References; 5. Phosphazene: Preparation, Reaction and Catalytic Role: 5.1 Introduction 5.2 Deprotonative Transformations Using Stoichiometric Phosphazenes5.2.1 Use of P1 Base; 5.2.2 Use of P2 Base; 5.2.3 Use of P4 Base; 5.2.4 Use of P5 Base; 5.3 Transformation Using Phosphazene Catalyst: 5.3.1 Addition of Nucleophiles to Alkyne: 5.3.2 Catalytic Activation of Silylated Nucleophiles; 5.4 Proazaphosphatrane Base (Verkade's Base); 5.4.1 Properties of Proazaphosphatrane; 5.4.2 Synthesis Using Proazphosphatrane; 5.5 Concluding Remarks; References; 6. Polymer-Supported Organosuperbases; 6.1 Introduction; 6.2 Acylation Reactions; 6.3 Alkylation Reactions; 6.4 Heterocyclization 6.5 Miscellaneous

Sommario/riassunto

Guanidines, amidines and phosphazenes have been attracting attention in organic synthesis due to their potential functionality resulting from their extremely strong basicity. They are also promising catalysts because of their potential for easy molecular modification, possible recyclability, and reduced or zero toxicity. Importantly, these molecules can be derived as natural products - valuable as scientists move towards "sustainable chemistry", where reagents and catalysts are derived from biomaterial sources. Superbases for Organic Synthesis is an essential guide to these important