

1. Record Nr.	UNINA9910822171403321
Autore	Akiba Kinya <1936->
Titolo	Organo main group chemistry // Kin-ya Akiba
Pubbl/distr/stampa	Hoboken, N.J., : Wiley, c2011
ISBN	1-283-22789-4 9786613227898 1-118-02588-1 1-118-02591-1 1-118-02587-3
Edizione	[1st ed.]
Descrizione fisica	1 online resource (289 p.)
Classificazione	SCI013040
Disciplina	547
Soggetti	Organic compounds Organic compounds - Synthesis Carbon compounds Chemistry, Organic
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	ORGANO MAIN GROUP CHEMISTRY; CONTENTS; Preface; 1 Main Group Elements and Heteroatoms: Scope and Characteristics; 1.1 Aufbau Principle and Sign of Orbitals; 1.2 Electronic Configuration of an Atom: Main Group Elements and Heteroatoms; 1.3 Fundamental Properties of Main Group Elements; 1.4 Acidity of Carboxylic Acid and Substituent Effect; 1.5 Heteroatom Effect; 1.5.1 Stabilization of -Carbocation by Resonance: Stereoelectronic Effect; 1.5.2 Coordination with Lewis Acids; References; Notes 1: Electronegativity; Notes 2: Importance of Formal Logic-I: Oxidation Number and Formal Charge Notes 3: Importance of Formal Logic-II: Octet Rule, Eighteen-Electron Rule, Hypervalence 2 Main Group Element Effect; 2.1 What Is Main Group Element Effect?; 2.2 Single Bond Energy and -Bond Energy; 2.3 Hypervalent Compound; 2.4 Effect of Hypervalent Bond (1): 3c.4e Bond and Structure; 2.5 Effect of Hypervalent Bond (2): Apicophilicity and Pseudorotation; 2.6 Effect of Hypervalent Bond (3): Ligand Coupling Reaction (LCR) and Edge Inversion; 2.7 Effect of X-C; 2.8 Effect of .X -C; Notes 4: (, *) and (, *): HMO (Hueckel Molecular Orbital) and

## Electrocyclic Reaction

3 Lithium, Magnesium, and Copper Compounds 3.1 Synthesis; 3.2 Structure; 3.3 Reaction; 3.3.1 Deprotonation as Base; 3.3.2 Nucleophilic Reaction; 3.3.3 Conjugate Addition of Lithium Dimethylcuprate; References; 4 Boron and Aluminum Compounds; 4.1 Synthesis; 4.2 Structure; 4.3 Reaction; References; 5 Silicon, Tin, and Lead Compounds; 5.1 Synthesis; 5.2 Reaction; 5.3 Organotin and Lead Compounds; References; Notes 5: Stable Carbene and Its Complex; 6 Phosphorus, Antimony, and Bismuth Compounds; 6.1 Phosphorus Compounds; 6.2 Synthesis of Organophosphorus Compounds 6.3 Tertiary Phosphine and Its Nucleophilic Reaction 6.4 Arbuzov Reaction; 6.5 Perkow Reaction; 6.6 Synthesis of Optically Active Phosphines; 6.7 Ylide and Wittig Reaction and Related Ones; 6.8 Reactions of Phosphonium Salts and Formation of Phosphoranes; 6.9 Freezing BPR and Its Effect; 6.10 Antimony and Bismuth Compounds; References; Notes 6: Dreams of Staudinger and Wittig; Notes 7: Stereochemistry in Nucleophilic Substitution of MX<sub>4</sub>-type Compounds: Inversion or Retention; 7 Sulfur, Selenium, and Tellurium Compounds; 7.1 Sulfur Compounds; 7.2 Synthesis of Organosulfur Compounds 7.3 Reactions of Organosulfur Compounds 7.4 Structure and Reaction of Hypervalent Organosulfur Compounds; 7.5 Selenium and Tellurium Compounds; References; Notes 8: Inversion Mechanism of NH<sub>3</sub> and NF<sub>3</sub>: Vertex Inversion or Edge Inversion; 8 Organohalogen Compounds: Fluorine and Iodine Compounds; 8.1 Synthesis of Chlorine and Bromine Compounds; 8.2 Fluorine Compounds; 8.3 Iodine Compounds; References; 9 Atrane and Transannular Interaction: Formation of Hypervalent Bond; 9.1 Introduction; 9.2 Silatrane and Atrane; 9.3 Transannular Interaction (1); 9.4 Transannular Interaction (2); References

10 Unsaturated Compounds of Main Group Elements of Third Period and Heavier

### Sommario/riassunto

"This book will capture the essential scope of organic chemistry of all main group elements and covers all main group elements dealing with syntheses and reactions of their organic compounds. While organic compounds of second row elements centered at carbon are the major components of animals and plants, those of the third row and below are also important and have unique roles which this book discusses. The first eight chapters are arranged according to the periodic table, starting with the role of lithium and magnesium cations (positively charged ions) in synthesis to fluorine and iodine compounds. The last four chapters deal with modern topics that were selected on the basis of unique characteristics of main group elements compared to the carbon (i.e. main group element effect is placed as the central idea to arrange and unify.)"--