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Coordination Number 1.25 Elements of Bonding in Hypervalent Compounds; 1.26 The λ Convention; 1.27 The Inert Pair Effect; 1.28 Summary; Further Reading; Chapter 2 The s-Block Elements: Alkali and Alkaline Earth Metals; 2.1 Solubility; 2.2 The s-Block Metals as Reducing Agents; 2.3 Reductive Couplings; 2.4 Dissolving Metal Reactions; 2.5 Organolithium and Organomagnesium Compounds; 2.6 Dihydrogen Activation by Frustrated Lewis Pairs (FLPs); 2.7 A Mg-Mg Bond; 2.8 Summary; Further Reading; Chapter 3 Group 13 Elements 3.1 Group 13 Compounds as Lewis Acids 3.2 Hydroboration; 3.3 Group 13-Based Reducing Agents; 3.4 From Borazine to Gallium Arsenide: 13-15 Compounds; 3.5 Low-Oxidation-State Compounds; 3.6 The Boryl Anion; 3.7 Indium-Mediated Allylations; 3.8 Thallium Reagents; 3.9 Summary; Further Reading; Chapter 4 Group 14 Elements; 4.1 Silyl Protecting Groups; 4.2 A Case Study: Peterson Olefination; 4.3 Silanes; 4.4 The β -Silicon Effect: Allylsilanes; 4.5 Silyl Anions; 4.6 Organostannanes; 4.7 Polystannanes; 4.8* Carbene and Alkene Analogs; 4.9* Alkyne Analogs; 4.10 Silyl Cations 4.11 Glycol Cleavage by Lead Tetraacetate 4.12 Summary; Further Reading; Chapter 5A Nitrogen; 5A.1 Ammonia and Some Other Common Nitrogen Nucleophiles; 5A.2 Some Common Nitrogen Electrophiles: Oxides, Oxoacids, and Oxoanions; 5A.3 N-N Bonded Molecules: Synthesis of Hydrazine; 5A.4 Multiple Bond Formation: Synthesis of Sodium Azide; 5A.5 Thermal Decomposition of NH_4NO_2 and NH_4NO_3 ; 5A.6 Diazonium Salts; 5A.7 Azo Compounds and Diazene; 5A.8* Imines and Related Functional Groups: The Wolff-Kishner Reduction and the Shapiro Reaction; 5A.9 Diazo Compounds 5A.10 Nitrenes and Nitrenoids: The Curtius Rearrangement

Sommario/riassunto

Involved as it is with 95% of the periodic table, inorganic chemistry is one of the foundational subjects of scientific study. Inorganic catalysts are used in crucial industrial processes and the field, to a significant extent, also forms the basis of nanotechnology. Unfortunately, the subject is not a popular one for undergraduates. This book aims to take a step to change this state of affairs by presenting a mechanistic, logical introduction to the subject. Organic teaching places heavy emphasis on reaction mechanisms - "arrow-pushing" - and the authors of this book have found that a mec
