

1. Record Nr.	UNINA9910583076003321
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Titolo	Advanced inorganic chemistry : applications in everyday life // Narayan S. Hosmane, Northern Illinois University
Pubbl/distr/stampa	London : , : Academic Press, and imprint of Elsevier, , [2017] 2017
ISBN	0-12-801993-X
Descrizione fisica	1 online resource (xix, 255 pages) : illustrations (some color)
Collana	Gale eBooks
Disciplina	546
Soggetti	Chemistry, Inorganic
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Foundations: concepts in chemical bonding and stereochemistry. Electronic structure: quantum theory revisited. Introduction: Why do we need to know quantum theory? ; Quantum mechanical description of the hydrogen atom -- Molecular geometries. Introduction: Why do we need to know molecular geometries or shapes of molecules? ; Shapes of molecules- valence shell electron pair repulsion (VSEPR) model ; Nonrigid shapes of molecules (stereochemistry) -- Molecular symmetry- Part I: Point group assignment. Introduction: Is it necessary to learn molecular symmetry? ; Elements of symmetry ; Point groups -- Group theory: matrix representation and character tables. Introduction: Is it necessary to learn group theory? ; Other properties of symmetry operations ; Applications to molecular structure and properties ; Examples of other structures ; Molecular spectroscopy -- Advanced topics 1: Introduction to ligands and metal complexes. Ligands and d-block metal complexes. Introduction: Is it necessary to know about ligands and metal complexes? ; Transition metals ; Nomenclature of coordination compounds ; Isomerism in coordination compounds -- Review of bonding theories for d-block metal complexes. Introduction: Why bonding theories of metal complexes are important? ; Valence bond theory ; Crystal field theory ; Molecular orbital theory -- Coordination chemistry: reaction mechanisms and their influencing factors. Introduction: What makes coordination chemistry interesting? ;

Modes of substitution reaction mechanisms ; Complications involving metal complexes ; Activation parameters ; Examples of different coordination numbers with geometries and factors influencing reaction mechanism -- Advanced topics 2: electronic spectra, clusters & isolobal fragments. Coordination chemistry: electronic spectra. Introduction: why do we need to learn electronic spectra? ; Electronic spectra ; Tanabe- sugano diagrams ; Charge transfer spectra -- Cluster chemistry and isolobal fragments. Introduction: Role of cluster chemistry in nature ; Clusters of boranes, carboranes, and their metal complexes ; Clusters of other main group elements and transition metals ; Extension of Wade's rules beyond boron clusters -- Advanced topics 3: Organometallic chemistry and catalysis. Organometallic chemistry. Introduction: What is in organometallic chemistry? ; Definitions and nomenclature of organometallic compounds ; Molecular formulas and structures of organometallic compounds -- Catalysis with organometallic. Introduction: What is so special about catalytic processes in our daily life? ; Homogeneous catalysts ; Hydrogenation catalysts ; Other catalytic processes -- Advanced topics 4: Bioinorganic chemistry and applications. Introduction ; History and medical relevance ; Transport and storage of metal ions ; Oxygen transport and activation proteins ; Biomineralization.

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### Sommario/riassunto

This book explores inorganic chemistry, connecting key topics with actual experiences in nature and everyday life. It begins with a focus on the shapes (geometry) dictating intermolecular forces of attractions, leading to reactivity between molecules of different shapes, and provides coverage from the foundations of chemical bonds and stereochemistry to advanced topics, such as organometallic, bioinorganic, carboranes, and environmental chemistry.

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