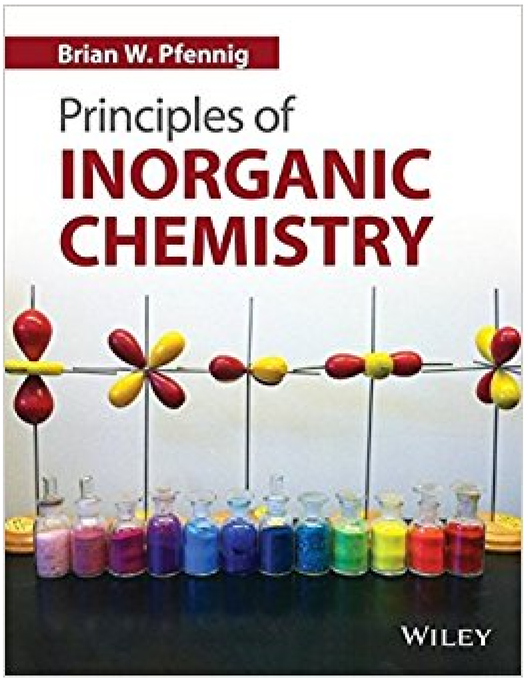
Principles Of Inorganic Chemistry



Synopsis

Aimed at senior undergraduates and first-year graduate students, this book offers a principles-based approach to inorganic chemistry that, unlike other texts, uses chemical applications of group theory and molecular orbital theory throughout as an underlying framework. This highly physical approach allows students to derive the greatest benefit of topics such as molecular orbital acid-base theory, band theory of solids, and inorganic photochemistry, to name a few. Takes a principles-based, group and molecular orbital theory approach to inorganic chemistry The first inorganic chemistry textbook to provide a thorough treatment of group theory, a topic usually relegated to only one or two chapters of texts, giving it only a cursory overview Covers atomic and molecular term symbols, symmetry coordinates in vibrational spectroscopy using the projection operator method, polyatomic MO theory, band theory, and Tanabe-Sugano diagrams Includes a heavy dose of group theory in the primary inorganic textbook, most of the pedagogical benefits of integration and reinforcement of this material in the treatment of other topics, such as frontier MO acid--base theory, band theory of solids, inorganic photochemistry, the Jahn-Teller effect, and Wade’s rules are fully realized Very physical in nature compare to other textbooks in the field, taking the time to go through mathematical derivations and to compare and contrast different theories of bonding in order to allow for a more rigorous treatment of their application to molecular structure, bonding, and spectroscopy Informal and engaging writing style; worked examples throughout the text; unanswered problems in every chapter; contains a generous use of informative, colorful illustrations

Book Information

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Customer Reviews

An informally written, engaging textbook, first of its kind, to offer a highly physical approach to inorganic chemistry Unlike other chemistry textbooks, whose memorization-heavy volumes often dispirit student interest, this text is designed for upper-level undergraduates (who have already taken physical chemistry) and introductory-level graduate students taking an inorganic or advanced inorganic chemistry course. Written by veteran professor and scientist, Brian W. Pfennig, Principles of Inorganic Chemistry is composed of eclectic sources from Dr. PfennigÃ¢â ¬â„¢s many years of teaching and built on a principles-based, group and molecular orbital theory approach. Covering a variety of topicsÃ¢â ¬â •from the Composition of Matter, to Models of Chemical Bonding, to Reactions of Organometallic CompoundsÃ¢â ¬â •this textbook features: Thorough treatment of group theory, a topic usually given cursory overview in other textbooks Rigorous mathematical derivations of the underlying chemical principles Comprehensive purview of chemical bonding that compares and contrasts the traditional classification of ionic, covalent, and metallic bonding in order to allow for a more integrative treatment of their application to molecular structure, bonding, and spectroscopy Coverage of atomic and molecular term symbols, symmetry coordinates in vibrational spectroscopy using the projection operator method, polyatomic MO theory, band theory, and Tanabe-Sugano diagrams Worked examples throughout the text, unanswered problems in every chapter, and generous use of informative, colorful illustrations   For instructors who are looking for a more physical inorganic chemistry course, this textbook offers pedagogical benefits of integration and reinforcement of group theory in the treatment of other topics. Together with its unique underlying framework, the bookÃ¢â ¬â„¢s approach allows students to be engaged and to derive the greatest learning experience possible from topics such as frontier MO acid-base theory, band theory of solids, inorganic photochemistry, the Jahn-Teller effect, and Wade’s rules for cluster compounds, to name but a few examples.Ã Â

Brian W. Pfennig, PhD, received his undergraduate B.S. degree in chemistry at Albright College in 1988. He earned his Ph.D. in 1992 in the field of physical inorganic chemistry at Princeton University with Dr. Andrew B. Bocarsly, studying the photochemistry of organometallic sandwich compounds and electron transfer in multinuclear mixed-valence coordination compounds. Dr. Pfennig has held a number of different teaching appointments at small liberal arts colleges, including Franklin & Marshall College, Haverford College, Vassar College, and Ursinus College.

During his 20-year teaching career, he has taught general chemistry, an accelerated one-semester general chemistry course, both introductory and advanced inorganic chemistry, bio-inorganic chemistry, and inorganic and organometallic photochemistry, as well as serving as the general chemistry laboratory coordinator at Ursinus College for the past 10 years. He is also actively engaged in research with undergraduates in the areas of inorganic photochemistry, electrochemistry, and electron transfer processes occurring in multinuclear mixed-valence coordination compounds. He has also published several papers in the area of chemical education.