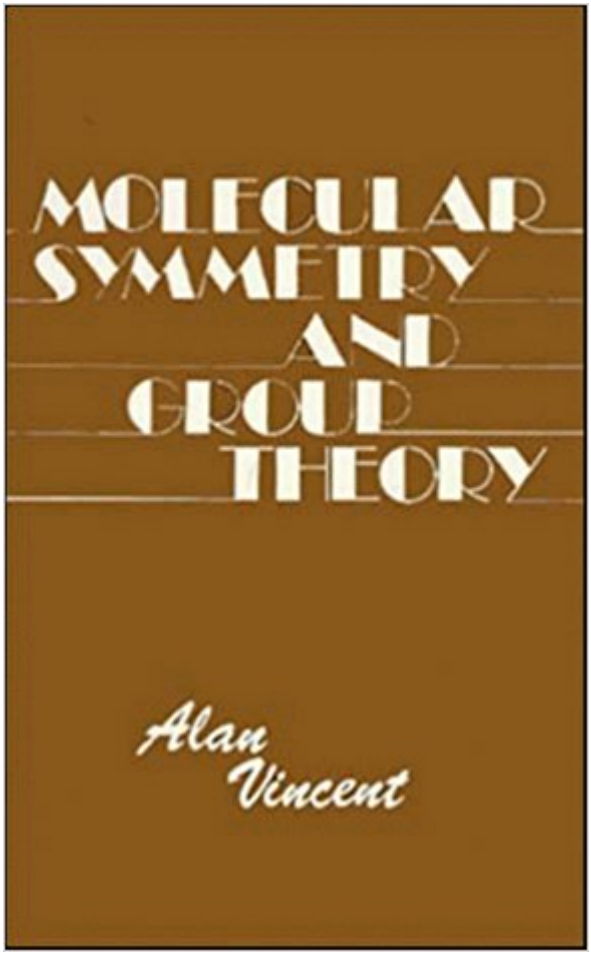
Molecular Symmetry And Group Theory: A Programmed Introduction To Chemical Application



Synopsis

This substantially revised and expanded new edition of the bestselling textbook, addresses the difficulties that can arise with the mathematics that underpins the study of symmetry, and acknowledges that group theory can be a complex concept for students to grasp. Written in a clear, concise manner, the author introduces a series of programmes that help students learn at their own pace and enable to them understand the subject fully. Readers are taken through a series of carefully constructed exercises, designed to simplify the mathematics and give them a full understanding of how this relates to the chemistry. This second edition contains a new chapter on the projection operator method. This is used to calculate the form of the normal modes of vibration of a molecule and the normalised wave functions of hybrid orbitals or molecular orbitals. The features of this book include: * A concise, gentle introduction to symmetry and group theory * Takes a programmed learning approach * New material on projection operators, and the calcultaion of normal modes of vibration and normalised wave functions of orbitals This book is suitable for all students of chemistry taking a first course in symmetry and group theory. --This text refers to an out of print or unavailable edition of this title.

Book Information

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Customer Reviews

"the best introduction to the subject, especially for those whose mathematics is weak." (Chemistry and Industry, 2nd April 2001) ".I recommend this book..." (Education in Chemistry, September 2002) --This text refers to an out of print or unavailable edition of this title.

The new edition of this best-selling textbook addresses the difficulties that can arise with the mathematics that underpins the study of symmetry, and acknowledges that group theory can be a complex concept for students to grasp. Molecular Symmetry and Group Theory is based around a series of programmes that help students learn at their own pace and enable them to understand the subject fully. Readers are taken through a series of carefully constructed exercises, designed to simplify the mathematics and give them a full understanding of how this relates to the chemistry. The second edition has been revised and expanded and includes a new chapter on the projection operator method. This is used to calculate the form of the normal modes of vibration of a molecule and the normalised wave functions of hybrid orbitals or molecular orbitals. Features: * A concise, gentle introduction to symmetry and group theory * Takes a programmed learning approach * New material on projection operators, and the calculation of normal modes of vibration and normalised wave functions of orbitals. --This text refers to an out of print or unavailable edition of this title.

I bought this book with no prior knowledge of molecular symmetry nor the mathematics of group theory. With only the idea of stereochemistry and matrix algebra, I was hoping that this book would help pave the way for my inorganic chemistry course over the summer. The first few pages (about 6-10 pages in) started out quite nicely, you get a comfortable feel for the author and his teaching style- almost like a parent holding your hand and guiding you gently through the basic elements of symmetry. Aside from a few vaguely conveyed ideas (improper rotation was not very clear), you start to get a hang of the idea and feel comfortable with the author and his pedagogy. BUT..... once you reach the 2nd chapter about point groups, it’s as though the author left you in the middle of a busy high-way, blindfolded, with little to no explanation why such a point group contains such elements, etc. and how, or even why he grouped it such a way! All the new concepts in chapter 2 were just thrown at you as though you are the master of molecular symmetry. This would be alright if the book haven’t been a step-by-step guide to Molecular symmetry and Group Theory, so basically when I got stuck with Chapter 2, I had NO clue what chapter 3 was talking about and because I don’t know chapter 3, I could forget about Chapter 4, and so on... Unfortunate! That’s one word I want to convey about this book. It’s unfortunate that the author just got tired of explaining better after chapter 1, and assumed that everyone is the master of molecular symmetry after an excellent introduction. It got my hopes up and let it down as soon as I got to chapter 2. If this is the "easiest" way to learn molecular symmetry, I don’t know how people learn it in the past. I give this 1 star because that’s how many chapters I got to understand in this book. Bottom line is, this book is

like a movie with a great trailer- and after watching the movie for the first ten minutes, you realize it has nothing to do with what the trailer is about- that’s how you’ll feel when you get to chapter 2....trust me.

This is a useful book; it expands an earlier edition. The book uses the "linear programming format."A programmed instruction book, when opened should lie as flat as possible so that the reader can cover the given answer as she/he solves the indicated problem!This is not the case with this book; it is small and stiff and tends to close and not lie flat when opened. This is a nuisance that interferes with study!I have read and own many programmed instruction books that date back to the 1960s. The better ones had relatively large pages that were bound in signatures; some used spiral binding, etc. These types of bindings allowed the book to remain open so that the preceding text was easily referred to as one completed an exercise, etc.Having said that, this book is useful. However, a casual acquaintance with 3-D coordinates, atomic orbitals, and matrices would be helpful.The material covered is classic, useful, and worth mastering. It will ease the pain when studies of more detailed accounts of symmetry and group theory are encountered!

This book provides a good overview of group theory and a great introduction to the field. It is easy to read and contains numerous exercises to demonstrate the key points throughout. Consequently, this makes it a good text for a course that involves group theory. It also contains some useful hints not found in other texts. I surveyed several books on group theory, and this was the best one overall. The text by Cotton is more complete and exhaustive, but for basic knowledge I prefer this book because it is simply written.

So far this is the best introductory book that is available in the topic. The style of presentation is lucid such that a student with minimum knowledge in geometry can master group theory in 2 weeks. Traditionally Group theory in Chemistry is considered as very abstract and therefore complex subject. But after reading from first page to the last, I felt that this opinion is wrong and Group theory can be presented in easy way as Vincent did. I strongly recommend this book for undergraduate and graduate courses!!

As an average chemistry student at an American University. I have to say this has been one of my favorite supplemental text books ever for the subject of Inorganic Chemistry. It condenses the information down into smaller sections with easy to understand sections broken up by practice

problems.I would not say this is the only necessary text for the subject but to sit along side your main Inorganic text book I would say this is a very useful book to have to read. The exercises are easy to understand and do. When you get stuck the book is short enough to re-read sections and clear up any confusion.However for a more in depth understanding I would look elsewhere.

The book starts easy but makes huge jumps in each subsequent chapter. In the end, you'll be left with enormous gaps of knowledge which the authors pretends to have addressed in his previous chapters. I spent minutes rereading a page in search of some information that I thought I had missed, only to find out there was nothing there. I recommend Robert Carter's book rather than this too-short-to-be-useful book. The low price isn't really worth it.

Our professor had us but this and a few other books to cover all the topics we needed to for Advanced Inorganic Chemistry. This book is great. It walks you through the coordination really nicely and is very interactive with it's little mid-reading quizzes. Probably one of the most spot on valuable books I've owned.

Totally love this book.The small chapters and exercises help the leader learn about group theory and symmetry (as applied to chemistry). No professor required.

Mathematical Theory of Symmetry in Solids: Representation Theory for Point Groups and Space Groups (Oxford Classic Texts in the Physical Sciences) International Tables for Crystallography, Space-Group Symmetry (IUCr Series. International Tables of Crystallography) Joining Together: Group Theory and Group Skills (11th Edition) The Genesis of the Abstract Group Concept: A Contribution to the History of the Origin of Abstract Group Theory (Dover Books on Mathematics) Group Theory: Application to the Physics of Condensed Matter THEORY AND APPLICATION OF QUANTUM MOLECULAR DYNAMICS