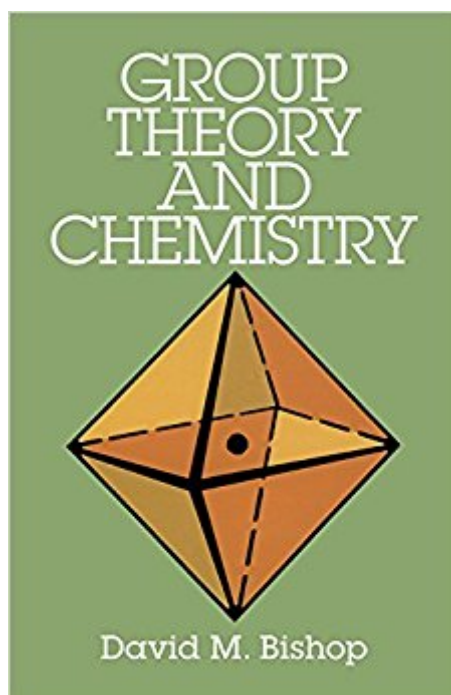


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# Group Theory And Chemistry (Dover Books On Chemistry)



## Synopsis

Group theoretical principles are an integral part of modern chemistry. Not only do they help account for a wide variety of chemical phenomena, they simplify quantum chemical calculations. Indeed, knowledge of their application to chemical problems is essential for students of chemistry. This complete, self-contained study, written for advanced undergraduate-level and graduate-level chemistry students, clearly and concisely introduces the subject of group theory and demonstrates its application to chemical problems. To assist chemistry students with the mathematics involved, Professor Bishop has included the relevant mathematics in some detail in appendixes to each chapter. The book can then be read either as an introduction, dealing with general concepts (ignoring the appendixes), or a fairly comprehensive description of the subject (including the appendixes). In any case, the author assures students that "the mathematics involved in actually applying, as opposed to deriving, group theoretical formulae is quite trivial. It involves little more than adding and multiplying."

## Book Information

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## Customer Reviews

I'm studying this book (finishing chapter 5- matrix representations of point groups) and like the informal, clear and simple style and presentation, of symmetries, groups (point), matrix and matrix representations of point groups). Bishop desmytifies and simplifies a lot the matter. This gives a clear view of what and how you proceed with points groups and their symmetries. He uses the

minimum of groups - only the concept and definition, classes, isomorphism, homomorphism and matrix representations (nothing about cosets, subgroups, factor groups, proper, normal, subgroups, etc). It is admirable that you can do a lot of things with so little! The chapters are crash courses about the points in question. There are very little typos and errors (I found only one until now- the answer to problem 5.2 is  $D(C_3^4)$  (instead of  $C_3^4$ )). And all this are the strength of the book. In the incompleteness, there are few problems (same with answers), they are representative but not enough to a good learning; some symbols deleted or weakened in impression. I used in parallel to clarify some points, figures, tables, examples, the Sand's book "Introduction to Crystallography" and Tsukerblat's "Group Theory in Chemistry and Spectroscopy" (this book is about the same theme (more complete and detailed) of Bishop's but I prefer the latter).

Great overview of some of the more important topics of group theory with application to spectroscopy. The book goes into some matrices math that is helpful for the conversion of character tables to irreducible representations. Great book for the person who has had some group theory before.

The book itself is awesome, but the Kindle edition is awful. First, there are several figures which are too detailed to see. If that is pdf, you can pinch out and enlarge the figure, but you cannot do the same thing on the Kindle books. One way is just tap the figure for a few seconds and wait until the edge of the figure darkened and a magnifier icon pops up in the center of the figure (which you need to touch to actually enlarge it). But, it just fits the figure to the screen and does not enlarge any more. If the figure is too detailed, it's not enough! The other way is, only on the PC Kindle, use magnifier application. But, as you know, it just enlarge the pixels, not figure itself, so usually you cannot catch the details. Second, as usual science books, there are so many non-traditional characters used and some of them are just replaced with a blank square. If that is only one, it would be okay, still you can recognize it. But the issue is that, more than two characters are missing. The only reason why I keep the Kindle edition is that I want to read this in the clean room. Otherwise, I will just kick this back for refund immediately.

I really wish I had this book when it first came out! The table on page 46 is of great use. The coverage in the books goes well with my own experience and Cotton's book on Inorganic Chemistry. My one very basic bone to pick is from my long (40 or more years) work involving group theory. Neither Cartan groups or Coxeter are mentioned or their relationship to these point groups.

The Federov space groups used in crystallography are also ignored. The result is to make western Chemistry students second class in world education( ignorant of basics in the Mathematics of groups). I can't blame this on Bishop as he is only following Dr. Cotton's lead. I read a recent cosmology book in which a very well educated American physics Ph.D. shows a basic ignorance of Federov space groups. None of the editors caught it and it is in print ...Russians everywhere must be laughing.I think that we have to integrate the mathematical approach to group theorywith the Chemical-Physical approach, so that instead of rote use offormulas, understanding is involved.

Graduate level physical organic chemistry required a knowledge of group theory that I didn't have until I got this book. Within the first 20 pages, you'll understand symmetry elements and symmetry operations and their notations.

It's a very good book and both cover and inside look pretty nice. And the price is very reasonable. ^^

For this review keep in mind that I am using this book as a look up reference. It may be good if you read it front to back.As an experimental physics grad student, I found this book to be far too heavy on the math and short on the physical interpretation in the very technical sections. Specifically, chapters 2 to 7 could almost be considered a stand alone math intro textbook for applied group theory. There is very little reference to chemistry and to the utility of the techniques in those chapters.If I recall correctly, I have seen reviews that say that this book is to the point and succinct, and this is the reason I bought it. Well those statements should be intrepretated as ``densely filled with math``. Of course, a perusal of the table of contents shows that the chapters are ended with proofs as appendices.This book is better than Flurry`s, but Cotton`s is better than this one(Bishop).

After having struggled all semester trying to learn something from "Chemical Applications of Group Theory" by Cotton, I finally returned that book to my university library and bought this one instead (it happens to be quite important for me to really understand this topic). Being a chemist and not a mathematician, I can learn from this one much, much more easily. It's not that I have an aversion to math (hopefully no one does who is seriously interested in quantum chemistry), I simply didn't have the abstract algebra background and "vocabulary" yet--but this book explains everything in "plain English"! In fact, I would recommend it as a math textbook for "ordinary" (non-math majors) people to learn about group theory, even if you're not doing chemistry.

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