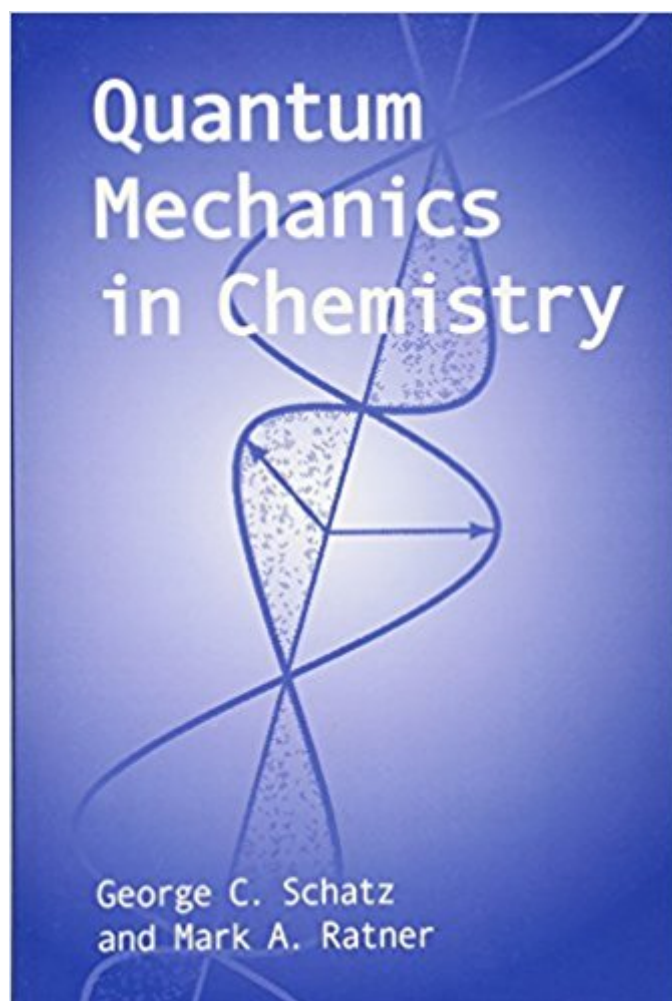


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# Quantum Mechanics In Chemistry (Dover Books On Chemistry)



## Synopsis

Intended for graduate and advanced undergraduate students, this text explores quantum mechanical techniques from the viewpoint of chemistry and materials science. Dynamics, symmetry, and formalism are emphasized. An initial review of basic concepts from introductory quantum mechanics is followed by chapters examining symmetry, rotations, and angular momentum addition. Chapter 4 introduces the basic formalism of time-dependent quantum mechanics, emphasizing time-dependent perturbation theory and Fermi's golden rule. Chapter 5 sees this formalism applied to the interaction of radiation and matter. In Chapter 6, the authors introduce occupation number representations, including applications to both quantized radiation fields and electronic structure; while chapters 7 and 8 focus on scattering theory and basic theories of chemical reaction rates. The remaining three chapters deal with the use of correlation functions and density matrices in quantum mechanics. Problems and a bibliography appear at the end of each chapter; and at the end of the book there is an Appendix C, "Solutions to Problems," new to this edition.

## Book Information

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## Customer Reviews

An exploration of quantum mechanical techniques from the chemistry and materials science point of view --focusing on the areas of dynamics, symmetry, and formalism. --This text refers to an out of print or unavailable edition of this title.

**Key Benefits:** Providing a chemistry-based treatment of continuous groups and angular momentum, this text explores quantum mechanical techniques from the chemistry and materials science point of view. **Key Topics:** It focuses on the areas of dynamics, symmetry, and formalism. **Market:** For professionals involved in chemical research. --This text refers to an out of print or unavailable edition of this title.

This book isn't for the first time QM experience. It skips right past all the basics and starts with two awful chapters on group theory that just seem out of place in the context of the rest of the book. I'm really not sure why they are there... After that, this book is golden. Its not overly thorough, but covers quite a bit of ground in the 300+ pages you get. I love the style, coming from a physical chemistry perspective. This book cant be beat for the price. I only wish it were longer. Not taking the group theory stuff into consideration, (you can just skip it... Its not used anywhere else in the book) this is definitely 5 stars for the price.

I bought this book to review for PhD candidacy exams and look back on it once every six months for reference. This book explains in a very clear way the most fundamental concepts in theoretical chemistry, particularly dynamics. It touches very little on quantum chemistry, ie electronic structure theory, as there are many other books on that topic available already. The coverage of Fermi's golden rule and response theory is very accessible. Even at \$50, this would be the best money one could spend on a graduate level textbook on quantum dynamics. I can't imagine someone in the field not finding this book useful at almost any stage of their career.

I enjoyed this book as a review of some quantum mechanics basics. The applied examples are pretty good. This would be an excellent book to use as a source of problems if one were teaching an undergraduate class.

Very nice book on special topics.

Bought it for my graduate level quantum chemistry class...

Book arrived as described and on time. The book is a must have if you are interested in chemical spectroscopy.

Exactly as described; quick delivery!

This book is devoted to the uses of quantum mechanics in chemistry. Not surprisingly, it has a lot of ground to cover. While it is an excellent work, it is definitely not suitable as an introduction to quantum chemistry. The prospective reader should bring a background in molecular orbital theory, and also in group theoretical applications to chemistry. I'd suggest *Modern Quantum Chemistry: Introduction to Advanced Electronic Structure Theory* (Dover Books on Chemistry), and *Group Theory and Chemistry* (Dover Books on Chemistry). Also the author's favorite basic quantum mechanics text appears to be *Quantum Mechanics* with which I am personally unfamiliar, but it has a good reputation. Much of the book is devoted to relatively advanced topics of which it provides an excellent survey. My favorite part was the last chapter on the density matrix. Here we are presented with some of the key ideas of quantum computation and quantum information theory such as qubits and decoherence. These terms aren't actually used unfortunately, but I liked seeing how these same concepts arose and played a role in quantum chemistry. In addition, for the student with the necessary background, this book provides a quick introduction to quantum field theory, again within the framework of applying the same methods to quantum chemistry. All around an excellent book well worth the time for the prepared reader.

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