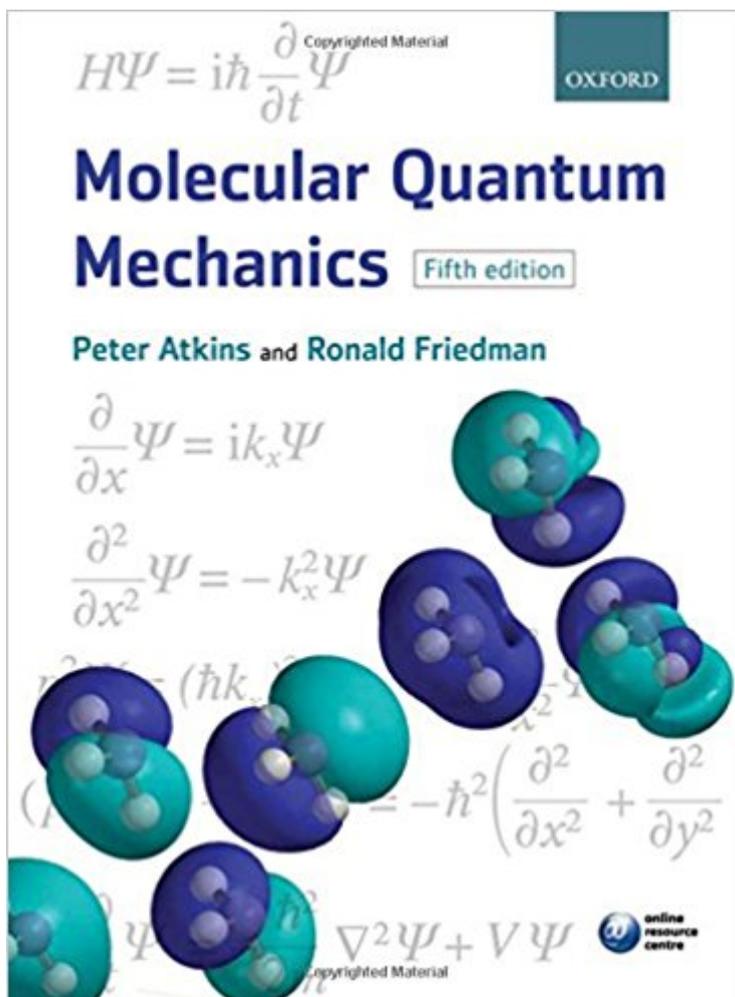


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Molecular Quantum Mechanics



Synopsis

Quantum mechanics embraces the behavior of all known forms of matter, including the atoms and molecules from which we, and all living organisms, are composed. *Molecular Quantum Mechanics* leads us through this absorbing yet challenging subject, exploring the fundamental physical principles that explain how all matter behaves. With the clarity of exposition and extensive learning features that have established the book as a leading text in the field, *Molecular Quantum Mechanics* takes us from the foundations of quantum mechanics, through quantum models of atomic, molecular, and electronic structure, and on to discussions of spectroscopy, and the electronic and magnetic properties of molecules. Lucid explanations and illuminating artworks help to visualise the many abstract concepts upon which the subject is built. Fully updated to reflect the latest advances in computational techniques, and enhanced with more mathematical support and worked examples than ever before, *Molecular Quantum Mechanics* remains the ultimate resource for those wishing to master this important subject.

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Customer Reviews

I have been reading reviews in this forum about this book. A few reviewers compare this book with two other popular quantum chemistry textbooks, namely, McQuarrie's *Quantum Chemistry* and Levine's *Quantum Chemistry*. I do not think it is an apple-to-apple

comparison. First McQuarrie's book is only an entry-level book. All the mathematical derivations are clearly laid out. There are hardly any doubts that McQuarrie's exposition of the subject is much better. For students that are mathematically less inclined and want to learn quantum chemistry, McQuarrie's book is the best among the three. However, only topics that are considered as traditional training for a chemist are covered in McQuarrie's book. After all the preliminaries such as particle in a box, operators, simple harmonic oscillator, angular momenta and perturbation theory, the book focuses on electronic theories of atoms and molecules. Both McQuarrie's and Atkins' books use the method of creation and annihilation operators to solve the Schrodinger Equation for a simple harmonic oscillation. Levine's book still uses the traditional power series method.

Mathematically, the operator method is definitely much more elegant. Levine's book is very similar to McQuarrie's book; mathematically it is on a much higher level. Both books hardly touch on group theory. Mathematically, Atkins' book is more compact and advanced than McQuarrie's book. Unlike McQuarrie's book, the mathematical derivations are not laid out in a step-by-step fashion. In principle, a person who has well working knowledge of calculus should have no problems with the mathematics. All other necessary mathematics are presented at the end of each chapter. To better understand this book, it is important to follow the mathematics with a pencil and a piece of paper.

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