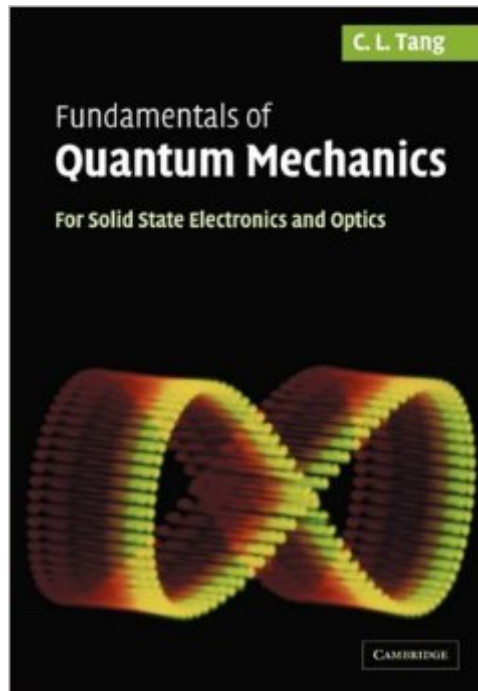


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# Fundamentals Of Quantum Mechanics: For Solid State Electronics And Optics



## Synopsis

Quantum mechanics has evolved from a subject of study in pure physics to one with a wide range of applications in many diverse fields. The basic concepts of quantum mechanics are explained in this book in a concise and easy-to-read manner, leading toward applications in solid-state electronics and optics. Following a logical sequence, the book focuses on key ideas and is conceptually and mathematically self-contained. The fundamental principles of quantum mechanics are illustrated by showing their application to systems such as the hydrogen atom, multi-electron ions and atoms, the formation of simple organic molecules and crystalline solids of practical importance. It leads on from these basic concepts to discuss some of the most significant applications in semiconductor electronics and optics. Containing many homework problems, the book is suitable for senior-level undergraduate and graduate-level students in electrical engineering, material sciences, applied physics and chemistry.

## Book Information

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## Customer Reviews

This slim and affordable book gives a gentle introduction to quantum mechanics, then applies these concepts and tools to examine the fundamental electronic properties of atoms and molecules, including their interaction with photons. It concludes with an analysis of the electronic properties of semiconductors and the pn junction, and the nonlinear response of optical materials to intense light. Rather than presenting a reiteration of its historical development to motivate the introduction of QM, the author takes the direct approach of showing why Newtonian mechanics cannot be applied

to analyzing the dynamics of particles on an atomic scale. In early chapters the author makes a systematic comparison of how the motion of particles is described in QM and in classical mechanics so that the reader unfamiliar with QM can make the necessary conceptual leaps from familiar ground. Periodically the book presents both the classical and quantum views of a particular problem to show the more detailed and subtle effects predicted by quantum mechanics. I found presentation of the material was logical and with just enough depth to get a basic understanding of semiconductor and opto-electronic material properties. Although it is succinctly reviewed in the early chapters, a prior familiarity with the concepts of linear algebra will make for easier going in some sections.

I purchased this book as a student hoping to learn more about Quantum Mechanics. Unfortunately, I was more confused about Quantum before I read this book than afterwards. It contains a number of typos, especially in equations, that are easy to spot with prior knowledge on the subject but will confuse the new reader. The writing is very dense, and can be difficult to understand. A strong understanding of linear algebra is also a requirement for understanding this book. This isn't a terrible book, but I won't recommend it and have found better resources simply by searching google for "quantum mechanics."

I got the book in a damaged condition. But the seller was very good in accepting the mishap and responded in a very positive manner.

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