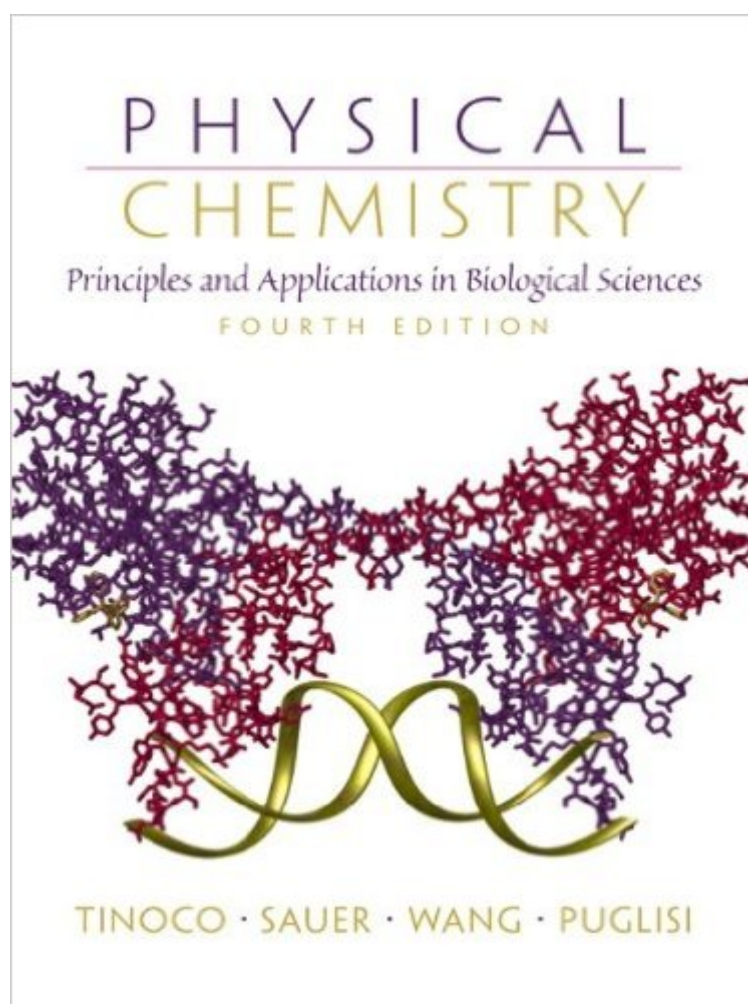


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Physical Chemistry: Principles And Applications In Biological Sciences (4th Edition)



Synopsis

This best-selling volume presents the principles and applications of physical chemistry as they are used to solve problems in biology and medicine. The First Law; the Second Law; free energy and chemical equilibria; free energy and physical Equilibria; molecular motion and transport properties; kinetics: rates of chemical reactions; enzyme kinetics; the theory and spectroscopy of molecular structures and interactions: molecular distributions and statistical thermodynamics; and macromolecular structure and X-ray diffraction. For anyone interested in physical chemistry as it relates to problems in biology and medicine.

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Customer Reviews

Tinoco, Sauer, Wang, and now Puglisi, have written a fine text on both the foundations of thermodyanmics and physical chemistry, and the applications of these fields to biological phenomena (both natural and experimental.)The 3rd edition of the book, in this reviewer's memory, was remarkable only in its staggering lack of focus and explanatory power. This 4th edition vastly improves on that effort.It has to be said that thermodynamics without statistical mechanics is probably always going to be obscured by the fog of axioms, unless the reader exhibits some remarkable intuitiveness about entropy and partial derivatives. The first few chapters of the book focus on thermodynamics from this axiomatic approach, and may be the reason why so many undergraduate students find the whole thing so distasteful. But it has to be said that the authors spared some effort in trying to ameliorate the abstractness of thermo, by interjecting molecular

interpretations of thermo phenomena every now and then. Once the reader has sped past the thermodynamics, and free energy equilibria chapters, he can be expected to come upon a series of well-written chapters on kinetics. The chapters are generously illustrated with informative diagrams, and most modern and relevant topics are discussed, such as transition state theories, enzyme kinetics, allostery (although the section on allostery was slightly underwhelming. I recommend that the authors develop this section more carefully by considering the various regimes of allostery.) A valiant attempt is made for discussing quantum mechanics and applications to physical chemistry problems. However, it would seem that quantum mechanics just can't be taught in one chapter, although it's essential in proper understanding of spectroscopy, which forms the basis for the subsequent 'applications' chapter. The book ends with a discussion of statistical thermodynamics. If the reader begins here and reads it carefully, it is likely that he can surmount the comprehension problems in the initial thermodynamics chapters. This is only the opinion of this reviewer though. In summary, this is a good book with a comprehensive collection of topics relevant to the modern biology researcher (be you biochemist, biophysicist, chemical biologist, or plain vanilla biologist). The undergraduate student may be bewildered by the variety of topics presented in such a succinct manner. The book has easy to read type, sometimes crammed with too much text. There is an absolutely excellent selection of problems, with an accompanying solutions manual that bears only a few errors. Let it be said that there are many many worse physical chemistry books out there, and giving this book anything less than 3 stars would corrupt the usefulness of the ... ratings system.

As a graduate student in biochemistry who has never taken a physical chemistry class, but who has a good background in physics and calculus, I really like this book as a reference. Standard physical chemistry textbooks I looked at, such as Atkins, did not cover the biologically relevant topics I was interested in. This book contains just the right depth for a reference in biophysical chemistry. The concepts are always presented with biological applications in mind. The topics covered are exactly what I was looking for, including thermodynamics, kinetics, quantum chemistry and the theory behind the main biophysical techniques. I was originally intending to buy the 3 volume Cantor and Schimmel series, but I have found that this book gives me everything I need for a much lower price.

This textbook made physical chemistry super easy and helped me to do really well in my course! I would definitely recommend this book to teachers and students for their p-chem courses!!!! It was really helpful!

Obviously someone with a vested interest in promoting this book is making ridiculous comments about how great the answer book is and how they got an A+. Bullcrap. They are all written by the same person. I have this book and the alleged "great" answer book. It IS full of mistakes. It's typeset in the most ridiculous way. Hello publisher. It's past 2010. You have no excuse for not using typeset that I have in Microsoft Word. That this publisher gets away with selling that sloppy piece of crap as an "answer book" is offensive. Oh yeah. I got an A in the class but the "answer book" was as much of a hindrance as a help. Thanks for taking my money Pearson. You suck.

This book is packed with information!!!... now good luck trying to sort through it all. The book is not organized very well, and in deriving some of the equations, they fail to explain how they reached the next step. For the part on Thermodynamics, they brush over some parts that I thought would be important in understanding the whole picture. If you already understand Biophysical Chemistry, this book could be for you, but if it is your first time learning the material, I would try another text.

The actual text book is decent enough, as physical biochemistry books go. It does well to introduce a difficult subject and does not require a mathematical background, beyond some simple calculus. In fact, the book seems to avoid the rigorous derivations (especially for thermodynamics) found in other text books. On the other hand, the solutions manual is a complete disaster. As a teaching assistant for two terms, I continually corrected errors and advised student to not trust the solutions manual. Interestingly in one example, the solution started correctly, then made a terrible math error only to eventually end with the correct numerical solution. Clearly, the solutions manual was never proofread. All in all, the book is decent for someone with another textbook and needs a different perspective on some of the material.

The text is poorly written and hard to understand. The solution manual is even worse!! The authors do not explain which equations they're using or where the numbers are coming from.

For a very difficult subject this book is without any color or interesting text. The derivations of the already complicated equations jump steps so you have to redo them all yourself to see how they got to the end. I got through to nearly the end of the first chapter but then gave up for now as I was falling asleep too often. I get the impression that the authors were approached by the publisher to write this textbook and that it was not written with any passion to show the excitement of scientific discovery. There is no background or history mentioned which would have made the whole thing

more human.

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