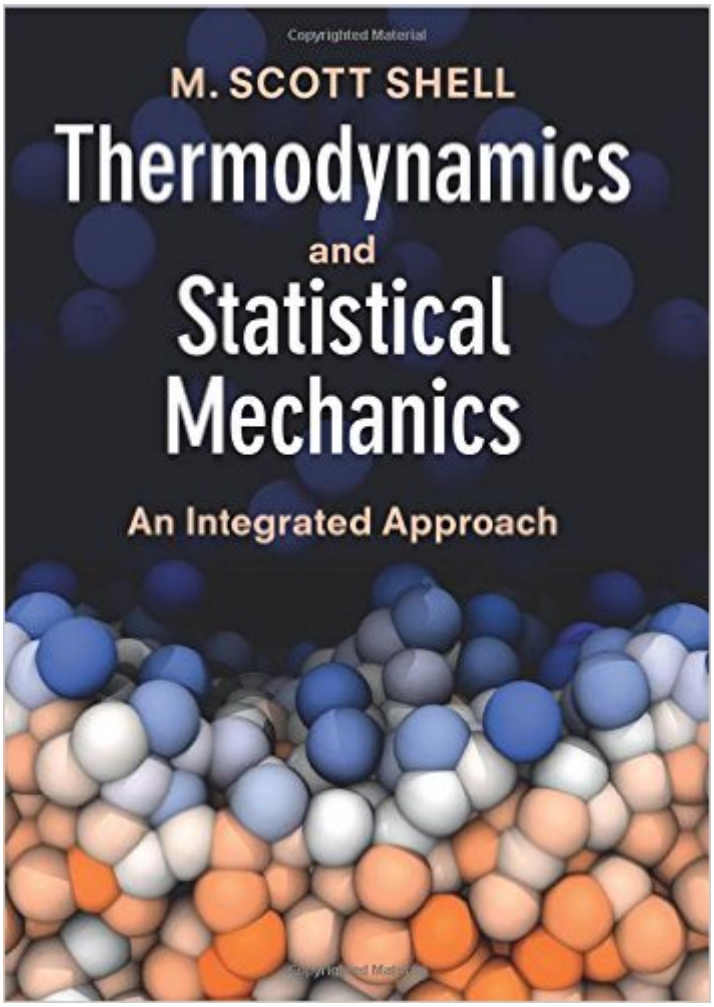
Thermodynamics And Statistical Mechanics: An Integrated Approach (Cambridge Series In Chemical Engineering)



Synopsis

Learn classical thermodynamics alongside statistical mechanics with this fresh approach to the subjects. Molecular and macroscopic principles are explained in an integrated, side-by-side manner to give students a deep, intuitive understanding of thermodynamics and equip them to tackle future research topics that focus on the nanoscale. Entropy is introduced from the get-go, providing a clear explanation of how the classical laws connect to the molecular principles, and closing the gap between the atomic world and thermodynamics. Notation is streamlined throughout, with a focus on general concepts and simple models, for building basic physical intuition and gaining confidence in problem analysis and model development. Well over 400 guided end-of-chapter problems are included, addressing conceptual, fundamental, and applied skill sets. Numerous worked examples are also provided together with handy shaded boxes to emphasize key concepts, making this the complete teaching package for students in chemical engineering and the chemical sciences.

Book Information

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Customer Reviews

I used this book as a graduate level introduction to thermodynamics and statistical mechanics. The approach is lucid and hands on - perfect for developing an intuitive understanding of challenging material.The first two thirds of the book deals with classical thermodynamics: the author explains the mathematics and thinking behind thermodynamics in a straightforward and understandable way. Important examples are carefully worked through and the exercises are designed to reinforce the most important concepts. I used Smith, van Ness and Abbott as an undergraduate and this book is

orders of magnitude better in terms of building a real understanding of thermodynamics.The last third of the book is devoted to statistical mechanics: the approach taken by the author is to present the reader with directly useful results and build an understanding on that basis. Unlike other books (e.g. Chandler, McQuarrie...) where one has to fight through the pages of justifications and simplifications this book essentially starts with the practical results one would use in statistical mechanics. The author also makes the link between classical thermodynamics and statistical mechanics easy to understand - that is the common thread throughout the entire book.Based on my experiences with the other books on this topic I would strongly recommend this book.

This is an outstanding modern textbook, both for students and instructors. The book is written in a manner that helps the reader develop a solid conceptual understanding of classical and statistical thermodynamics while simultaneously appreciating the practical utility of the subject. This is a delicate balancing act that many other texts simply fail to achieve. The book contains numerous contemporary problems, many of which will be directly relevant to PhD students and researchers in Chemical Engineering, Biophysics and related fields. Students will likely find the text particularly valuable for the worked examples throughout the chapters as well as the conceptual and applied problems available at the end of each chapter. I would recommend the text highly for advanced undergraduate and standard graduate courses in Classical and Statistical Thermodynamics.

Teaches thermodynamics beginning with a molecular view and then transitions into the familiar undergraduate material. Well written and relevant problems detailed in each chapter.

This is a wonderful thermodynamics book! It helps you understand the fundamentals of thermodynamics in an easy way.

Thermodynamics Reinforced Concrete: Mechanics and Design (4th Edition) (Civil Engineering and Engineering Mechanics) Fundamentals of Engineering Thermodynamics/Book and Disk (Mcgraw Hill Series in Mechanical Engineering) Elementary Stochastic Calculus With Finance in View (Advanced Series on Statistical Science & Applied Probability, Vol 6) (Advanced Series on Statistical Science and Applied Probability) Molecular Driving Forces: Statistical Thermodynamics in Biology, Chemistry, Physics, and Nanoscience, 2nd Edition Thermodynamics of Materials: A Classical and Statistical Synthesis Molecular Driving Forces: Statistical Thermodynamics in Biology, Chemistry, Physics, and Nanoscience, Second Edition An Introduction to Statistical Thermodynamics (Dover Books on Physics) Fundamentals of Earthquake Engineering (Civil engineering and engineering mechanics series) Fundamentals of Physics: Mechanics, Relativity, and Thermodynamics (The Open Yale Courses Series) Property Tables Booklet for Thermodynamics: An Engineering Approach Analysis, Synthesis and Design of Chemical Processes (4th Edition) (Prentice Hall International Series in the Physical and Chemical Engineering Sciences) 4th (fourth) Edition by Turton, Richard, Bailie, Richard, Whiting, Wallace B., Shaei [2012]