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Until recently, the field of statistical physics was traditionally taught as three separate subjects: thermodynamics, statistical mechanics, and kinetic theory. This text, a forerunner in its field and now a classic, was the first to recognize the outdated reasons for their separation and to combine the essentials of the three subjects into one unified presentation of thermal physics. It has been widely adopted in graduate and advanced undergraduate courses, and is recommended throughout the field as an indispensable aid to the independent study and research of statistical physics.

Designed for a one-year course of instruction for non-specialist graduate students, or advanced undergraduates, the book is divided into three parts. Principles of Statistical Thermodynamics (Part I) covers the first and second laws of thermodynamics, elementary statistical methods in physics, and other topics, including an especially clear and enlightening discussion of thermodynamic potentials and their applications.

Part II, devoted to equilibrium statistics of special systems, offers excellent coverage of the imperfect gas, lattice dynamics, the statistics of semiconductors, the two-dimension Ising model, and a particularly lucid chapter on dilute solutions. Moreover, the treatment of topics in solid state physics is more extensive than is usually found in books on statistical mechanics.

Kinetic theory, transport coefficients, and fluctuations comprise Part III, with a fine presentation of the Kac ring model; the Boltzmann transport equation; kinetics of charge carriers in solids, liquids, and gases; fluctuations and Brownian motion, and more.

A liberal quantity of problems has been added to each chapter, including a special section of "recommended problems," whose solutions will insure an adequate understanding of the text. Solutions of all problems will be found at the back of the book along with a list of supplementary literature. - See more at: http://store.doverpublications.com/048665401x.html#sthash.qGByda0c.dpuf