Statistical Physics I Equilibrium Statistical Mec

Eventually, you will categorically discover a extra experience and achievement by spending more cash. still when? attain you endure that you require to get those every needs later than having significantly cash? Why dont you attempt to acquire something basic in the beginning? Thats something that will lead you to comprehend even more on the order of the globe, experience, some places, similar to history, amusement, and a lot more?

It is your agreed own times to play reviewing habit. in the midst of guides you could enjoy now is **Statistical Physics I Equilibrium Statistical Mec** below.

Statistical Mechanics - Terrell L. Hill 1956-01-01
Standard text opens with clear, concise chapters on classical statistical mechanics, quantum statistical mechanics, and the relation of statistical mechanics to thermodynamics. Further topics cover fluctuations, the theory of imperfect gases and condensation, distribution functions and the liquid state, nearest neighbor (Ising) lattice statistics, and more.
Non-equilibrium Statistical Mechanics and Turbulence - John Cardy 2008-12-11
This self-contained volume introduces modern

methods of statistical mechanics in turbulence, with three harmonised lecture courses by world class experts.

Statistical Mechanics - Franz Schwabl 2006-09-19

This completely revised edition of the classical book on Statistical Mechanics covers the basic concepts of equilibrium and non-equilibrium statistical physics. In addition to a deductive approach to equilibrium statistics and thermodynamics based on a single hypothesis this book treats the most important elements of non-equilibrium phenomena. Intermediate calculations are presented in complete detail. Problems at the end of each chapter help students to consolidate their understanding of the material. Beyond the fundamentals, this text demonstrates the breadth of the field and its great variety of applications.

Problems on Statistical Mechanics - D.A.R Dalvit 1999-01-01

A thorough understanding of statistical mechanics depends strongly on the insights and manipulative skills that are acquired through the solving of problems. Problems on Statistical Mechanics provides over 120 problems with model solutions, illustrating both basic principles and applications that range from solid-state physics to cosmology. An introductory chapter provides a summary of the basic concepts and results that are needed to tackle the problems, and also serves to establish the notation that is used throughout the book. The problems themselves occupy five chapters, progressing from the simpler aspects of thermodynamics and equilibrium statistical ensembles to the more challenging ideas associated with strongly interacting systems and nonequilibrium processes. Comprehensive solutions to all of the problems are designed to illustrate efficient and elegant problem-solving techniques. Where appropriate, the authors incorporate extended discussions of the points of principle that arise in the course of the

solutions. The appendix provides useful mathematical formulae.

Equilibrium Statistical Physics - Michael Plischke 1994

This textbook concentrates on modern topics in statistical physics with an emphasis on strongly interacting condensed matter systems. The book is self-contained and is suitable for beginning graduate students in physics and materials science or undergraduates who have taken an introductory course in statistical mechanics. Phase transitions and critical phenomena are discussed in detail including mean field and Landau theories and the renormalization group approach. The theories are applied to a number of interesting systems such as magnets, liquid crystals, polymers, membranes, interacting Bose and Fermi fluids; disordered systems, percolation and spin of equilibrium concepts are also discussed. Computer simulations of condensed matter systems by Monte Carlo-based and molecular dynamics methods are treated.

Equilibrium Statistical Mechanics - E. Atlee Jackson 2012-11-21

Key features include an elementary introduction to probability, distribution functions, and uncertainty; a review of the concept and significance of energy; and various models of physical systems. 1968 edition.

Equilibrium Statistical Mechanics of Lattice Models - David A. Lavis 2015-01-31

Most interesting and difficult problems in equilibrium statistical mechanics concern models which exhibit phase transitions. For graduate students and more experienced researchers this book provides an invaluable reference source of approximate and exact solutions for a comprehensive range of such models. Part I contains background material on classical thermodynamics and statistical mechanics, together with a classification and survey of lattice models. The geometry of phase transitions is described and scaling theory is used to introduce critical exponents and scaling

laws. An introduction is given to finite-size scaling, conformal invariance and Schramm—Loewner evolution. Part II contains accounts of classical mean-field methods. The parallels between Landau expansions and catastrophe theory are discussed and Ginzburg--Landau theory is introduced. The extension of mean-field theory to higher-orders is explored using the Kikuchi--Hijmans--De Boer hierarchy of approximations. In Part III the use of algebraic, transformation and decoration methods to obtain exact system information is considered. This is followed by an account of the use of transfer matrices for the location of incipient phase transitions in one-dimensionally infinite models and for exact solutions for two-dimensionally infinite systems. The latter is applied to a general analysis of eight-vertex models yielding as special cases the two-dimensional Ising model and the six-vertex model. The treatment of exact results ends with a discussion of dimer models. In Part IV series methods and real-space renormalization group transformations are discussed. The use of the De Neef—Enting finite-lattice method is described in detail and applied to the derivation of series for a number of model systems, in particular for the Potts model. The use of Pad\'e, differential and algebraic approximants to locate and analyze second- and first-order transitions is described. The realization of the ideas of scaling theory by the renormalization group is presented together with treatments of various approximation schemes including phenomenological renormalization. Part V of the book contains a collection of mathematical appendices intended to minimise the need to refer to other mathematical sources.

Thermodynamics and Statistical Mechanics - Walter Greiner 2000-07-01

From the reviews: "This book excels by its variety of modern examples in solid state physics, magnetism, elementary particle physics [...] I can recommend it strongly as a valuable

source, especially to those who are teaching basic statistical physics at our universities." Physicalia

Statistical Physics I - M. Toda 2012-01

Statistical Mechanics of Nonequilibrium Liquids - Denis J. Evans 2014-08-07

In recent years the interaction between dynamical systems theory and non-equilibrium statistical mechanics has been enormous. The discovery of fluctuation theorems as a fundamental structure common to almost all non-equilibrium systems, and the connections with the free energy calculation methods of Jarzynski and Crooks, have excited both theorists and experimentalists. This graduate-level book charts the development and theoretical analysis of molecular dynamics as applied to equilibrium and non-equilibrium systems. Designed for both researchers in the field and graduate students of physics, it connects molecular dynamics simulation with the mathematical theory to understand non-equilibrium steady states. It also provides a link between the atomic, nano, and macro worlds. The book ends with an introduction to the use of non-equilibrium statistical mechanics to justify a thermodynamic treatment of non-equilibrium steady states, and gives a direction to further avenues of exploration.

Statistical Physics - Franz Mandl 2013-06-05

The Manchester Physics Series General Editors: D. J. Sandiford; F. Mandl; A. C. Phillips Department of Physics and Astronomy, University of Manchester Properties of Matter B. H. Flowers and E. Mendoza Optics Second Edition F. G. Smith and J. H. Thomson Statistical Physics Second Edition E. Mandl Electromagnetism Second Edition I. S. Grant and W. R. Phillips Statistics R. J. Barlow Solid State Physics Second Edition J. R. Hook and H. E. Hall Quantum Mechanics F. Mandl Particle Physics Second Edition B. R. Martin and G. Shaw The Physics of Stars Second Edition A. C.

Phillips Computing for Scientists R. J. Barlow and A. R. Barnett Statistical Physics, Second Edition develops a unified treatment of statistical mechanics and thermodynamics, which emphasises the statistical nature of the laws of thermodynamics and the atomic nature of matter. Prominence is given to the Gibbs distribution, leading to a simple treatment of quantum statistics and of chemical reactions. Undergraduate students of physics and related sciences will find this a stimulating account of the basic physics and its applications. Only an elementary knowledge of kinetic theory and atomic physics, as well as the rudiments of quantum theory, are presupposed for an understanding of this book. Statistical Physics, Second Edition features: A fully integrated treatment of thermodynamics and statistical mechanics. A flow diagram allowing topics to be studied in different orders or omitted altogether. Optional "starred" and highlighted sections containing more advanced and specialised material for the more ambitious reader. Sets of problems at the end of each chapter to help student understanding. Hints for solving the problems are given in an Appendix.

Introduction to Statistical Mechanics - S. K. Sinha 2005

Discusses the basic law of statistical physics and their applications to a range of interesting problems. In this title, the basic principles of equilibrium statistical mechanics are clearly formulated and applied to specific examples of ideal gases and interacting systems to bring out their strength and scope.

Classical Equilibrium Statistical Mechanics - Colin J. Thompson 1988

An introduction to statistical mechanics which aims to relate microscopic properties of matter to observed macroscopic, or bulk, behaviour of physical systems.

Introduction to Statistical Mechanics: Solutions to Problems - John Dirk Walecka 2016-08-25

Statistical mechanics is concerned with defining

the thermodynamic properties of a macroscopic sample in terms of the properties of the microscopic systems of which it is composed. The previous book Introduction to Statistical Mechanics provided a clear, logical, and self-contained treatment of equilibrium statistical mechanics starting from Boltzmann's two statistical assumptions, and presented a wide variety of applications to diverse physical assemblies. An appendix provided an introduction to non-equilibrium statistical mechanics through the Boltzmann equation and its extensions. The coverage in that book was enhanced and extended through the inclusion of many accessible problems. The current book provides solutions to those problems. These texts assume only introductory courses in classical and quantum mechanics, as well as familiarity with multi-variable calculus and the essentials of complex analysis. Some knowledge of thermodynamics is also assumed, although the analysis starts with an appropriate review of that topic. The targeted audience is first-year graduate students and advanced undergraduates, in physics, chemistry, and the related physical sciences. The goal of these texts is to help the reader obtain a clear working knowledge of the very useful and powerful methods of equilibrium statistical mechanics and to enhance the understanding and appreciation of the more advanced texts.

25 Years of Non-Equilibrium Statistical Mechanics - Thirteenth Sitges Conference Staff 1995-09-18

The book aims to give an overview of the previous Sitges Conferences, which have been held during the last 25 years, with special emphasis on topics related to non-equilibrium phenomena. It includes review articles and articles dealing with new trends in the subject, written by scientists who have played an important role in the development of this area. The book is intended as a commemorative edition of the Sitges Conferences. Graduate

students of physics and researchers will find this a stimulating account of the development of non-equilibrium statistical mechanics in the last years, covering a wide scope of topics: kinetic theory, hydrodynamics, fluctuation phenomena and stochastic processes, relaxation phenomena, kinetics of phase transitions, growth kinetics, and so on.

Principles of Equilibrium Statistical Mechanics - Debashish Chowdhury 2000-10-10

This modern textbook provides a complete survey of the broad field of statistical mechanics. Based on a series of lectures, it adopts a special pedagogical approach. The authors, both excellent lecturers, clearly distinguish between general principles and their applications in solving problems. Analogies between phase transitions in fluids and magnets using continuum and spin models are emphasized, leading to a better understanding. Such special features as historical notes, summaries, problems, mathematical appendix, computer programs and order of magnitude estimations distinguish this volume from competing works. Due to its ambitious level and an extensive list of references for technical details on advanced topics, this is equally a must for researchers in condensed matter physics, materials science, polymer science, solid state physics, and astrophysics. From the contents Thermostatics: phase stability, phase equilibria, phase transitions; Statistical Mechanics: calculation, correlation functions, ideal classical gases, ideal quantum gases; Interacting Systems: models, computer simulation, mean-field approximation; Interacting Systems beyond Mean-field Theory: scaling and renormalization group, foundations of statistical mechanics "The present book, however, is unique that it both is written in a very pedagogic, easily comprehensible style, and, nevertheless, goes from the basic principles all the way to these modern topics, containing several chapters on the various approaches of mean field theory, and a chapter on computer

simulation. A characteristic feature of this book is that often first some qualitative arguments are given, or a "pedestrians's approach", and then a more general and/or more rigorous derivation is presented as well. Particularly useful are also "supplementary notes", pointing out interesting applications and further developments of the subject, a detailed bibliography, problems and historical notes, and many pedagogic figures."

Statistische Mechanik - Franz Schwabl 2013-07-02

"Das Buch eignet sich ausgezeichnet als Grundlage oder Ergänzungslektüre für eine theoretische Vorlesung ab dem 5. Semester. Es deckt praktisch alle ... üblichen Inhalte ab, geht aber teilweise auch wesentlich darüber hinaus ... Zusammenfassend kann dieses Buch sowohl als Begleittext zu einer Vorlesung wie auch als Nachschlagewerk wärmstens empfohlen werden." (Physikalische Blätter) "... Die Fülle des behandelten Stoffes ist beeindruckend ... kann Studenten der ... Chemie, ... Physik und verwandter Disziplinen nachdrücklich empfohlen werden. Aber auch als Lehr- und Nachschlagewerk ist es geeignet." (Zeitschrift für Physikalische Chemie)

Nonequilibrium Statistical Mechanics - Robert Zwanzig 2001-05-17

This is a presentation of the main ideas and methods of modern nonequilibrium statistical mechanics. It is the perfect introduction for anyone in chemistry or physics who needs an update or background in this time-dependent field. Topics covered include fluctuation-dissipation theorem; linear response theory; time correlation functions, and projection operators. Theoretical models are illustrated by real-world examples and numerous applications such as chemical reaction rates and spectral line shapes are covered. The mathematical treatments are detailed and easily understandable and the appendices include useful mathematical methods like the Laplace transforms, Gaussian random variables and

phenomenological transport equations.

Thermodynamic Formalism - David Ruelle 2004-11-25

Reissued in the Cambridge Mathematical Library, this classic book outlines the theory of thermodynamic formalism which was developed to describe the properties of certain physical systems consisting of a large number of subunits. Background material on physics has been collected in appendices to help the reader. Supplementary work is provided in the form of exercises and problems that were "open" at the original time of writing.

Equilibrium and Non-equilibrium Statistical Mechanics - Carolyn M. Van Vliet 2008

This book encompasses our current understanding of the ensemble approach to many-body physics, phase transitions and other thermal phenomena, as well as the quantum foundations of linear response theory, kinetic equations and stochastic processes. It is destined to be a standard text for graduate students, but it will also serve the specialist-researcher in this fascinating field; some more elementary topics have been included in order to make the book self-contained.The historical methods of J Willard Gibbs and Ludwig Boltzmann, applied to the quantum description rather than phase space, are featured. The tools for computations in the microcanonical, canonical and grand-canonical ensembles are carefully developed and then applied to a variety of classical and standard quantum situations. After the language of second quantization has been introduced, strongly interacting systems, such as quantum liquids, superfluids and superconductivity, are treated in detail. For the connoisseur, there is a section on diagrammatic methods and applications.In the second part dealing with non-equilibrium processes, the emphasis is on the quantum foundations of Markovian behaviour and irreversibility via the Pauli-Van Hove master equation. Justifiable linear response expressions and the quantum-

Boltzmann approach are discussed and applied to various condensed matter problems. From this basis the Onsager-Casimir relations are derived, together with the mesoscopic master equation, the Langevin equation and the Fokker-Planck truncation procedure. Brownian motion and modern stochastic problems such as fluctuations in optical signals and radiation fields briefly make the round.

STATISTICAL MECHANICS - R. K. SRIVASTAVA 2005-01-01

Statistical Mechanics is an integral part of theoretical physics, and this book aims at presenting the fundamentals of statistical mechanics in a clear and concise manner. The book begins with a clear exposition of classical as well as quantal equilibrium statistical mechanics. Then it moves on to give insights into the Gibbs canonical distribution, the grand canonical distribution, ideal Bose gas, ideal fermi gas, and imperfect gases. The text also delves into certain topics of special interest, such as phase-transitions, Ising model, and liquid Helium. The book concludes with a discussion of some selected topics of non-equilibrium statistical mechanics. Primarily intended as a text for postgraduate students of physics, it would also prove useful for students at the undergraduate level.

Equilibrium Statistical Mechanics - Frank C. Andrews 1975

Entropy and Non-Equilibrium Statistical Mechanics - Antonio M. Scarfone 2020-12-15

Nonequilibrium statistical mechanics has a long history featuring diverse aspects. It has been a major research field in physics and will remain so in the future. Even regarding the concept of entropy, there exists a longstanding problem concerning its definition for a system in a state far from equilibrium. In this Special Issue, we offered the possibility to discuss and present up-to-date problems that were not necessarily restricted to statistical mechanics. Theoretical

and experimental papers are both presented, in addition to unifying research works. As the entropy itself is the central element of nonequilibrium processes, papers discuss various formulations of the second law and its consequences. In this Special Issue, recent progress in kinetic approaches to hydrodynamics, rational extended thermodynamics, entropy in a strongly nonequilibrium stationary state, and related topics are reported as both review articles as well as original research works.
Statistical Mechanics - 1966

Non-Equilibrium Statistical Mechanics - Ilya Prigogine 2017-03-17
Groundbreaking monograph by Nobel Prize winner for researchers and graduate students covers Liouville equation, anharmonic solids, Brownian motion, weakly coupled gases, scattering theory and short-range forces, general kinetic equations, more. 1962 edition.

An Introduction to Statistical Thermodynamics - Terrell L. Hill 1986-01-01
"A large number of exercises of a broad range of difficulty make this book even more useful…a good addition to the literature on thermodynamics at the undergraduate level." — Philosophical Magazine Although written on an introductory level, this wide-ranging text provides extensive coverage of topics of current interest in equilibrium statistical mechanics. Indeed, certain traditional topics are given somewhat condensed treatment to allow room for a survey of more recent advances. The book is divided into four major sections. Part I deals with the principles of quantum statistical mechanics and includes discussions of energy levels, states and eigenfunctions, degeneracy and other topics. Part II examines systems composed of independent molecules or of other independent subsystems. Topics range from ideal monatomic gas and monatomic crystals to polyatomic gas and configuration of polymer

molecules and rubber elasticity. An examination of systems of interacting molecules comprises the nine chapters in Part Ill, reviewing such subjects as lattice statistics, imperfect gases and dilute liquid solutions. Part IV covers quantum statistics and includes sections on Fermi-Dirac and Bose-Einstein statistics, photon gas and free-volume theories of quantum liquids. Each chapter includes problems varying in difficulty — ranging from simple numerical exercises to small-scale "research" propositions. In addition, supplementary reading lists for each chapter invite students to pursue the subject at a more advanced level. Readers are assumed to have studied thermodynamics, calculus, elementary differential equations and elementary quantum mechanics. Because of the flexibility of the chapter arrangements, this book especially lends itself to use in a one-or two-semester graduate course in chemistry, a one-semester senior or graduate course in physics or an introductory course in statistical mechanics.

Statistical Physics - Ian Ford 2013-05-28
This undergraduate textbook provides a statistical mechanical foundation to the classical laws of thermodynamics via a comprehensive treatment of the basics of classical thermodynamics, equilibrium statistical mechanics, irreversible thermodynamics, and the statistical mechanics of non-equilibrium phenomena. This timely book has a unique focus on the concept of entropy, which is studied starting from the well-known ideal gas law, employing various thermodynamic processes, example systems and interpretations to expose its role in the second law of thermodynamics. This modern treatment of statistical physics includes studies of neutron stars, superconductivity and the recently developed fluctuation theorems. It also presents figures and problems in a clear and concise way, aiding the student’s understanding.
Statistical Mechanics - A.M. Glazer 2001-08-02
This superb book provides the reader with a

general perspective of an interdisciplinary field between statistical physics and information sciences/engineering. It is effectively the only book on the subject, aside from a collection of papers published fourteen years ago. The field is a rapidly expanding one and this self-contained presentation will be sure to acquire a wide audience in physics and engineering.

Operator Algebras and Quantum Statistical Mechanics - Ola Bratteli 2003-01-09

For almost two decades, this has been the classical textbook on applications of operator algebra theory to quantum statistical physics. Major changes in the new edition relate to Bose-Einstein condensation, the dynamics of the X-Y model and questions on phase transitions.

Statistical Physics for Biological Matter - Wokyung Sung 2018-10-19

This book aims to cover a broad range of topics in statistical physics, including statistical mechanics (equilibrium and non-equilibrium), soft matter and fluid physics, for applications to biological phenomena at both cellular and macromolecular levels. It is intended to be a graduate level textbook, but can also be addressed to the interested senior level undergraduate. The book is written also for those involved in research on biological systems or soft matter based on physics, particularly on statistical physics. Typical statistical physics courses cover ideal gases (classical and quantum) and interacting units of simple structures. In contrast, even simple biological fluids are solutions of macromolecules, the structures of which are very complex. The goal of this book to fill this wide gap by providing appropriate content as well as by explaining the theoretical method that typifies good modeling, namely, the method of coarse-grained descriptions that extract the most salient features emerging at mesoscopic scales. The major topics covered in this book include thermodynamics, equilibrium statistical mechanics, soft matter physics of polymers and

membranes, non-equilibrium statistical physics covering stochastic processes, transport phenomena and hydrodynamics. Generic methods and theories are described with detailed derivations, followed by applications and examples in biology. The book aims to help the readers build, systematically and coherently through basic principles, their own understanding of nonspecific concepts and theoretical methods, which they may be able to apply to a broader class of biological problems.

Thermodynamics and Statistical Mechanics - Phil Attard 2002-07-08

The account of thermodynamics and statistical mechanics in Thermodynamics and Statistical Mechanics is based on entropy and its maximization. Building from first principles, it gives a transparent explanation of the physical behaviour of equilibrium thermodynamic systems, and it presents a comprehensive, self-contained account of the modern mathematical and computational techniques of statistical mechanics. This field of study is of vital importance to researchers, lecturers and students alike. Dr Attard is a well-known researcher in statistical mechanics who has made significant contributions to this field. His book offers a fresh perspective on the foundations of statistical thermodynamics. It includes a number of new results and novel derivations, and provides an intriguing alternative to existing monographs. Especially of note are the simple graphs and figures that illustrate the text throughout and the logical organization of the material. Thermodynamics and Statistical Mechanics will be an invaluable and comprehensive reference manual for research scientists. This text can be used as a complement to existing texts and for supplementary reading. Offers a fresh perspective on the foundations of statistical thermodynamics Includes a number of new results and novel derivations, and provides an intriguing alternative to existing monographs

Simple graphs and figures illustrate the text throughout Logical organization of material An invaluable and comprehensive reference manual for research scientists Can be used as a complement to existing texts and for supplementary reading

Thermal Physics and Statistical Mechanics - S. K. Roy 2001

This Book Emphasises The Development Of Problem Solving Skills In Undergraduate Science And Engineering Students.The Book Provides More Than 350 Solved Examples With Complete Step-By-Step Solutions As Well As Around 100 Practice Problems With Answers.Also Explains The Basic Theory, Principles, Equations And Formulae For A Quick Understanding And Review. Can Serve Both As A Useful Text And Companion Book To Those Pre-Paring For Various Examinations In Physics.

Statistical Physics - Gregory H. Wannier 1987-01-01

Classic text combines thermodynamics, statistical mechanics, and kinetic theory in one unified presentation. Topics include equilibrium statistics of special systems, kinetic theory, transport coefficients, and fluctuations. Problems with solutions. 1966 edition.

Matter in Equilibrium - R. Stephen Berry 2002

Originally Part II of Physical Chemistry, Second Edition, and now published as its own volume, Matter in Equilibrium: Statistical Mechanics and Thermodynamics simultaneously develops the statistical molecular theory and the classical thermodynamic theory of the bulk properties of matter in a mutually reinforcing fashion. Despite presenting both a microscopic and macroscopic approach, this sophisticated text offers a rigorous treatment of classical thermodynamics and allows professors to separate the two theories if desired. Packed with tables, graphs, and figures, it describes the equilibrium properties of bulk matter and develops the tools needed to study gases, solids, liquids, phase transformations, solutions of nonelectrolytes,

and solutions of electrolytes. The book makes extensive use of computer simulations of molecular behavior and, where appropriate, uses experimental data to illustrate concepts and principles. Ideal for advanced undergraduate and beginning graduate level courses, Matter in Equilibrium broadens and challenges student perspectives while offering valuable information to researchers.

An Introduction to Chaos in Nonequilibrium Statistical Mechanics - J. R. Dorfman 1999-08-28

This book is an introduction to the applications in nonequilibrium statistical mechanics of chaotic dynamics, and also to the use of techniques in statistical mechanics important for an understanding of the chaotic behaviour of fluid systems. The fundamental concepts of dynamical systems theory are reviewed and simple examples are given. Advanced topics including SRB and Gibbs measures, unstable periodic orbit expansions, and applications to billiard-ball systems, are then explained. The text emphasises the connections between transport coefficients, needed to describe macroscopic properties of fluid flows, and quantities, such as Lyapunov exponents and Kolmogorov-Sinai entropies, which describe the microscopic, chaotic behaviour of the fluid. Later chapters consider the roles of the expanding and contracting manifolds of hyperbolic dynamical systems and the large number of particles in macroscopic systems. Exercises, detailed references and suggestions for further reading are included.

Equilibrium Statistical Mechanics - Joseph Edward Mayer 1968

Introduction to Non-equilibrium Quantum Statistical Mechanics - Shigeji Fujita 1966

Statistical Mechanics - Bruce Berne 2012-05-06

The last decade has been marked by a rapid growth in statistical mechanics, especially in

connection with the physics and chemistry of the fluid state. Our understanding in these areas has been considerably advanced and enriched by the discovery of new techniques and the sharpening of old techniques, ranging all the way from computer simulation to mode-mode coupling theories. Statistical mechanics brings together under one roof a broad spectrum of mathematical techniques. The aim of these volumes is to provide a didactic treatment of those techniques that are most useful for the study of problems of current interest to theoretical chemists. The emphasis throughout is on the techniques themselves and not on reviewing the enormous literature in statistical mechanics. Each author was charged with the following task. Given N pages, (a) pose the problem, (b) present those aspects of the particular technique that clearly illustrate its internal workings, (c) apply the technique to the solution of several illustrative examples, and (d) write the chapter so that it will enable the reader to approach key citations to the literature intelligently. These volumes are designed for graduate students and research workers in statistical mechanics. Nevertheless, because of the range of techniques and their general utility, they should be useful in other areas as well.

Introduction to Nonequilibrium Statistical Mechanics - James A. McLennan 1989

Equilibrium and Non-Equilibrium Statistical Mechanics - Radu Balescu 1975-05-14