of other texts in the area. The first two chapters provide the usual background concerning the mathematics of distributions and a review of thermodynamics, followed by the introduction of the concept of ensembles and fluctuations and their relationship to thermodynamic parameters. Chapter three is focused on the treatment of independent particles (ideal gas, crystal vibrations, spins in a magnetic field), while chapter four develops the partition function for molecules and includes applications for the treatment of chemical equilibria and adsorption (Langmuir isotherm). Quantum statistical mechanics is the subject of chapter five, concentrating on electrons in metals, semiconductors, and black-body radiation. Chapter six introduces classical statistical mechanics and how it can be used for the study of transport properties (heat conduction, diffusion, and viscosity), dipoles in a field, and dielectric properties of solutions. The liquid phase is introduced in chapter seven through the use of the virial expansion, cluster diagrams, distribution functions, and integral equations, leading into Debye−Hückel theory. The book concludes with a chapter on time dependence covering the Liouville equation, relaxation to equilibrium, time correlation functions, diffusion, the Langevin equation, and chemical reactions.

There are very few mistakes in the text, and the questions at the end of each chapter provide further practical applications of the different sections. Whether one should adopt this text for a graduate course in statistical mechanics will depend on your individual taste/bias. For instance, some of the subjects not covered in this book (and not necessarily in any of the other common texts either) include statistical mechanical perturbation theory, thermodynamic integration, molecular dynamics and Monte Carlo simulation techniques (mentioned only briefly considering they have been the major tools used for the development of statistical mechanics in the last three decades), Kirkwood−Buff theory, phase transitions (Ising models), and the statistical mechanics of polymer chains. In addition, some of the sections could have been improved slightly by including a critique to aid the student (Debye−Hueckel theory, different integral equation closures, in particular). However, these are minor points concerning what is a particularly interesting book for the general chemistry graduate student.

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JA9756477

S0002-7863(97)05647-3

Hypervalent Iodine in Organic Synthesis. By Anastasios Varvoglis (Aristotelian University of Thessaloniki, Greece). Edited by A. R. Katritzky (University of Florida−Gainesville), O. Meth-Cohn (University of Sunderland), and C. W. Rees (Imperial College of Science and Technology−London). Academic Press: San Diego. 1997. xix + 223 pp. ISBN 0-12-714975-9.

Organohypervalent reagents have become an important class of chemical compounds which in many cases are the reagents of choice for various synthetic transformations. Professor Varvoglis has contributed substantially to this area of research and has also written a number of reviews as well as an earlier book on the subject. His earlier book, *The Organic Chemistry of Polycoordinated Iodine* (1992), covered the entire field while the present work focuses on applications in organic syntheses. While there is some overlap, new material is presented and some excellent examples are given of critical uses of these reagents. The twelve chapters which constitute the contents present preparative methods followed by chapters devoted to synthetic applications of the reagents. An introductory chapter titled general considerations lists most of the important reviews on hypervalent iodine chemistry. The first reagent covered is (diacetoxyiodo)benzene, and a detailed experimental section is given for its use in the conversion of 1,5-cyclooctadiene to 2,6-diacetoxybicyclo[3,3,0]octane. A number of other applications are given with actual experimental details. These include the oxidation of ketones to yield α-hydroxydimethyl acetals, the 1,4-oxidative fragmentation of α-stannylated lactols, the oxidative cyclization of lactols, and the oxidation of various nitrogen compounds. The literature coverage is quite complete and accurate. The succeeding chapters, [Bis(acyloxy)iodo]benzenes, Iodosylbenzene, (Difluoroiodo)- and (dichloroiodo)arenes, [Hydroxy(tosyloxy)iodo]benzene and Its Analogues, Diaryl Iodonium Salts, Phenyliodonium Salts with an Aliphatic Moiety, Phenyliodonium Zwitterions, Reagents of Iodine(V), and Some Further Reagents of Iodine(III), are in the same format and are equally useful. Particularly noteworthy is the presentation of the Dess−Martin reagent which includes the important observation of Meyer and Schreiber in 1994 that a small amount of water is in fact useful although the original description recommended anhydrous conditions. This degree of synthetic awareness makes the book particularly useful. References to the use of this reagent as late as 1995 are given.

I can strongly recommend this book. It should have a wide audience among organic chemistry. It is written at a level appropriate both for graduate students and people working in synthetic organic chemistry. This book accomplishes the dual goal of presenting organohypervalent iodine reagents in a descriptive way, and by virtue of the inclusion of actual experimental procedure, it becomes a valuable reference text.

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JA975507X

S0002-7863(97)05507-8

Advances in Molecular Structure Research, Vol. 2. Edited by Magdolna Hargittai (Hungarian Academy of Sciences) and Istvan Hargittai (Budapest Technical University). JAI Press: Greenwich. 1996. ix + 255 pp. $109.50. ISBN 0-7623-0025-6.

This book is the second volume of a user-oriented series which discusses the progress in molecular structure research. What is particularly interesting about the book is the fact that it reviews the frontiers of this field, taking a critical approach to the feasibility of various calculations and to the reliability of results.

The first chapter discusses conformational principles of congested organic molecules, with emphasis on trans versus gauche stability.

The second chapter describes transition metal clusters from the point of view of molecular versus crystal structure.

The third chapter discusses a novel approach to hydrogen bonding, trying to answer the question, "which molecules are most likely to form the strongest hydrogen-bonds?", by developing a method which makes use of simple induction from experimental evidence.

Partially bonded molecules and their transition to the crystalline state are discussed in the fourth chapter.

The fifth chapter describes valence bond concepts, molecular mechanics, and molecular shapes with emphasis on the hybrid orbital strength function.

Empirical correlations in structural chemistry form the subject of the sixth chapter.

The seventh chapter deals with the NMR "inadequate" technique, while the eighth and last chapter proposes a complete mathematical solution for the study of conjugated polyene hydrocarbons.

The book is written in a concise yet comprehensive manner, and touches on a variety of subjects not discussed extensively elsewhere. It presents an exhaustive and critical coverage of the literature even though some of the references are somewhat dated.

This book is recommended for researchers interested in new points of view in structural chemistry.

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JA9755828

S0002-7863(97)05582-0