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The Physics and Chemistry of Aqueous Ionic Solutions **Ionic Processes in Solution** *Equilibrium Statistical Mechanics for Inhomogeneous Ionic Solutions* Physical Chemistry of Electrolyte Solutions Jacaranda Chemistry 1 VCE Units 1 and 2, LearnON and Print Journal of Research of the National Bureau of Standards **Proton Conductors** Ionic Processes in Solution *Statistical Thermodynamics* **Generalized van der Waals Theory of Molecular Fluids in Bulk and at Surfaces** Monte Carlo Methods in Statistical Physics The Monte Carlo Method in Condensed Matter Physics **Colloquium on Geology, Mineralogy, and Human Welfare** Solution Chemistry Research Progress Research and Development Progress Report **Chemical Physics of Ionic Solutions Non-Aqueous Solutions – 5** Polyampholytes *Electrolytes at Interfaces* Handbook of Layered Materials **Ionic Soft Matter: Modern Trends in Theory and Applications Advances in Chromatography** Instrumentation Reference Book **Ions in Solution Chemo-Mechanical Coupling in Clays: From Nano-scale to Engineering Applications** Thermodynamics and Kinetics in Materials Science *Molecular Basics of Liquids and Liquid-Based Materials Electrochemistry on Liquid/Liquid Interfaces* **Proceedings of the Third International Symposium on Molten Salts Volume 1: Modern Electrochemistry Activity Coefficients in Electrolyte Solutions Essential Computational Modeling in Chemistry** Novel Approaches to the Structure and Dynamics of Liquids: Experiments, Theories and Simulations *Concrete Solutions 2011* Solid Solutions in Silicate and Oxide systems **Condensed Matter Physics Aspects Of Electrochemistry - Proceedings Of The Conference (Free Sample) Objective NCERT Xtract Chemistry for NTA NEET & JEE Main 6th Edition** *Freeze-Drying/Lyophilization of Pharmaceutical and Biological Products Essays on Analytical Chemistry* Encyclopedia of Physical Science and Technology

For six decades, scientists and researchers have relied on the Advances in Chromatography series for the most up-to-date information on a wide range of developments in chromatographic methods and applications. The clear presentation of topics and vivid illustrations for which this series has become known make the material accessible and engaging to analytical, biochemical, organic, polymer, and pharmaceutical chemists at all levels of technical skill. Presents an in-depth review of chaotropic chromatography. Reviews recent advances in HPLC and SFC columns packed with hybrid organic/inorganic particles. Explores new advances in nano-liquid chromatography for proteomics analysis. Outlines the heterogeneity of gangliosides and advances in the chromatographic techniques used in their separation. Freeze-drying, or lyophilization, is a well established technology used in the preservation of numerous pharmaceutical and biological products. This highly effective dehydration method involves the removal of water from frozen materials via the direct sublimation of ice. In recent years, this process has met with many changes, as have the regulatio The Concrete Solutions series of International Conferences on Concrete Repair began in 2003, with a conference held in St. Malo, France in association with INSA Rennes, followed by the second conference in 2006 (with INSA again, at St. Malo, France), and the third conference in 2009 (in Padova and Venice, in association with the University of Pado This book was first published in 1991. It considers the concepts and theories relating to mostly aqueous systems of activity coefficients. This volume of proceedings contains contributions which provide an overview of theoretical electrochemistry from a condensed matter physics point of view. Main attention is focused on developments in the theory of liquids and solutions, structure, adsorption and electric and optical properties of the electrochemical interface, kinetics of charge transfer reactions, fractal and superconducting electrodes, solar energy conversion and power sources. This Is An Introductory Book Which Explains The Foundations Of The Subject And Its Application. It Is Intended Primarily For Graduate Students But May Provide Useful Information And Reading To Science And Engineering Students At All Levels. It Assumes That Readers Have Knowledge Of Basic Thermodynamics And Quantum Mechanics. With This, The Theory Has Been Developed In A Simple, Logical And Understandable Way. Some Applications Of Statistical Thermodynamics Have Been Described In Detail With Illustrative Solved Examples.There Are Two Basic Approaches In Statistical Mechanics; One Based On The Study Of Independent Particles In An Isolated System And The Other Based On The Concept Of Ensembles. In This Book Attempt Has Been Made To Take Advantage Of Both Approaches. While The Fundamental Concepts Have Been Developed By First Approach, Concept Of Ensembles Have Been Included To Bring Out The Importance Of This Concept In The Application Of Statistical Thermodynamics To Chemical Systems Where Interparticle Interactions Become Important.Part I Of The Book Deals With The Background Concepts, Fundamentals In Mathematics, Classical Mechanics, Quantum Mechanics And Thermodynamics Which Are Essential For Statistical Mechanics. Part Ii Covers Formalism Of Statistical Mechanism And Its Relation To Thermodynamics As Well As The Statistical Mechanics Of Ensembles, Quantum Statistics And Fluctuations. Part Iii Includes Chapters On The Applications Of The Formalism To Real Laboratory Chemical Systems. In This Part Additions Such As Imperfect Gases, Equilibrium Isotope And Kinetic Isotope Effects And Reactions At The Surfaces Have Been Made, In This Edition. Part Iv Is Also An Addition Which Covers Quantum Systems Such As Ideal Fermi Gas (Free Electrons In Metals), Photon Gas And Ideal Bose Gas (Helium Gas). Non-Aqueous Solutions — 5 is a collection of lectures presented at the Fifth International Conference on Non-Aqueous Solutions held in Leeds, England, on July 5-9, 1976. The papers explore reactions in non-aqueous solutions as well as the thermodynamic and kinetic properties of non-aqueous solutions. Examples of the use of spectroscopic techniques are presented, and solutions in molten salts are given. Metals in solution and liquid metal solutions are also considered. This book is comprised of 12 chapters and begins with a review of a general scheme which considers the species formed by cation-electron and electron-electron interactions at dilute to moderate concentrations, along with the influence of the solvent and the metal on these interactions. The discussion then shifts to the application of electron spin resonance spectroscopy to the study of solvation; the influence of solvent properties on ligand substitution mechanisms of labile complexes; and the effect of acidity on chemical reactions in molten salts. Subsequent chapters deal with the chemistry of solutions of salts in liquid alkali metals; preferential solvation in kinetics; and the use of non-aqueous solvents for preparation and reactions of nitrogen halogen compounds. Results of Raman spectroscopic studies of non-aqueous solutions and spectroscopic studies of coordination compounds formed in molten salts are also presented. This monograph will be of interest to chemists. J.E. Enderby At the last NATO-ASI on liquids held in Corsica, (August 1977),Professor de Gennes, in his summary of that meeting, suggested that the next ASI should concentrate on some specific aspect of the subject and mentioned explicitly ionic solutions as one possibility. The challenge was taken up by Marie-Claire Bellissent-Funel and George Neilson; I am sure that all the participants would wish to congratulate our two colleagues for putting together an outstanding programme of lectures, round tables and poster session. The theory which underlies the subject was covered by four leading authorities: J.-P. Hansen (Paris) set out the general framework in terms of the statistical mechanics of bulk and surface properties; H.L. Friedman (Stony Brook) focused attention on ionic liquids at equilibrium, and J.B. Hubbard considered non-equilibrium properties such as the electrical conductivity and ionic friction coefficients. Finally, the basic theory of polyelectrolytes treated as charged linear polymers in aqueous solution was presented by J.M. Victor (Paris). The aim of this book is to provide the reader with a modern presentation of ionic solutions at interfaces, for physical chemists, chemists and theoretically oriented experimentalists in this field. The discussion is mainly on the structural and thermodynamic properties, in relation to presently available statistical mechanical models. Some dynamic properties are also presented, at a more phenomenological level. The initial chapters are devoted to the presentation of some basic concepts for bulk properties: hydrodynamic interactions, electrostatics, van der Waals forces and thermodynamics of ionic solutions in the framework of a particular model: the mean spherical approximation (MSA). Specific features of interfaces are then discussed: experimental techniques such as in-situ X-ray diffraction, STM and AFM microscopy are described. Ions at liquid/air, liquid/metal and liquid/liquid interfaces are considered from the experimental and theoretical viewpoint. Lastly some dynamic (transport) properties are included, namely the self-diffusion and conductance of small colloids (polyelectrolytes and micelles) and the kinetics of solute transfer at free

liquid/liquid interfaces. Essential Computational Modeling in Chemistry presents key contributions selected from the volume in the Handbook of Numerical Analysis: Computational Modeling in Chemistry Vol. 10(2005). Computational Modeling is an active field of scientific computing at the crossroads between Physics, Chemistry, Applied Mathematics and Computer Science. Sophisticated mathematical models are increasingly complex and extensive computer simulations are on the rise. Numerical Analysis and scientific software have emerged as essential steps for validating mathematical models and simulations based on these models. This guide provides a quick reference of computational methods for use in understanding chemical reactions and how to control them. By demonstrating various computational methods in research, scientists can predict such things as molecular properties. The reference offers a number of techniques and the numerical analysis needed to perform rigorously founded computations. Various viewpoints of methods and applications are available for researchers to chose and experiment with; Numerical analysis and open problems is useful for experimentation; Most commonly used models and techniques for the molecular case is quickly accessible This book gives a comprehensive review of proton conductors, including theory, techniques, the materials themselves and applications. Generalized van der Waals Theory of Molecular Fluids in Bulk and at Surfaces presents successful research on the development of a new density theory of fluids that makes it possible to understand and predict a wide range of properties and phenomena. The book brings together recent advances relating to the Generalized van der Waals Theory and its use in fluid property calculations. The mathematics presentation is oriented to an audience of varying backgrounds, and readers will find exercises that can be used as a textbook for a course at the upper undergraduate or graduate level in physics or chemistry. In addition, it is ideal for scientists from other areas, such as geophysics, oceanography and molecular biology who are interested in learning about, and understanding, molecular fluids. Presents an approximate, but fully derived and physically explained, theory of molecular fluids to facilitate broad applications Derives a density functional theory of classical fluids and applies it to obtain equations of state, as well as non-uniform fluid properties, e.g., surface tension and adsorption Demonstrates how the theory can be applied to complex multi-center molecules forming a polymer fluid Provides user-friendly programs to redraw figures for variable parameters and to perform calculations in particular applications Includes a set of exercises to support use of the book in a course This book sheds light on the molecular aspects of liquids and liquid-based materials such as organic or inorganic liquids, ionic liquids, proteins, biomaterials, and soft materials including gels. The reader discovers how the molecular basics of such systems are connected with their properties, dynamics, and functions. Once the use and application of liquids and liquid-based materials are understood, the book becomes a source of the latest, detailed knowledge of their structures, dynamics, and functions emerging from molecularity. The systems discussed in the book have structural dimensions varying from nanometers to millimeters, thus the precise estimation of structures and dynamics from experimental, theoretical, and simulation methods is of crucial importance. Outlines of the practical knowledge needed in research and development are helpfully included in the book. In the seven years since this volume first appeared. there has been an enormous expansion of the range of problems to which Monte Carlo computer simulation methods have been applied. This fact has already led to the addition of a companion volume ("Applications of the Monte Carlo Method in Statistical Physics", Topics in Current Physics. Vol . 36), edited in 1984, to this book. But the field continues to develop further; rapid progress is being made with respect to the implementation of Monte Carlo algorithms, the construction of special-purpose computers dedicated to exe cute Monte Carlo programs, and new methods to analyze the "data" generated by these programs. Brief descriptions of these and other developments, together with numerous addi tional references, are included in a new chapter , "Recent Trends in Monte Carlo Simulations" , which has been written for this second edition. Typographical correc tions have been made and fuller references given where appropriate, but otherwise the layout and contents of the other chapters are left unchanged. Thus this book, together with its companion volume mentioned above, gives a fairly complete and up to-date review of the field. It is hoped that the reduced price of this paperback edition will make it accessible to a wide range of scientists and students in the fields to which it is relevant: theoretical phYSics and physical chemistry , con densed-matter physics and materials science, computational physics and applied mathematics, etc. Of the Encyclopedia of Physical Science and Technology: Has been completely updated with no less than 90% revised material and 50% new content throughout the volumes Presents eighteen volumes, nearly 800 authoritative articles and 14,500 pages Is lavishly illustrated with over 7,000 photographs, illustrations and tables Presents an increased emphasis on the hottest topics such as information processing, environmental science, biotechnology and biomedicine Includes a final Index Volume containing Thematic, Relational and Subject indexes. Clay behaviour is affected by coupled mechanical and chemical processes occurring in them at various scales. The peculiar chemical and electro-chemical properties of clays are the source of many undesired effects. These papers provide insight into the variables controlling clay behaviour. Essays on Analytical Chemistry: In Memory of Professor Anders Ringbom is a collection of analytical chemistry papers and research studies in honor of the memory of Professor Anders Ringbom, a highly esteemed researcher and teacher. The papers are grouped under the following headings: Chemical Equilibria, Titrations, Photometric Analysis, Electrochemistry, Separations, Trace Analysis, Kinetic Analysis, and Other Analytical Topics. This book is organized into eight parts encompassing 52 chapters. The first part deals with the concept of chemical equilibria in acid-base and metal complexes. The next parts cover the applications of different titration techniques, photometric analysis, electrochemistry, and separation techniques. Other parts highlight the principles and application of trace analysis, including the determination of heavy metals and airborne particulates. The last parts contain papers that examine the analytical application of the rate phenomena of several chemical reactions. These parts also tackle the topics of sampling, statistical analysis in analytical chemistry, and the features of photoelectron spectroscopy and capillary electrophoresis. This book will be of great value to analytical chemists, researchers, and analytical chemistry students. This text presents a concise and thorough introduction to the main concepts and practical applications of thermodynamics and kinetics in materials science. It is designed with two types of uses in mind: firstly for a one or two semester university course for mid- to upper-level undergraduate or first year graduate students in a materials-science-oriented discipline and secondly for individuals who want to study the material on their own. The following major topics are discussed: basic laws of classical and irreversible thermodynamics, phase equilibria, theory of solutions, chemical reaction thermodynamics and kinetics, surface phenomena, stressed systems, diffusion and statistical thermodynamics. A large number of example problems with detailed solutions are included as well as accompanying computer-based self-tests, consisting of over 400 questions and 2000 answers with hints for students. Computer-based laboratories are provided, in which a laboratory problem is posed and the experiment described. The student can "perform" the experiments and change the laboratory conditions to obtain the data required for meeting the laboratory objective. Each "laboratory" is augmented with background material to aid analysis of the experimental results. In order to adapt the properties of living materials to their biological functions, nature has developed unique polyelectrolytes with outstanding physical, chemical and mechanical behavior. Namely polyampholytes can be suitable substances to model protein folding phenomenon and enzymatic activity most of biological macromolecules due to the presence of acidic and basic groups. The ability of linear and crosslinked amphoteric macromolecules to adopt globular, coil, helix and stretched conformations and to demonstrate coil-globule, helix-coil phase transitions, and sol-gel, collapsed expanded volume changes in relation to internal (nature and distribution of acid and base substituents, copolymer composition, hydrophobicity etc.) and external (pH, temperature, ionic strength of the solution, thermodynamic quality of solvents etc.) factors is very important and constantly attracts the attention of theorists and experimentalists because the hierarchy of amphoteric macromolecules can repeat, more or less, the structural organization of proteins. That is why polyampholytes fall within eyeshot of several disciplines, at least polymer chemistry and physics, molecular biology, colloid chemistry, coordination chemistry and catalysis. The main purpose of this monograph is to bridge the gap between synthetic and natural polymers and to show a closer relationship between two fascinating worlds. The first chapter of the book acquaints the readers with synthetic strategy of "annealed", "quenched" and "zwitterionic" polyampholytes. Radical copolymerization, chemical modification and radiation-chemical polymerization methods are thoroughly considered. Kinetics and mechanism of formation of random, alternating, graft, di-block or tri-block sequences is discussed. The second chapter deals with behavior of polyampholytes in solutions. A charge transfer across the

interface between two immiscible liquid media has an important role both in nature and in man-designed applications. Ion transfer across the biological membranes, behavior of ion-selective electrodes with liquid membranes and similar sensors, extraction processes, phase transfer catalysis and applications in electroanalytical chemistry can serve as examples. Present interest in the interface between two immiscible electrolytes (liquid liquid or L/L interface) was originated by Koryta's idea (Koryta, Vanysek and Brezina 1976) that the interface between immiscible liquids could serve as a simple model for one half of a biological membrane in the contact with the surrounding electrolyte. It was also Koryta who started using the acronym ITIES (Interface between Two Immiscible Electrolyte Solutions) which generally encompasses all the phenomena discussed in this book. Physiological and electrochemical investigations have certainly well established tradition. In his classic experiments with frog thighs Luigi Galvani discovered in 1791 relationship between electricity and nerves and muscles. As outlined by Koryta and Stullk (1983) in the introduction to their book, the study of electrophysiological phenomena did not progress much for several decades and only a few experiments were performed. For instance M. Faraday (Williams, 1965) studied the electricity produced by an electric fish and Du Bois-Reymond (1848) suggested that the surface of biological formations have properties similar to the electrode of a galvanic cell. However, the properties of biological membrane could not be explained before the first concept of electrochemistry was postulated. Solution chemistry deals with liquid solutions in such fields as physical chemistry, chemical physics, molecular biology, statistical mechanics, biochemistry, and biophysics. This book includes experimental investigations of the dielectric, spectroscopic, thermodynamic, transport, or relaxation properties of both electrolytes and non-electrolytes in liquid solutions. The latest research in the world has been selected, gathered and presented here. Focusing on layered compounds at the core of materials intercalation chemistry, this reference comprehensively explores clays and other classes of materials exhibiting the ability to pillar, or establish permanent intracrystalline porosity within layers. It offers an authoritative presentation of their fundamental properties as well as summaries of The Monte Carlo method is now widely used and commonly accepted as an important and useful tool in solid state physics and related fields. It is broadly recognized that the technique of "computer simulation" is complementary to both analytical theory and experiment, and can significantly contribute to ad vancing the understanding of various scientific problems. Widespread applications of the Monte Carlo method to various fields of the statistical mechanics of condensed matter physics have already been reviewed in two previously published books, namely Monte Carlo Methods in Statistical Physics (Topics Curro Phys. , Vol. 7, 1st edn. 1979, 2ndedn. 1986) and Applications of the Monte Carlo Method in Statistical Physics (Topics Curro Phys. , Vol. 36, 1st edn. 1984, 2nd edn. 1987). Meanwhile the field has continued its rapid growth and expansion, and applications to new fields have appeared that were not treated at all in the above two books (e. g. studies of irreversible growth phenomena, cellular automata, interfaces, and quantum problems on lattices). Also, new methodic aspects have emerged, such as aspects of efficient use of vector com puters or parallel computers, more efficient analysis of simulated systems con figurations, and methods to reduce critical slowing down at i>hase transitions. Taken together with the extensive activity in certain traditional areas of research (simulation of classical and quantum fluids, of macromolecular materials, of spin glasses and quadrupolar glasses, etc. The unique behavior of the "liquid state", together with the richness of phenomena that are observed, render liquids particularly interesting for the scientific community. Note that the most important reactions in chemical and biological systems take place in solutions and liquid-like environments. Additionally, liquids are utilized for numerous industrial applications. It is for these reasons that the understanding of their properties at the molecular level is of foremost interest in many fields of science and engineering. What can be said with certainty is that both the experimental and theoretical studies of the liquid state have a long and rich history, so that one might suppose this to be essentially a solved problem. It should be emphasized, however, that although, for more than a century, the overall scientific effort has led to a considerable progress, our understanding of the properties of the liquid systems is still incomplete and there is still more to be explored. Basic reason for this is the "many body" character of the particle interactions in liquids and the lack of long-range order, which introduce in liquid state theory and existing simulation techniques a number of conceptual and technical problems that require specific approaches. Also, many of the elementary processes that take place in liquids, including molecular translational, rotational and vibrational motions (Trans. -Rot. -Vib. coupling), structural relaxation, energy dissipation and especially chemical changes in reactive systems occur at different and/or extremely short timescales. The aim and purpose of this book is a survey of our actual basic knowledge of electrolyte solutions. It is meant for chemical engineers looking for an introduction to this field of increasing interest for various technologies, and for scientists wishing to have access to the broad field of modern electrolyte chemistry. Recently there have been profound developments in the understanding and interpretation of liquids and soft matter centered on constituents with sho- range interactions. Ionic soft matter is a class of conventional condensed soft matter with prevailing contribution from electrostatics and, therefore, can be subject to possible long-range correlations among the components of the - terial and in many cases crucially affecting its physical properties. Among the most popular representatives of such a class of materials are natural and synthetic saline environments, like aqueous and non-aqueous electrolyte - lutions and molten salts as well as variety of polyelectrolytes and colloidal suspensions. Equally well known are biological systems of proteins. All these systems are examples of soft matter strongly in?uenced, if not dominated, by long-range forces. For more than half of century the classical theories by Debye and Hückel as well as by Derjaguin, Landau, Verwey and Owerbeek (DLVO) have been at the basis of theoretical physical chemistry and chemical engineering. The substantial progress in material science during last few decades as well as the advent of new instrumentation and computational techniques made it apparent that in many cases the classical theories break down. New types of interactions (e.g. hydrodynamic, entropic) have been discovered and a number of questions have arisen from theoretical and experimental studies. Many of these questions still do not have de?nite answers. The 6th New Enlarged Edition of the ALL NEW Objective NCERT Xtract Chemistry for NEET/ JEE Main is now available in a new 2-Color format much powerful than the previous one. • The most highlighting feature of the book is the inclusion of all the concepts from NCERT Class 11 & 12 Books in the form of ONE-LINERS Notes. • This book-cum-Question Bank spans through 30 chapters - 14 Chapters of Class 11 & 16 Chapters of Class 12. Each Chapter can be divided into 2 Parts: Part I - Learn & Revise: • Every Chapter starts with TREND BUSTER, which highlights the Most & Least Important Topics of the Chapter based upon the last 7 years Questions of NEET/ JEE Main. • The book provides Topical NCERT ONE-LINER Notes without missing a single concept. • Another NEW INCLUSION in this edition is extract of NEET/ JEE Main Past MCQs in the form of NEET/ JEE ONE-LINERS. • Further Tips/ Tricks/ Techniques ONE-LINERS to provide additional inputs for Quick Problem Solving Part II - Practice & Excel: • This is followed by 5 types of Objective Exercises covering all variety of questions asked in NEET/ JEE Main 1. NCERT based Topic-wise MCQs exactly as per NCERT Flow with ample amounts of MCQs 2. NCERT Exemplar & Past NEET MCQs Past Questions are categorised into Concept, Application & Skill Levels. Questions out of NCERT scope are also marked as Beyond NCERT. 3. Matching, Statement & A-R type MCQs 4. Skill Enhancer MCQs/ HOTS 5. Numeric Value Answer Questions • The book also provides 4 Mock Tests as per latest (2021) pattern for Self Assessment.. • In all, the book contains 5000+ High Probability MCQs specially designed to Master MCQs for NEET/ JEE • Detailed Quality explanations have been provided for all MCQs for conceptual clarity. • This book assures complete syllabus coverage by means of Concept Coverage & MCQs for all significant concepts. In nutshell this book will act as the MUST HAVE PRACTICE & REVISION MATERIAL for NEET/ JEE Main Aspirants. The discipline of instrumentation has grown appreciably in recent years because of advances in sensor technology and in the interconnectivity of sensors, computers and control systems. This 4e of the Instrumentation Reference Book embraces the equipment and systems used to detect, track and store data related to physical, chemical, electrical, thermal and mechanical properties of materials, systems and operations. While traditionally a key area within mechanical and industrial engineering, understanding this greater and more complex use of sensing and monitoring controls and systems is essential for a wide variety of engineering areas--from manufacturing to chemical processing to aerospace operations to even the everyday automobile. In turn, this has meant that the automation of manufacturing, process industries, and even building and infrastructure construction has been improved dramatically. And now with remote wireless instrumentation, heretofore inaccessible or widely dispersed operations and procedures can be automatically monitored and controlled. This already well-established

reference work will reflect these dramatic changes with improved and expanded coverage of the traditional domains of instrumentation as well as the cutting-edge areas of digital integration of complex sensor/control systems. Thoroughly revised, with up-to-date coverage of wireless sensors and systems, as well as nanotechnologies role in the evolution of sensor technology Latest information on new sensor equipment, new measurement standards, and new software for embedded control systems, networking and automated control Three entirely new sections on Controllers, Actuators and Final Control Elements; Manufacturing Execution Systems; and Automation Knowledge Base Up-dated and expanded references and critical standards This book had its nucleus in some lectures given by one of us (J. O’M. B.) in a course on electrochemistry to students of energy conversion at the University of Pennsyl- nia. It was there that he met a number of people trained in chemistry, physics, biology, metallurgy, and materials science, all of whom wanted to know something about electrochemistry. The concept of writing a book about electrochemistry which could be understood by people with very varied backgrounds was thereby engendered. The lectures were recorded and written up by Dr. Klaus Muller as a 293-page manuscript. At a later stage, A. K. N. R. joined the effort; it was decided to make a fresh start and to write a much more comprehensive text. Of methods for direct energy conversion, the electrochemical one is the most advanced and seems the most likely to become of considerable practical importance. Thus, conversion to electrochemically powered transportation systems appears to be an important step by means of which the difficulties of air pollution and the effects of an increasing concentration in the atmosphere of carbon dioxide may be met. Cor- sion is recognized as having an electrochemical basis. The synthesis of nylon now contains an important electrochemical stage. Some central biological mechanisms have been shown to take place by means of electrochemical reactions. A number of American organizations have recently recommended greatly increased activity in training and research in electrochemistry at universities in the United States.