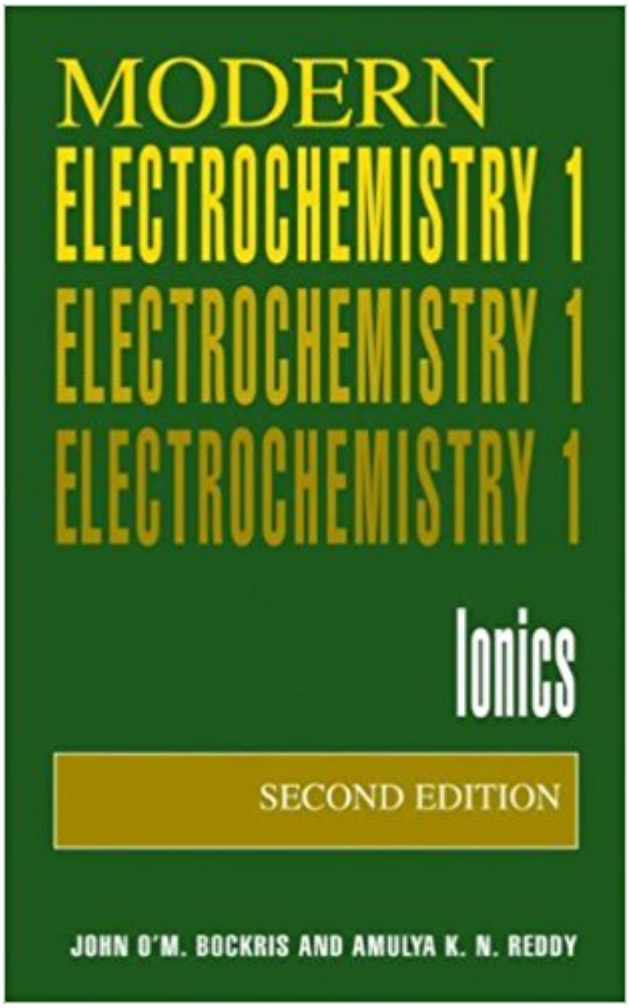
Modern Electrochemistry 1: Ionics, 2nd Edition



Synopsis

This book had its nucleus in some lectures given by one of us (J. Oâ ™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.

Book Information

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Customer Reviews

Praise for the First Edition: `Superbly written...indispensable.' JACS `A truly extraordinary achievement.' Journal of the Electrochemical Society `A must.' Nature about the Second Edition: `This excellent teaching book can be warmly recommended to every student of chemistry as well as to all electrochemists in industry and at university. It deserves to be found on the shelf of every electrochemical laboratory. Journal of Solid State Electrochemistry, 4 (2000) `... this is an excellent book that outlines basic theories and measurements of ions in solution and ionic liquids. There is no doubt that readers from a variety of research areas will benefit from it. The book is well suited to serve as a reference book or reading material for electrochemistry courses. It should also serve as a very useful and important handbook for electrochemists who are engaged in active research or teaching.' Journal of the American Chemical Society, 122:9 `The first edition of Modern Electrochemistry, a two-volume set published in 1970, is familiar as a classic work to those who teach and practice electrochemistry. The second edition ... is a worthy successor, containing nearly all the original material, updated with the results of two and one-half decades of additional research, as well as a large amount of new material. ...the authors have done an admirable job of beginning each idea at a very basic level and building from there, the buildup is quite rapid as textbooks go and liberally sprinkled with mathematics and its attendant condensation of information, so the reading is challenging. Additionally, the authors are not bashful about invoking the calculus when it is appropriate. On the basis of the level of treatment and the sheer volume of material, this volume would be most appropriate as a textbook for an advanced course (post physical chemistry) in physical electrochemistry. It seems eminently suitable as a source of supplemental reading for students in a variety of upper-level courses, including physical chemistry. As a reference for the practicing electrochemist it shines because of its thorough coverage of the discipline, its excellent index, and its easy-to-use system of paragraph headings, each of which includes sufficient detail to enable the researcher to confidently identify the relevant portion of text. In view of the challenge presented in reading this text, I (who consider myself an applied analytical chemist) confess significant surprise in finding that the volume is relatively difficult to put down. The authors have managed to include more than their fair share of the "So that's why that happens!" factor.' Journal of Chemical Education, 76:8 (1999) `It is an excellent teaching book, indispensable to every student of electrochemistry.' Corrosion, 58:5 `These original, stimulating and informative volumes offer an unusual approach and inter alia provide an excellent entrÃ©e to the field for the non-specialist.' Emeritus Professor Douglas Inman, Dept. of Materials, Imperial College, London

These authors have a great writing style. This is a subject matter that has a potential to be very,

very dry but the authors have somehow made it enjoyable. If they get into hardcore calculations and derivations that you might be a little rusty on, they anticipate that (I assume from lots of students' feedback) and include appendixes at the end of each chapter so that you don't need to run off and find the corresponding chapter in one of your math/physics/chemistry textbooks. They also have a very useful nomenclature guide (in the first book only) in case you keep forgetting what certain symbols mean and what units they are in. The footnotes are great and keep things from getting too dry. Overall, I would definitely recommend these three books.Note: Unless you have a fetish for hard covers, get the paperbacks; they're half the cost. When I bought these books from .com, it was very confusing to figure out which books to get. Here are the ISBN's of each of the three books in the series. This will save you some headache:Electrochemistry 1: IonicsISBN: 0306455552 (paperback)Electrochemistry 2A: Fundamentals of ElectrodicsISBN: 0306461676 (paperback)Electrochemistry 2B: Electrodics in Chemistry, Engineering, Biology, and Environmental ScienceISBN: 0306463253 (paperback)

it's my bible for electrolyte chemistry

The Modern Electrochemistry volumes are truly excellent textbooks and references for all aspects of electrochemistry.Whether you're dealing with corrosion, electrolytic processes, batteries, or biochemistry, the electrochemistry is fully explained here. The authors go into a great deal of detail topics while maintaining a very familiar, easy-to-read tone. There are also plenty of interesting historical footnotes which serve to lighten the text.These books are written for electrochemists interested in the chemical mechanisms behind electrochemical processes. Applications of these processes are treated very briefly. If you are more interested in real-world applications of these processes, other texts may serve you better.The text comes in three volumes, which is problematic. It is difficult to find all three at most booksellers. Many online booksellers (including) don't distinguish between the volumes in their catalogs; I had to go by ISBN numbers to ensure I got the complete set. But it was well worth the trouble.

Remarkable book. I admire how the authors explain the analogy between gravitaional potential, electrostatic potential and chemical potential in the context of a solute-solvent in an electrochemical system. I beleive that a clarity of understanding can be achieved only by (listening to someone having) a clarity of expression that comes from (that person who has the) clarity of thought. The authors have striven to present electrochemical aspects, as they state, in lucid and honest manner.

I think they can also claim, "fluid" (I mean flow, not less-concrete stuff) in their accomplishment because the text flows so well and it is a very readable book. I have no doubt the authors have been inspired by Feynman's Lectures of Physics.

The difference of this second Ed. from the first one is huge; the author actually rewrote ca. 50% of the first volume (Ionics) and ca. 70% of the second volume (Electrodics, still in writing), covering literature up to later 90's.For classroom use, the most important addition of the edition is the problem set, which are extremely helpful for students on introductory level. It was a great honor of me to be invited by the author to write part of the problem sets for all chapters in Vol.1 and a few chapters in Vol.2, and I can tell you that the author and the problem writers put in a lot of effort to elucidate the fundamental electrochemistry while also help original thinkings of the students on more advanced electrochemistry issues.

This book By Bockris and Reddy, is the best book you can hope to lay your hands, if you are looking for an good introduction and thorough description of the fundamentals. This is definetely one book, or rather two books which no library should be without, including libraries of graudate students. The style of the authors is extremely simple, and reading this book is like reading a story book. you would find it quite difficult to keep the book down once you have picked it up.An absolutely fantastic book, though slightly on the costlier side.

An excellent book on ionics in electrochemistry. Bockris and Reddy are great authorities on electrochmistry and have handled all the topics covered in this book very lucidly and superbly. A must reading for all electrochemists and others who are working in this area.

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