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Fundamentals Of Electrochemical Science



Synopsis

"[Fundamentals of Electrochemical Science] is a valuable contribution and I support the publication....I am looking forward to seeing this book on the shelves, and once published, I will not hesitate to recommend it to my students."--ANDRZEJ WIECKOWSKI, University of Illinois at Urbana-Champaign

Key Features*

- Deals comprehensively with the basic science of electrochemistry
- Treats electrochemistry as a discipline in its own right and not as a branch of physical or analytical chemistry
- Provides a thorough and quantitative description of electrochemical fundamentals

Book Information

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Customer Reviews

"This is an exceptionally clear and careful exposition of the elementary aspects of electrochemistry. The details have been well thought out and the examples and problems are well judged and helpful."--ROGER PARSONS, University of Southampton, U.K....the book would be a good starting point for more advanced levels of study where a good understanding of electrochemical principles is required....it would certainly be useful for an electroanalytical chemist who wished to understand electrochemical processes in more depth....In general this is a clearly written book on electrochemistry which will be of use to anybody wishing to understand the subject in reasonable depth.--ANALYTICA CHIMICA ACTA, ANDRZEJ WIECKOWSKI, University of Illinois at Urbana-Champaign

I have been reading so many electrochemistry books for years and my favorite starting point was

always Modern Electrochemistry by Bockris and Reddy. For a middle level reader, Bard and Faulkner's Classic "Electrochemical Methods" is good. For an advanced reader with a mathematical background Professor John Newman's "Electrochemical Systems" is recommended. Bockris' book is probably the best in visualization but to get to a point where one could derive equations and use the concepts, he/she would have to belabor through a lot of pages. Newman's book on the other hand is extremely minimal in visuals and only a person with a strong bent for Mathematics would follow it completely. In fact, progressing from one chapter to another could be very difficult. While Bockris is blah, Bard less engaging and Newman too mathematical (and sometimes cryptic) Prof. Oldham's book is probably the smoothest introduction to electrochemistry I have seen. The beauty of this book lies in the powerful visualization that he provides for the physical phenomena. And this is understandable since it has basically come out of his lectures. This book, which I stumbled only recently, integrates the best aspects of Bard and Faulkner and Bockris and presents the reader a rapid but strong footed approach to understanding electrochemistry. I particularly liked the following sections:

1. Chapter on Electrodes
2. Introduction to Nernst-Planck Law

I also loved the way author introduces "activity". In his words ://The activity of a species in a certain location reflects its "restlessness" there. The greater the activity the more eager is the species to leave.//Personally I have not heard a better explanation. I strongly recommend this book to anybody who wants to know electrochemistry. If a reader would like to specialize in electrochemistry, I suggest this order:

1. Fundamentals of Electrochemical Science - Oldham
2. Electrochemical Methods - Bard and Faulkner
3. Electrochemical system - John Newman and Bockris and Reddy for daily night reading.

This is an excellent introduction to electrochemical science, it's well written and incredibly useful. I strongly recommend it if you are studying, working or just interested in this area.

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