

Electrochemistry II. Topics in current chemistry, Volume 143; edited by E. Steckhan, Springer-Verlag, Berlin, Heidelberg, New York, London, Paris and Tokyo, 1988, xii + 187 pages, DM138. ISBN 3-540-18226-8.

This volume is the second in a sub-series of volumes to be dedicated to new trends in electrochemistry within the excellent series *Topics in Current Chemistry*. Unlike many of its competitors, this series has concentrated upon theme volumes, and is all the more successful because of this. This volume contains four articles, each dealing with a topic at the forefront of electrochemical research, but of great interest to inorganic chemists.

The first review discusses electrochemical techniques in bioanalysis (C.E. Lunte and W.R. Heineman; 48 pages; 328 refs.), and concentrates upon potentiometry (including ion-selective electrodes, gas-sensing electrodes, biosensors, ion-sensitive field-effect transistors, and potentiometric immunoassay) and dynamic techniques (including liquid chromatography electrochemistry, enzyme-linked electrochemical techniques, in vivo electrochemical techniques, and anodic stripping voltammetry). Although the cynosure of the article is biochemical systems, the text is very well written from a practical point-of-view, and many of the techniques are immediately applicable to organometallic and coordination compounds. The second review discusses the medical applications of electrochemical sensors and techniques (G.S. Calabrese and K.M. O'Connell; 30 pages; 266 refs.) and, although fascinating, is too specialized to discuss further here.

The third article is worth the cover price of the volume alone. Memming, one of the leaders in his field, has written an outstanding review (34 pages; 127 refs.) of photoelectrochemical solar energy conversion, with particular emphasis being placed on photovoltaic cells. He discusses, inter alia, the photoelectrolysis of water and of H_2S and HI, the reduction of CO_2 to methanol, and the photoelectrochemical production of ammonia, along with the general principles of photovoltaic devices. The review is critical, and will repay the time spent reading it. If this article were not enough to tempt the would-be purchaser, however, the fourth review of the mechanism of reactions on colloidal microelectrodes and size quantization effects (A. Henglein; 68 pages; 247 refs.) should clinch it. It is refreshing to find a review of this area which has not been written by Grätzel, and this article is very well structured, considering colloidal metals, colloidal metal sulfides and colloidal metal oxides separately. The text is exceptionally lucid, and it is not necessary to be an expert electrochemist (indeed, any kind of electrochemist) in order to enjoy and understand it.

All-in-all, this is an excellent type-set volume at a reasonable price. It will undoubtedly be on the shelves of all practising electrochemists; it certainly should be in all chemistry libraries.

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