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NEWS

Book review

Electrode Processes and Electrochemical Engineering
F. Hine, Plenum Press, New York, 1985
410 pp., $55, ISBN 0-306-41656-5

This book is a translation of a Japanese text first published in 1982. It is divided into three sections: introduction to electrochemistry, the electrochemical industries, and electrochemical engineering. The first section develops the background to the thermodynamics and kinetics of electron transfer, mass transport and energy (and voltage) balances in electrolytic cells, and each topic is illustrated with a number of detailed and well chosen examples. The second section discusses water electrolysis, the chlor–alkali industry, fused salt and aqueous metal extraction and batteries although no explanation is given for the exclusion of topics such as electroplating, electroforming, electrochemical machining or effluent treatment. The final section on electrochemical engineering has chapters on cell components, current and potential distribution, process design and economics together with a final discussion on chlorate production and organic electrosynthesis.

I approached the task of reviewing this major text with considerable anticipation and interest. Unfortunately I must express some disappointment. Much of the text seems to have been written at least ten to fifteen years ago. This impression arises from, for example, the references (there are many from the period 1950–70 but few after 1975), the use of calories rather than joules, the emphasis of the discussion of chlor–alkali on mercury cells with carbon anodes with much less emphasis on dimensionally stable anodes, modern membranes or cathode catalysts, and the absence of any mention of lithium batteries or solid electrolyte water electrolysers. In addition, many opportunities to explain the chemistry and electrochemistry occurring in the processes are missed and the discussion of modern cell design is weak. On the other hand, the text is clearly written in good English and the author continuously stresses and illustrates the importance of energy conservation, obviously an important theme at the present time. Accompanied by more up-to-date material the book would make a useful contribution to the reading list of any course on applied electrochemistry.

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