

references listed to allow a search to continue for information that may be specifically needed. Each of the physical property chapters concludes with a brief recommendation of how to proceed with the correlations and estimates just reviewed. These recommendations are the most useful sections of the book. If the entire book was written in this critical manner, the book may have been more useful. As it is, a reader may be unsure about the relevance or importance of a correlation as presented without reading other literature on the subject.

Another disadvantage of this book is that the chapters are not categorized in a way to use the contents effectively. It would have been helpful to classify correlations as being applicable for dilute solutions or concentrated solutions, by electrolyte, and as being a theoretical or empirical expression. Each physical property chapter has to be read thoroughly to understand the relevance of the information presented. The book is poorly cross-referenced. For example, there is a chapter concerning activity coefficients; however, there are also discussions of activity coefficient correlations in the chapters on vapor pressure, diffusion coefficients, and osmotic coefficients. Although each chapter is self-contained, much information is repeated throughout the book. For many of the correlations the values of the empirical or property constants needed to utilize them are not given; therefore, the general relationships that are given would be difficult to apply to a specific solution.

A handbook of physical properties and correlations for aqueous electrolyte solutions would be extremely useful for scientists and engineers dealing with electrochemical systems. However, this book would be a disappointment for someone who reads the title and thinks a long-needed handbook of aqueous electrolyte solutions now exists. Workers who wish to quickly and easily find a correlation for a particular physical property would find it difficult to use. For the researcher or graduate student who needs a resource guide, this book may be a good reference to initiate a search in the literature for physical property correlations for an aqueous electrolyte solution.

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Thermodynamic Data for Pure Compounds. Part A: Hydrocarbons and Ketones. Part B: Halogenated Hydrocarbons and Alcohols (Physical Sciences Data 25)

By Buford D. Smith and Rakesh Srivastava, Elsevier, New York, 1986, Part A:883 pp., Part B:999 pp., \$294.50.

These data compilations are intended primarily to facilitate calculations of vapor-liquid equilibria in mixtures, i.e. to calculate pure-component vapor-phase fugacity coefficients and pure-component liquid-phase fugacities. Tabulated data are given for vapor pressures, saturated vapor volumes, saturated liquid volumes, enthalpies of vaporization and second virial coefficients. No data are given for heat capacities or for enthalpies and entropies of formation. No data are given for solids, superheated gases or supercritical fluids.

To facilitate estimates when data are not available, the following constants are given for many (but not all) listed compounds: critical properties, acentric factor, radius of gyration, melting temperature, normal boiling temperature and dipole moment; these constants can then be used as input data for well-known correlations. Finally, constants are reported for several well-known equations that give vapor pressure or liquid density as a function of temperature. Perhaps most useful, the authors give literature sources for every property tabulated.

The authors deserve thanks from the community of phase-equilibrium thermodynamicists for their painstaking work. These tabulated pure-component data will be useful for reduction (and subsequent correlation) of experimental vapor-liquid equilibrium data for mixtures.

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Instrumentation and Control for the Process Industries

By John Borer, Elsevier, New York, 1985, 293 pp., \$64.50.

Process Instruments and Controls Handbook, Third Edition

Edited by Douglas M. Considine, McGraw-Hill, New York, 1985, 1766 pp., \$89.50.

These two texts cover the same subject area, namely measurement and control of

process variables. The Borer text gives roughly equal coverage to measurement and control, while the Considine text devotes about 70% to measurement and 30% to control. If one could purchase only one of these texts, there is no doubt that the Considine text is the more desirable choice. The Considine text is significantly better in terms of its technical content and coverage.

In the measurement section of the Borer text, the basic variables, temperature, pressure, flow and level are discussed. The treatment is somewhat superficial and dated. A real problem with the text is the lack of any references at the end of chapters. If one would like to learn more about a particular technique, there is no place to go.

Two examples can be cited concerning the dated nature of the material. In discussing the selection of pressure measurement devices, Borer spends most of his time on Bourdon devices. One sentence is devoted to strain gauges. By way of contrast, Considine's text points out that strain gauges are the most common pressure transducer, considering all process related uses. Further, it is pointed out that strain gauges have made serious inroads on pneumatic technology in many applications. In the control section of Borer's text there is a chapter titled "Control Mechanisms." This chapter is devoted to a discussion of various bellows and mechanical linkages to achieve PID type control. Although they still exist in the field, the type of hardware discussed is being replaced by digital computer control systems. There is a discussion of pneumatic controllers in the Considine text as well. However, the emphasis in the Considine text is clearly toward digital control and instrumentation.

There is one serious error in the Borer text. In discussing the use of the relative gain for control loop pairing, the process gain and not the relative gain is used. This error appears both in the text and the accompanying illustrative example.

The Considine text gives very thorough coverage of the subject area. Detailed treatment of the basic measurements, temperature, flow, pressure, etc. are given as well as new approaches, fiber optics, on-line analytical instruments, thin film methods, etc. There are even discussions of machine vision and voice recognition. This handbook was written by over 140 specialists in the field and it