Book Reviews

Vapor−Liquid Equilibria: Vol. 1—Hydrocarbons—Part 1. Binary systems of C_5 and C_6 with C_5 to C_{20} hydrocarbons. By A. Mączyński, A. Bok, P. Oracz, and A. Skrzecz. Thermodynamics Data Center, Warsaw, Poland. 1997. 114 pp. $45. ISBN 83-901430-8-9.

Vol. 2—Hydrocarbons—Part 2. Binary systems of C_7 to C_{18} hydrocarbons. By A. Mączyński, A. Bok, P. Oracz, and A. Skrzecz. Thermodynamics Data Center, Warsaw, Poland. 1997. 108 pp. $45. ISBN 83-901430-9-7.

Vol. 3—Alcohols + Aliphatic Hydrocarbons. Binary systems C_1 to C_{14} alcohols with C_3 to C_{12} hydrocarbons. By M. Góral, A. Mączyński, A. Bok, P. Oracz, and A. Skrzecz. Thermodynamics Data Center, Warsaw, Poland. 1998. 110 pp. $45. ISBN 83-87576-10-7.

Vol. 4—Alcohols + Non-Aliphatic Hydrocarbons. Binary systems C_1 to C_{10} alcohols with C_5 to C_{10} hydrocarbons. By M. Góral, A. Mączyński, A. Bok, P. Oracz, and A. Skrzecz. Thermodynamics Data Center, Warsaw, Poland. 1998. 106 pp. $45. ISBN 83-87576-15-8.

Vol. 5—Alcohols and Ethers. Binary systems C_1 to C_{12} alcohols and C_3 to C_{10} ethers. By P. Oracz, A. Mączyński, A. Bok, and A. Skrzecz. Thermodynamics Data Center, Warsaw, Poland. 1998. 113 pp. $45. ISBN 83-87576-20-4.

Vol. 6—Esters + Esters, Alcohols, and Hydrocarbons. Binary systems C_3 to C_{18} esters, C_1 to C_6 alcohols, and C_4 to C_{10} hydrocarbons. By A. Mączyński, P. Oracz, A. Bok, and A. Skrzecz. Thermodynamics Data Center, Warsaw, Poland. 1998. 122 pp. $45. ISBN 83-87576-60-3.

These volumes are compilations of experimental data for low-pressure vapor−liquid equilibria of binary mixtures. The data are presented in tabular and graphical form. Almost all of the data in Vols. 1, 2, 5, and 6 have been correlated with the Wilson equation, assuming the vapor phase to be an ideal gas. The data in Vols. 3 and 4 were correlated by the Góral (*1*) equation, which is an equation of state incorporating association. Some users of these volumes may prefer other models than the Wilson model, and the Góral equation is not available in simulation programs. The data sets were selected from the *Floppy Book* (*2*) and were prepared by the authors previously. It is stated that the data selected were critically evaluated by performing the following: (A) Consistency tests, that is, (1) the overall area test of Redlich−Kister−Herington, (2) the point-to-point test of Mrazek and Van Ness, (3) the extended pressure-dependent area test of Oracz, and (4) the infinite dilution test of Kojima et al.; (B) data correlation; (C) comparison with enthalpy of mixing data. No details of the testing are given. Only the Wilson parameters and the standard deviation in the pressure (or temperature) are presented. It is stated that "where numerous data sets exist, measured at different $P-T$ conditions, the multiset correlation was applied based on multiresponse maximum likelihood."

This does not seem to be the case, however. For example, there are over 50 papers in the literature which present data for the benzene + *n*-heptane system. The authors have presented the data from 20 papers and provided 32 sets of Wilson parameters (as some papers present data at more than one T (or P)).

The question arises: for whom are these volumes intended? Certainly the user of a simulator does not want to choose among 32 sets of parameters. He wants to have a recommended set of parameters for a system, with some measure of the goodness of fit of the best data. If one wants to find out if experimental data are available on a particular system, the *Vapor−Liquid Equilibrium Bibliographic Database* (*3*) can be searched. If one needs the experimental data, they can be obtained from the *DECHEMA Chemistry Data Series* (*4*) or from the *Floppy Book* (*2*). The sole advantage of the present volumes is that data may be retrieved at relatively low cost.

Literature Cited

(1) Góral, M. Cubic equation of state for calculation of phase equilibria in association systems. *Fluid Phase Equilib.* **1996**, *118*, 27−59.
(2) *TRC Data Base for Chemistry and Engineering—Floppy Data Book on VLE Data, Binary Systems*; Thermodynamic Research Center, Texas A&M University: College Station, TX, 1998.
(3) Wichterle, I.; Linek, J.; Wagner, Z.; Kehiaian, H. V. *Vapor−Liquid Equilibrium in Mixtures and Solutions Bibliographic Database*; ELDATA SARL: Montreuil, France, 1998.
(4) Gmehling, J., Onken, U., Eds. *Vapor−Liquid Equilibrium Data Collection: Chemistry Data Series*; DECHEMA: Frankfurt/Main, Germany, 1977−1999.

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