New Data Compilations

Reviewed by the Editorial Board, National Bureau of Standards

Selected Values of Chemical Thermodynamic Properties. Tables for the Lanthanide (Rare Earth) Elements (Elements 62 through 76 in the Standard Order of Arrangement). *R. H. Schumm, D. D. Wagman, S. Bailey, W. H. Evans, and V. B. Parker,* Physical Chemistry Division, Institute of Materials Research, National Bureau of Standards, Washington, D.C. 20234. NBS Technical Note 270-7. 93 pages. Available from U.S. Government Printing Office, Washington, D.C. 20402. (Catalog No. C13.46:-270-7), April 1973. $1.25.

Contains tables of values for the standard heats and Gibbs (free) energies of formation, entropies and enthalpies at 298.15K and heats of formation at 0K for compounds of the rare-earth elements (the lanthanides; lutetium from lanthanum; elements 62 through 76 in the Standard Order of Arrangement). These tables are a continuation of the comprehensive revision of NBS Circular 500.

Reviewed by the JC&ED Editorial Board

Selected Specific Rates of Reactions of Transients from Water in Aqueous Solution. I. Hydrated Electron. *Michael Anbar,* Stanford Research Institute, Menlo Park, Calif. 94025; and *Mark Bambenek and Alberta B. Ross,* Radiation Chemistry Data Center, University of Notre Dame, Notre Dame, Ind. 46556. NSRDS-NBS 43. 67 pages. National Bureau of Standards, Washington, D.C., May 1973. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. (Catalog No. C13.48:43). Issued June 1973. $0.90.

Rates of reactions of hydrated electrons with over 700 different organic and inorganic molecules, ions, and transients have been tabulated. Most of the data are derived from pulse radiolysis of aqueous solutions; results from photolysis and from steady-state radiolysis by competition kinetics are also included.

Reactivity of the Hydroxyl Radical in Aqueous Solutions. *Leon M. Dorfman,* Department of Chemistry, The Ohio State University, Columbus, Ohio 43210; and *Gerald E. Adams,* Cancer Research Campaign, Grey Laboratory, Mount Vernon Hospital, Northwood, Middlesex, England. NSRDS-NBS 46. 72 pages. National Bureau of Standards, Washington, D.C., June 1973. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. (Catalog No. C13.48:46). $0.90.

The reaction rate data of the hydroxyl radical in aqueous solution are compiled and evaluated in this critical review. The values are reported in a series of tables covering addition, hydrogen abstraction, inorganic electron transfer, and radical reactions. Rate constants for the hydroxyl radical with biological molecules are included. In addition, the rate constant data for the oxide radical ion are given. Physical properties are listed, and the experimental methods employed in OH radical chemistry are reviewed. An analysis involving rate constant data comparisons is made.

Tables of Molecular Vibrational Frequencies. Consolidated Volume I. *Takehiko Shimanouchi,* Department of Chemistry, Tokyo University, Japan. National Bureau of Standards NSRDS-NBS 39. 164 pages. Available from U.S. Government Printing Office, Washington, D.C. 20402. (Catalog No. C13.48:39). Issued June 1972. $3.00.

The compilations of fundamental vibrational frequencies of molecules previously published as NSRDS-NBS-6, NSRDS-NBS-11, and NSRDS-NBS-17 have been revised and extended to 52 additional molecules. This consolidated volume includes data on a total of 223 molecules. Selected values of the fundamental vibrational frequencies are given for each molecule, together with observed infrared and Raman spectral data and citations to the original literature. The selection of vibrational fundamentals has been based on careful studies of the spectral data and comprehensive normal-coordinate analyses. An estimate of the accuracy of the selected values is included. The tables provide a convenient source of information for those who require vibrational energy levels and related properties in molecular spectroscopy, thermodynamics, analytical chemistry, and other fields of physics and chemistry.

Physical and Thermodynamic Properties of Aliphatic Alcohols. *R. C. Wilhoit and B. J. Zwolinski,* Thermodynamics Research Center, Department of Chemistry, Texas A&M University, College Station, Tex. 77843. *J. Phys. Chem. Ref. Data,* **2,** Suppl. 1, 1973. Available from the American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036. Hard cover, $33.00; soft cover, members of AIP, ACS, and affiliated societies, $10.00, nonmembers, $30.00.

Critically evaluated data are presented on the thermodynamic properties and certain physical properties of the monohydroxy aliphatic alcohols. Properties studied include refractive index, density, vapor pressure, phase transitions, heat capacity, properties of the saturated real gas and the ideal gas, properties of standard states at 25°C, and critical properties to the extent that these have been measured. Data are given for 722 alcohols in the carbon range of C_1 to C_{50}.

Thermochemical Properties of Inorganic Substances. *I. Barin and O. Knocke.* Rhein-Westf. Technische Hochschule Aachen, Lehrstuhl fur Metallurgie der Kernbrennstoffe und Theoretische Huttenkunde. Springer-Verlag, Berlin-Heidelberg-New York, 1973, 921 pages.

Extensive tables of heat capacity, enthalpy, entropy, and Gibbs energy as function of temperature are given for about 920 inorganic compounds in the solid, liquid, and gas phases. Parameters in equations for calculating heat capacity and vapor pressure as functions of temperature are also listed. Substances include the common elements, as well as oxides, halides, sulfides, nitrides, and more complex combinations, and also a few simple organic compounds. The introduction is written in English, French, and German.