

NEW BOOKS

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Handbook of Spectroscopy, J.W. Robinson, Editor, (CRC Press, Cleveland, Ohio, 1974, Volume 1, 938 p. \$49.95; Volume II, 587 p., \$39.95).

This two volume set compiles information on 11 of the most popular spectroscopic techniques and should provide a good, concise source of reference data. Volume I contains sections on X-ray, ESCA (electron spectroscopy for chemical analysis)/photoelectron, and flame, atomic, and emission spectroscopies. The most extensive coverage is devoted to ESCA (X-ray excitation, 238 pages, 151 ref.)/photoelectron (UV excitation, 249 pages, 236 ref.) spectroscopy, where the spectral characteristics of a very wide variety of compounds are tabulated. The section on X-ray spectroscopy (246 pages) covers characteristic absorption and emission lines and attenuation cross sections for 94 elements, X-ray fluorescence yields, spectral distribution of X-ray tubes, and both crystal and film analyzer data. The section on flame spectroscopy tabulates the molecular spectra of flames (organic, nonmetallic, and metallic) for the UV, visible, and IR regions in 44 pages and 73 references. The atomic spectroscopy section tabulates the limit of detection of the most intense line for 69 elements in atomic absorption, atomic fluorescence, and flame (plasma) emission modes (45 pages, 128 ref.). The emission spectroscopy section lists the limits of detection for the elements for a variety of experimental conditions.

Volume II contains sections on IR, Raman, UV, ESR, MS, NMR spectroscopies. The IR section (104 pages), in addition to the customary tabulations of band positions by functional groups, presents extensive data on window materials, solvents, secondary calibration standards, and internal reflectance techniques. The Raman coverage (28 pages) is a mini-version of the above. The section on UV spectroscopy (81 pages), taken from the *CRC Atlas of Spectral Data*, lists the spectral parameters of ca. 5000 organic compounds and appears to provide a good representative cross-section of UV data. The ESR treatment (97 pages) is broken down into 10 subsections (each amply referenced) and presents data on spectra, instrumentation, spin Hamiltonians, relaxation times, and double resonance techniques. The extensive NMR section (154 pages, over 400 ref.) is restricted to proton chemical shifts and coupling constants and tabulates these for a very wide variety of compound types.

The section on mass spectrometry (14 pages, 3 ref.) is inexcusably brief and a great disappointment.

The presentation throughout is tabular and easy to read and follow, except for a portion of the X-ray section which apparently is reproduced from a computer printout and has a tendency to be visually overpowering. All sections are well referenced, and the index (to each volume) is extensive and apparently comprehensive.

This two volume *Handbook of Spectroscopy* should be of equal (and great) value to student, technician, researcher, and technical planner alike. It should be a handy source of reference data on a wide variety of spectroscopic techniques. It should provide the researcher and planner with a quick comparison of techniques and their applicability. In this respect, this two volume set easily could take the place of a shelf full of books. The only criticism that can be leveled at this publication (aside from the deficiencies in

the MS treatment) is that the price (\$90), while not excessive for the content, probably will limit its circulation to institutional purchasers.

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Methods of Analysis of Association of Official Analytical Chemists, Twelfth Edition, William Horwitz, Editor, (Association of Official Analytical Chemists, Washington, D.C., 1975, 1094 p.).

This is the twelfth edition of this well known reference work published at 5 year intervals since 1920. The objective of this book is to provide chemists with reliable methods of analysis for determining the composition of commodities subject to legal control. As usual, this edition contains detailed procedures for analysis in the fields of agriculture, foods, drugs, cosmetics, and the environment. The demonstrated reliability of these methods has resulted in their widespread use in industry, especially in regard to regulatory matters.

The book is divided into 49 sections which contain detailed procedures for the examination of a wide variety of materials, including fertilizers, plants, disinfectants, pesticides, beverages, foodstuffs, fats, oils, sugar products, water, drugs, cosmetics, and vitamins. As usual, all methods have been validated with collaborative testing by professional chemists from both industry and government. The format remains unchanged; however, the section on drugs has been subdivided into five separate sections, and a new chapter on forensic sciences has been added. A useful portion at the beginning of the book provides definitions and a table of abbreviations used in the text. Separate chapters are devoted to laboratory safety and standard solutions. A large number of tables is included at the end of the book.

It would not be practical to mention all of the additions, deletions, and changes which have been adapted in this edition. Many of the new methods reflect the application of instrumental techniques, such as spectrophotometry, atomic absorption, automated analysis, and chromatography. The association is, therefore, keeping abreast of the newer approaches which are supplanting the older classical routes. New ties have been established with IUPAC and ISO. This should result in the adaption of uniform methods on an international scale.

The printing is clear, and many procedures contain excellent drawings of special equipment needed for specific tests. A list of selected references is included at the end of each section.

In view of our current regulatory climate, this book is highly recommended for use by all analytical chemists. It should be included as an important reference in every technical library.

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