

# NEW BOOKS

FRACTIONAL SOLIDIFICATION, Vol. 1, edited by M. Zief and W. R. Wilcox (Marcel Dekker, Inc., New York, p. 714, 1967).

This volume, the first of two, deals primarily with the basic principles and a literature survey of the apparatus involved in crystallization and growth of solids from melts. Chapters 1-6 summarize basic principles (phase equilibria, mass and heat transfer, and nature of the solid-liquid interface); Chapters 13-17—general laboratory techniques (zone melting and precipitation, progressive freezing, and countercurrent column crystallization); Chapters 18 to 25—specific applications of fractional solidification techniques (e.g., ultrapurity in pharmaceuticals or electronic materials); and Chapter 26—economics.

Perhaps of most interest to the chemist are appendices listing information pertinent to the purification by zone-melting of a host of inorganic and organic compounds. In most cases, however, only minimal data are presented and these appendices are therefore primarily useful as an index to the literature. Since the individual chapters are written by different individuals, their quality is variable.

In summary, it would seem that chemical engineers and metallurgists would be the most interested in this volume. There is little in it for the average chemist and he would be well advised to save his money.

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ATOMIC ABSORPTION SPECTROSCOPY, by James W. Robinson (Marcel Dekker, Inc., New York, 198 pp. & index, 1966, \$9.75).

For several years a need has existed for a compilation of this nature, to fill the information gap between the earlier (1962) book by Elwell and Gidley and the rapidly expanding literature in the field. This book represents a praiseworthy effort to fill this gap with descriptions of equipment and techniques which have been developed in the intervening time. The author has wisely refrained from publishing a bibliography, restricting his references to basic literature entries and material of lasting importance.

A too-brief introduction, which includes some basic theory and discussion of the advantages and disadvantages of the technique, is followed by detailed discussions of equipment components, analytical parameters and applications, and related topics, including atomic fluorescence. The theoretical treatment is not as elegant and concise as that which appeared in the Elwell and Gidley work; various theoretical discussions are scattered through the book, not always easy to find from the contents, but sufficient theory to support the discussions is available.

The discussions of basic equipment components are broad and general enough to be useful through the second decade of the age of atomic absorption, but the short section on commercial equipment might as well have been left out, because it was obsolete before it was printed. In his discussion of the equipment and analytical parameters (i.e., wavelength, atomization, solvent effect, etc.) the author exercises his prerogatives to editorialize on the utility and durability of the flame technique and suggests that other means of atomization should and will become available. The reviewer does not share his optimism, in view of the great simplicity and rapidity of the flame technique.

The fourth section of the book, analytical applications, is essentially a condensation of the Perkin-Elmer Corporation's Manual, with adequate credit and acknowledgment.

Like all of Dr. Robinson's writing, the book is highly readable and detailed enough to stand on its own merits.

In his preface, the author defines his target audience as (1) the graduate student in analytical chemistry, (2) the research chemist evaluating the method, and (3) the analytical chemist responsible for doing the samples. He is on target, with possibly a near miss at the graduate student, who will want to find deeper and more rigorous theoretical treatment. This reviewer would add a fourth group—the technician who will do 95% of the work with the method, and who wants to be more than a pair of hands through which samples become data, will find this book useful, understandable, and educational.

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TECHNIQUE OF ORGANIC CHEMISTRY, Volume XII: Thin-Layer Chromatography, edited by E. S. Perry and A. Weissberger (Interscience Publishers, New York, 788 p. 1967, \$21.50).

This is the twelfth volume of a series dealing with the use of specific analytical tools and techniques for the synthesis, isolation and purification of compounds, and physical methods for the determination of their chemical properties. This book, by J. G. Kirchner of the Coca Cola Company, deals with the use of thin-layer chromatography. In 1951, the author and his colleagues, then at the laboratories of the USDA in Pasadena, Calif., utilized glass strips coated with adsorbents (Chromatostrips) for the analysis of terpenes in essential oils. As a result of this work, thin-layer chromatography, as it is called today, became better known. In 1958 to 1960, E. Stahl demonstrated the applicability of thin-layer chromatography in many groups of compounds other than terpenes. Soon the technique was widely accepted and highly acclaimed. Several books on thin-layer chromatography are now available and the book edited by Stahl ("Thin-Layer Chromatography, A Laboratory Handbook," English Edition: Academic Press, New York, 1964) was probably the most comprehensive review until now.

The book is divided into two parts, the first 12 chapters presenting techniques in 240 pages; the last 21 chapters, (495 pages), covers applications through 1964 and partially in 1965. The book also includes a chapter on the separation of inorganic cations and anions. The volume is well organized and produced with an extensive table of contents and subject index.

Of particular interest to the JAOCs reader are chapters on lipids and steroids which include extensive reviews on the work dealing with the separations of many different types of lipid chemicals and their quantitative analysis. The section on steroids deals with sterol esters, C<sub>18</sub>, C<sub>19</sub>, and C<sub>21</sub>-steroids, urinary hormones, bile acids and steroidal sapogenins, saponins and alkaloids, cataloging pertinent figures and tables of information already in the literature.

A chapter on detection reagents for colorless compounds should be of interest to everyone working with thin-layer chromatography. Over 200 spray reagents have been categorized for specific application with details on their preparation and appropriate references.

This book should be a useful handbook in any laboratory engaged in analysis by thin-layer. In general, the author gives a comprehensive survey of thin-layer chromatography laboratory practice and applications and is recommended for the lab and library.

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