

## BOOK REVIEW

*Tube Type Dilatometers.* Joseph Valentich, Instrument Society of America, Research Triangle Park, N.C., U.S.A. 1981 /sold by John Wiley and Sons/; xxi + 211 pp, 105 figures, 15 tables. /Price £ 22.50/.

The author of the book has spent about twenty years in thermal expansion testing with tube /or pushrod/ type dilatometry. There is no better basis for writing a comprehensive work covering virtually all aspects of practical dilatometry.

"Tube Type Dilatometers" is compiled in a different way from most monographs: each chapter is complete in itself, and none is a prerequisite for another. This facilitates the access to information on a particular subject but, of necessity, results in some duplication.

Chapter 1 outlines the types of dilatometers and describes the properties of vitreous silica, the most important material in dilatometer construction. Chapters 2 to 5 discuss dilatometers for various temperature ranges within the total range  $-195$  to  $2200^{\circ}\text{C}$ , working in air, an inert atmosphere and vacuum. Chapter 6 is devoted to measurements on plates in vacuum. All these chapters contain detailed descriptions of dilatometer elements, calibration methods, testing procedures and data evaluation.

Chapter 7 - written by W.A. Plummer - offers a discussion of differential dilatometry /in which the thermal expansion of the sample is measured relative to that of a reference material variable from test to test/.

In a book intended for practical use it is useful to present some information on the equipment commercially available; this is attempted in Chapter 8, which contains short descriptions and technical data on Harrop, Netzsch, Orton and Theta dilatometers. The author states in the Preface that "The dilatometers described do not necessarily constitute the entire line of a manufacturer". However, the line of manufacturers presented is far from complete either. Just a quick look at the catalogues of some manufacturers of thermoanalytical apparatus shows that DuPont, Mettler and Perkin-Elmer sell thermo-mechanical analyzers which can be used as dilatometers. An adapter for dilatometry is available with the derivatograph, too.

The next part discusses the effects of specimen size and preparation /Chapter 9/, and the calibration of dilatometers /Chapter 10/ in general, while the last chapter describes some dilatometer systems for very low temperatures /from  $-271^{\circ}\text{C}$ /.

There are 70 references in the book, arranged in separate lists at the end of each chapter. An appendix presents a standard test method for the thermal expansion of solids, approved by ASTM.

The style and layout of the book are simple and clear. "Tube Type Dilatometers" can be recommended to any student or scientist who has to carry out thermal expansion measurements or work on the construction or modification of dilatometers.

György Pokol

*Wilson and Wilson's Comprehensive Analytical Chemistry* (Ed. by G. Svehla) Volume XII, *Thermal Analysis, Part B, Biochemical and Clinical Applications of Thermometric and Thermal Analysis*. Ed. by Neil D. Jespersen, Elsevier Scientific Publishing Co., 1982, XVII + 254 pp. (Price 79 U.S. \$ ).

The authors are well-known and successful specialists in their field. They collect and systematize the newest results of research for the reader.

The book comprises 10 chapters with 94 figures, 21 tables and 495 references. 4 chapters deal with methods and instruments, and 5 of them with their biochemical /clinical-analytical/ applications.

Every chapter at the same time forms an independent whole; they are naturally not free of overlap.

The 2nd and 3rd chapters give theoretical reviews of titration, flow calorimetry, thermometric titrimetry, direct injection enthalpimetry and differential scanning calorimetry, and they then enumerate the commercial instruments. The 4th and 5th chapters report on the latest solutions:

- the flow reactor makes the thermal method more competitive with regard to other automatized methods used in clinical analysis;
- the thermistor probe makes possible the use of a new non-destructive analysis.

The other chapters survey the application of the mentioned methods and instruments in different fields of biochemistry.

The chapters contain a number of figures and tables, and critically survey the applicability and limitations of each thermal method. Therefore, the book is a source of thought both for specialists dealing with clinical analysis /chemists, biologists, pharmacologists/ and for instrument designers, since this new field of the thermal analysis raises demands relating to the construction of instruments sensitive enough for the small sample masses available in this field; it thus stimulates development.

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