Thermochimica Acta, 225 (1993) 141–142
Elsevier Science Publishers B.V., Amsterdam

Book Review

Thermal Analyses — Techniques and Applications, edited by E.L. Charsley and S.B. Warrington, The Royal Society of Chemistry, Cambridge, 1992, ISBN 0 851863752, hardcover, viii + 296 pages, price £45.

This book is based on a course organized by the Thermal Analysis Consulting Service in Leeds in 1991. It is intended to give a survey of the most frequently used thermal methods and their most important fields of application, and to inform the reader about the progress recently achieved in this field.

The authors of the book are scientists who have built up a reputation in the field of thermal analysis.

After an introduction to thermal analysis, several instrumental techniques are discussed: differential thermal analysis (DTA), differential scanning calorimetry (DSC), thermogravimetry (TG), complementary thermal analysis techniques (TG/DTA, TG/DSC, thermomicroscopy, high-temperature X-ray diffraction), evolved gas analysis (EGA), thermomechanical analysis (TMA) and dynamic mechanical analysis (DMA).

This introduction is followed by chapters dealing with applications on polymers, pharmaceutics, metallurgy, material sciences, minerals, fossil fuels and catalysts. The book also contains some chapters on controlled rate thermal analysis, quality assurance, the International Confederation for Thermal Analysis (ICTA) and sources of information in thermal analysis; it concludes with a subject index.

The book leaves a favorable impression on the reader. Although it is in phototypesetting, the contributions are of high quality. Even the quality of the figures taken from other sources is acceptable. Fortunately, there are only a few misprints.

The generally critical attitude towards the evaluation programs of the instrument manufacturers also makes a positive impression. The book refers to problems encountered in a combination of different firmware and software, in the data exchange between programs of different manufacturers, and the production of results with an impossibly large number of significant figures. The fact that the subject "quality assurance" is dealt with in a separate chapter helps the reader to recognize the importance of this aspect.

There are, nevertheless, a few points which must be criticized. Proton magnetic resonance thermal analysis is to be found listed in Chapter 1 among the most important methods of thermal analysis, although this

method is rarely used (with the exception of the person who developed this method and who is the author of this contribution). It is also stated that reproducible conditions and the same instrument must be used to obtain comparable results. This was the case according to the state of the art 30 years ago. The objective of all scientific investigations should be to determine the properties of material under investigation and not those of the instrument; today, with the aid of appropriate instruments and methods, this can at least to some extent be achieved in the field of thermal analysis. A prerequisite for this, however, is that the instrument has been carefully calibrated, and that all relevant instrument-specific influence factors are taken into account. This problem is dealt with here only in passing.

The chapters on different kinds of applications vary a great deal. In some cases, they are purely lists of fields of application; in others, a few examples are discussed in great detail. The chapter on catalysts, for example, gives an introduction to the theory of catalysis, but only one example is given to explain the application of thermal analysis in this field.

To summarize, this book can be recommended to readers with sufficient knowledge of thermal analysis to be able to judge the relevance of the variety of information presented and who do not shrink from the effort of consulting the quite useful bibliography for more detailed information.

St. Sarge