Book review

Handbook of Thermal Analysis, edited by T. Hatakeyama and Z. Liu
John Wiley & Sons, Chichester-New York-Weinheim-Brisbane-Singapure-Toronto, £130.

This handbook, with a total of 452 pages, furnishes general information on the basic principles of thermal analysis (TA) and a comprehensive description of its applications.
The handbook is divided into two parts. The first part (about one-third of the total volume) consists of 6 chapters which provide the reader with fundamental theoretical information and the most important data concerning instrument operation, sample preparation, and the evaluation and interpretation of the results.
Chapter 1. The short history presents a review of the development of TA worldwide and the most important steps of the advance of TA in Japan and China. The list of events since the 18th century might have included two important additional ones: the appearance of the first simultaneous equipment (the Paulik–Paulik–Erdey derivatograph), the original model of which was constructed in 1955 and came to the market in 1960; and the 'Atlas of Thermoanalytical Curves (Vols 1–5)' edited by G. Liptay.
The authors give the correct definitions of various thermoanalytical methods (TA, TG, DTG, DTA and DSC) and point out the changes and developments in the nomenclature. Detailed information is made available concerning the characteristics and data reports for TA and the calibration.
Chapter 2. The authors introduce the setting-up of the various types of instruments used in TA and provide a brief discussion of their applications.
Chapter 3. This chapter deals in particular with the effects of the experimental conditions on thermoanalytical measurements. Descriptions of the determination of kinetic parameters by a number of methods and general information relating to the evaluation of the different thermoanlytical curves are to be found here.
Chapters 4–6. The last three chapters discuss the applications of TA for the measurement of various transitions and chemical reactions and for the determination of physical parameters. The second part of the book describes numerous typical thermoanalytical curves, with short explanations covering materials that can be investigated by thermoanalytical methods: inorganic and organic compounds, polymers, minerals, foods, pharmaceuticals, explosives, etc. This collection of curves is useful (as a database) for every user who applies TA methods either in research laboratories or in industrial ones.
This handbook surveys the results mainly from Japan and China, and the reader is therefore provided with a broad insight into the thermoanalytical literature in these two countries. The simple and clear language and the well-structured indexes make the use of this publication quick and effective.
Overall, the basic principles of TA methods, the different applications and the practical instructions are clearly described. This book is of interest, with emphasis on practical instructions for industrial researchers, undergraduates and postgraduates. I recommend it to all who utilize thermoanalytical methods for practical purposes.

B. Androsits
Editor

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