THERMAL ANALYSIS

Edited by Ž. D. Živković

PUBLISHED BY TECHNICAL UNIVERSITY, 19219 BOR, YUGOSLAVIA

This is the second book on thermal analysis published by the Technical University in Bor. It is a collection of review papers written in English by a group of thermal analysis from specialists from Yugoslavia, Poland, Czechoslovakia, Hungary and Romania. The introductory chapter by M. Nevriva and J. Šestak, on A Thermodynamic Approach to the Study of Solid-Liquid Phase Equilibria in Uninvestigated Oxide Systems, examines the strategy of constructing phase diagrams.

The article Theoretical Aspects of Quantitative DTA, written by N. Smajić, provides a mathematical treatment of the fundamental equation for the relation between the peak area and the heat of the reaction. In the next chapter, with the title Application of Quantitative Differential Thermal Analysis, Ž. D. Živković presents a number of examples of the determination of enthalpies and activities in binary systems.

F. Paulik and J. Paulik give an excellent review of Simultaneous TG and EGA Technique Applied Under Conventional and Quasi-Isothermal-Quasi-Isobaric Conditions. The advantages of the technique for the study of overlapping complex reactions are well documented.

In the chapter on the Thermal Decomposition of Sulfates, P. Bukovec and N. Bukovec carry out a systematic survey throughout the periodic table, discussing the reactions, the thermodynamics and the kinetics of the decompositions.

The next article, entitled Thermal Analysis of some Sulphides, Sulphoarsenides and Sulphoferrides of Copper, written by S. Janjić and Ž. D. Živković, describes the basic thermal characteristics of the most important copper-bearing minerals.

Thermal Analysis Application in Fertilizer Investigations, by O. Rasulić, presents a study of decomposition reactions which can be used for identification and to forecast behaviour during storage and application.

The Kinetic Analysis of Thermogravimetric Data has been reviewed by J. Zsakó. The author introduces the basic principles of heterogeneous kinetics, continues with the relation between homogeneous and heterogeneous processes, model

John Wiley & Sons, Limited, Chichester
Akadémiai Kiadó, Budapest

approximations, isothermal and dynamic methods, and concludes with the compensation effect.

In the chapter on Regularities in the Thermal Dissociation of Solids, J. J. Pysiak shows how the Arrhenius equation can be represented in the form of a projection equation in order to generalize some fundamental kinetic problems. In the last article on some Aspects of Thermodesorption Kinetics, V. Dondur treats the desorption of water from various sorbents and discusses specific features of desorption kinetics.

The reviews are written by specialists active in thermal analysis research, and thus the book reveals the "state of the art" in the particular fields. It can be ordered from the Technical University, 19219 Bor, Yugoslavia.

P. Bukovec

DIFFERENCIALNO TERMIJSKA ANALIZA — TEORIJA I PRIMENA (DIFFERENTIAL THERMAL ANALYSIS — THEORY AND APPLICATION)

Ž. D. Živković and *B. Dobovišek*

PUBLISHED BY TECHNICAL UNIVERSITY, 19219 BOR, YUGOSLAVIA

This is the first book published on differential thermal analysis in Yugoslavia. It is written in Serbocroatian and is intended to be a text-book for students and a basic source for those who are beginning work in the field. It is also valuable for specialists who apply differential thermal analysis in their daily work.

Chapter 1 is an introduction to the field and covers the terminology and standards in thermal analysis, in particular those used for DTA.

The basic principles of DTA are introduced in Chapter 2, together with the historical evolution of the method.

Chapter 3 describes the chronological development of the theory of DTA. It begins with the proposals of Speil and continues with those of Wold, Boersma, Berg, Pilojan, Pecor and Smajić. All the theories are thoroughly explained, with a general discussion at the end.

Chapter 4 considers the influence of experimental parameters on the characteristics of DTA curves. They are divided into procedural, sample and apparatus

influences. The effects of experimental factors are introduced theoretically and are then illustrated by means of a number of examples.

The application of DTA for study of the physical and chemical properties of various substances is presented in Chapter 5. As the authors are metallurgists, there are a number of examples of the qualitative and quantitative use of DTA in that field, together with kinetic aspects.

Chapter 6 provides a review of commercial equipment, together with the most important literature on thermal analysis.

The up-to-date treatment of DTA and the high standard of the presentation of the problems would justify the publishing of this book in English.

P. Bukovec