

## Book Review

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Thermal Analysis. T. DANIELS, Kogan Page Ltd. London. Nov. 1973. pp 272. Price £6.00

This is an excellent book, providing an up-to-date and comprehensive introduction to the whole field of thermal analysis. The ten chapters cover the following topics: 1. The Scope of Thermal Analysis. 2. General Features of Thermal Analysis Instrumentation. 3. Techniques based on Measurement of Sample Weight. 4. Techniques based on Changes in Thermal Properties. 5. Techniques based on Measurement of Dimensional or Mechanical Properties. 6. Techniques based on Measurement of Electrical or Magnetic Properties (Electrothermal Analysis; Thermogravimetry). 7. Techniques based on Detection of Volatile Products. 8. Combination of Thermal Analysis Techniques. 9. Commercial Equipment for Thermal Analysis. 10. The Literature of Thermal Analysis.

The book is well-written and free from errors. One of its strengths lies in its comprehensiveness. Thus whilst the reader is given an adequate introduction to both thermogravimetry and differential thermal analysis, three chapters are devoted to other important techniques most of which have been inadequately covered to date. A second strength is the adherence of the author throughout to ICTA recommended practices in nomenclature and the recommendations of the ICTA Standardization Committee on the reporting of thermal analysis data is reproduced in full.

In the preface it is stated 'the present volume should be regarded merely as an introduction to the subject'. Inevitably a selection has had to be made, however, one would have liked to have seen a little more

emphasis on applications. Whilst literature references in each chapter are somewhat sparse the final chapter on literature gives a full coverage of conference proceedings, books, reviews, articles and abstract services, journals and manufacturers' publications complete to 1972 which would enable the reader to augment his reading on topics of special interest to him.

One of the problems of any survey of instruments which an author faces, is that of getting a uniform and up-to-date presentation from the large number of manufactures. However, Dr Daniels is to be congratulated in that his survey is one of the fullest that the reviewer has encountered.

J. P. REDFERN

Thermal Analysis. ANTONIN BLAŽEK, Van Nostrand Reinhold Co. Ltd. London. January 1974, pp 286. Price £9.00

This book deals primarily with the two main methods of thermal analysis, namely thermogravimetry and differential thermal analysis. The contents of the 5 chapters are: 1. Introduction, 2. Thermogravimetry, 3. Differential Thermal Analysis, 4. Applications of Thermal Analysis, 5. Apparatus. In addition there are three appendices covering (i) the thermal emf values for a number of thermocouple systems, (ii) the recommendations of the ICTA Standardisation Committee, and (iii) references to DTA micro methods.

The book is a classical addition to thermal analysis literature; although it has an identical title to T. Daniels' book (reviewed

above) it is different in concept in that it concentrates entirely on TG and DTA, and devotes one chapter to applications.

The discussion of TG and DTA is full and covers all the expected ground adequately. It will be of interest to somebody who has had little experience in the field in that the author reviews the procedures for obtaining meaningful results, discusses the conditions affecting those results as well as outlining how both techniques can be used to study reaction kinetics, and how DTA can be used for quantitative studies. Both chapters are well documented, as is the whole book, each of the first 4 chapters having between 100–200 references. It is unfortunate that in the text errors of spelling occur in authors' names, e.g. on p. 65 Bridley when it should be Brindley, and on the next page, Krevel when it should be Van Krevelen. Surprisingly the pioneering work of this author and his co-workers is not included in the list of references although mentioned in the text.

The chapter on applications is concerned, after an initial ten pages, primarily with the DTA of minerals and lists in tabular form the thermal behaviour of naturally occurring carbonates, oxides, sulphides, sulphates, halides, nitrates, phosphates and silicates which are of importance in industry and technology.

The chapter that covers instrumentation is not so full, accurate or up-to-date as in Daniels' book, and in view of the fact that the author works in the Thermoanalysis Laboratory at the Institute of Chemical Technology in Prague the reviewer would have liked to have seen more than just a passing mention to Eastern European equipment, apart from the very well-known 'Derivatograph'. Some well-known manufactures mentioned in the text of the chapter do not figure in Table 5.1.

It is once again commendable to see a book that carefully follows the ICTA recommendations on nomenclature and reproduces in one of its appendices recommendations of the Nomenclature Committee in full (incidentally the Nomenclature Committee is a separate specialist committee to the ICTA Standardisation Committee).

J. P. REDFERN

DUMITRU N. TODOR: *Analiza termică a mineralelor*. Editura Tehnică. Bucurest, 1972. pp. 280, 15.5 Lei

Research workers dealing with the thermal analysis of minerals were recently pleased by the publication of this outstanding book, the first to appear about this field in Roumanian. The book consists of six chapters in which the theoretical fundamentals of the method are also treated in detail.

The first chapter deals with the methods of thermal analysis. After a theoretical introduction, DTA, TG and complex methods (Keyser; Erdy—Paulik—Paulik) are described. The Derivatograph and its potentialities are discussed in special detail, in accordance with the increasing importance of this technique.

In the second chapter the effect of the experimental conditions is studied and the optimum measurement conditions are given.

The fourth chapter describes some physical and chemical phenomena which can be followed by thermal methods.

In the fifth chapter (150 pages) the thermal decomposition of various minerals and the possibilities of DTA studies are discussed. The treatment of minerals starts with a description of the thermal behaviour of oxides; native elements are not mentioned. Other minerals are treated in groups, according to their thermal properties. A great advantage of the book is that it presents readily evaluable thermal curves in which the weight loss is given in weight percent and the peak temperatures are also given. The thermal decomposition processes taking place are described in detail in the text, with literature references. The majority of the thermal curves presented were probably prepared by the author, since references are given rather rarely.

The value of the book is increased by the fact that data are also given for very scarce minerals. Within the treatment of silicates, special emphasis is placed on the thermal behaviour of clay minerals. However, the curves here are mostly taken from the literature, and are less clear than those taken by the author.

In the sixth chapter the possibilities of the application of thermal methods to complex rocks are dealt with briefly, with special

regard to rocks consisting of mixed carbonates and salt rocks. The book is completed by 79 references. It is a pity that a great number of misprints occur in the names of authors here and in the text too e.g. Barschad instead of Barshad, Födvári instead of Földvári, Meckenzie instead of Mackenzie, Tivodor K. instead of Kotsis, Tivadar (in addition, cited at T in the author index),

to give a few examples. This, however, does not reduce the value of the work.

The book gives a valuable collection of thermal data of minerals. It is desirable to translate it into all of the world-languages so that those not knowing Roumanian can read and use it.

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