Comments on the book: **Emanation Thermal Analysis and other Radiometric Emanation Methods** by *V. Balek, J. Tölgyessy,* published by Akadémiai Kiadó, and Elsevier Science Publishers B. V. Amsterdam, 1984

The book covers all the important aspects of Emanation Thermal Analysis (ETA) a part of the many sided thermal analysis, one which has been developed during the past two decades. It has to be noted that one of the authors (V. B.) is known to be a leading expert in the field while the co-author (J. T.) is also a recognized authority. The 300 pages of the book are divided into 8 chapters.

Following an evaluating foreword by R. C. Mackenzie and two pages of a general survey by the authors Chapter 1 sums up the terminology of the field and presents its historic background. Although the title promises to describe the basic principle only the author's definition on the method deserves special attention. Accordingly: Emanation Thermal Analysis (ETA) is a method, by means of which information about solid state and its change is obtained on the basis of inert gas release from solids measured at various temperatures.

Chapter 2 deals with question on the labelling technique of the samples. As the number of parent elements emitting inert but radiating gases, labelling means an extension of the measuring technique. The chapter gives a detailed description of the execution of the labelling technique, including the way of inert gas incorporation and the method used to introduce parent nucleides. As the end of the chapter an evaluating summary presents the aspects for selecting the technique.

Chapter 3 and 4 can be regarded as the central part of the book, for it is here that the release of inert gas from solids is discussed. As gas release depends not only on matrix characteristics but on the ways of labelling as well, the circumstances for gas release are investigated separately in samples with parent nucleids in Chapter 3 and with those containing incorporated gas in Chapter 4. Information is essentially obtained through the study of dependence of emanation power on temperature and on the varying properties of the matrix.

Chapter 5 presents in details the possibilities of measuring techniques. The fact that an industrially (Netzsch Co.) produced and commercially available instrument is at hand proves how developed the method already is. A characteristic feature of the measuring technique is that in practice it is used in a simultaneous link with several thermoanalytical methods (combinations with DTA, TG, EGA and dilatometry are known and described).

Chapter 6, an excellent and interesting survey on the performance of the technique bears the title: Scope and limitations of the method. Its fields of application include the study of surface qualities, diffusion conditions, texture, morphology, defective structures, phase transitions, crystallisation, recrystallisation, solid phase reactions. It can often be applied even in cases when other methods are inefficient for detecting

the phenomena. This chapter presents several practical measuring examples and through analogues makes it possible to plan new investigations also, Chapter 7 deals with the analysis of Rn and its parent elements and discusses the analytical applicability of ^{85}Krypton labelling.

Oxygen, hydrogen, ozon, fluor, carbonmonoxid etc. gases can with exactitude and sensibility analyzed with the help of kryptonates. The authors recommend this method mainly in the field of environmental protection. However they also describe its radiometric possibilities in aqueous volumetric analysis and it is here that determination of end point and the analysis of dissolved oxygen is discussed.

Chapter 8 deals with the execution and possibilities of technical analysis. The possibilities are mainly investigations on surface phenomena and characteristics, such as corrosion and the study of building materials etc. The book ends in a brief forecast, describing the further development and extension of the method's applicability as foreseen by the authors.

The book discussed the theoretical and practical problems of this analytical field on a high standard. Because of the well defined group of the literature quoted the list of references can be regarded as comprehensive. The book is well edited and its material well divided. The figures could be better presented.

I warmly recommend the book for study to experts in radiochemistry, thermal analysis and analysts engaged in environmental protection.

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