

## Book Review

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WESLEY W. WENDLANDT and JAMES P. SMITH: *The thermal properties of transition-metal amine complexes*. Elsevier Publ. Comp. Amsterdam, London, New York 1967. IX + 235 pages

Investigations on the thermal stability of metal complexes were begun already at the end of the last century. Similarly, thermoanalytical methods have long been used in preparative complex chemistry. Nevertheless, the rapid development of thermoanalytical experimental methods in the last 15-20 years, and simultaneously, more exacting demands in complex chemistry with regard to testing methods had to occur to make thermal methods one of the basic research tools of complex chemistry.

Advances in thermal methods made it possible to study, besides the stoichiometry of thermal decomposition, the kinetics and the reaction mechanism of these reactions, and to determine relevant thermodynamical data. The combination of thermal analysis with methods of structural analysis has made it possible to determine structural characteristics and symmetry conditions, etc. of the intermediate products of thermal decomposition. A knowledge of the factors determining the strength of the coordinate bond can result in the elucidation of the factors determining the stability of metal complexes. An increasing number of publications reports on new scientific results attained in this field. However, we still lack monographs giving a survey of results obtained by thermal methods in coordination chemistry. The work of Wendlandt and Smith will fill this gap.

Professor Wendlandt and co-workers have been engaged for more than ten years in the thermal investigation of transition metal amine complexes. The book presents, first of all, the results of the Wendlandt school obtained in this field and acknowledged internationally, but it also reports on the most important results of other authors, though not striving after completeness.

The authors compare the information obtained on the systems investigated by thermal methods with the knowledge yielded by other methods. In several cases, the individual reactions are interpreted on the basis of complex chemistry. However, it can be seen from the mode of treatment that systems are investigated primarily from the viewpoint of the thermoanalyst, and only in the second place from the aspect of the complex chemist. Even so, the rich collection of well systematized thermal data will be a great help to complex chemists. It makes possible and timely the subsequent interpretation of knowledge obtained by thermoanalytical methods using the considerations of bond theory. Thus, it opens up new possibilities for the application of thermal analysis to coordination chemistry.

The book of 235 pages is divided into 13 chapters. Chapter 1 is an introduction, showing the objectives by a few well-selected model systems. Chapter 2 describes experimental techniques. It gives a short account of the fundamentals and mode of application of thermogravimetry, differential thermoanalysis, thermomagnetic measurements, dilatometry, mass spectrometry and reflexion spectrometry at high temperatures. Chapters

3, 4 and 5 deal with the investigation of cobalt(III) amine complexes, Chapter 6 with that of cobalt(II) amine complexes, Chapter 7 discusses the thermal investigation of chromium(III), Chapter 8 of copper(II), Chapter 9 of nickel(II), Chapter 10 of cadmium(II) and zinc(II), Chapter 11 of platinum(II, IV), and palladium(II, IV) amine complexes. Chapter 12 deals with the investigation of platinum(II, IV) complexes with organic amines. Chapter 13 gives a short summary of miscellaneous metal amine complexes, including the thermal analysis of scandium, vanadium, manganese,

rhenium, osmium, ruthenium, thallium, gallium, indium and rhodium amine complexes. The book closes with an author index and a detailed subject index.

The rich experimental material dealt with in the book is illustrated by 114 clear figures, and the book contains 35 tables and 236 references. The presentation of the book meets all requirements.

This work will be a valuable handbook both to those working in various fields of thermal analysis and to complex chemists.

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