INTRODUCTION TO NON-ISOTHERMAL KINETICS (Introduction in cinetica neizoterma)

E. SEGAL and D. FATU, Academiei Republicii Socialiste Romania, Bucuresti, 1983

A large number of authors have dealt in the last 20 years with kinetic problems in thermal analysis. In fact 14 per cent of all the publications on thermal analysis deal with kinetic problems. Nonisothermal kinetic methods have been applied and investigated by Prof. Segal and his co-worker Fatu for a long period, and they summarized the experiences in this field completing them with their own results.

The book is dedicated to this field of growing interest, born as a result of creative interaction between two main chapters of physical chemistry: chemical kinetics and physico-chemical methods of analysis (particularly, thermal methods of analysis).

Following a short introduction, Chapters I and II deal with thermogravimetry and differential thermal analysis, physico-chemical methods widely used in non-isothermal kinetics.

Chapter III contains some basics of chemical kinetics necessary to understand the main principles of non-isothermal kinetics.

Chapter IV deals with the fundamentals of non-isothermal kinetics.

Chapters V and VI contain the methodology applied to determine the kinetic parameters of chemical reactions and phase transformation from thermogravimetric and DTA data.

Chapter VII raises some problems on kinetic models whose conversion function $f(\alpha)$ is submitted to the condition $f(\alpha) \neq (1-\alpha)^n$.

Chapter VIII is dedicated to the controversial problem of the compensation effect in non-isothermal kinetics.

For the first time in literature, in Chapter IX thermal description was considered as a branch of non-isothermal kinetics.

Chapter X deals with the automatic processing of the experimental data in non-isothermal kinetics.

In Chapter XI the authors present some results obtained in their laboratory concerning the non-isothermal kinetics of some solid-gas endothermal decomposition of coordination compounds.

Chapter XII contains some applications of non-isothermal kinetics (mainly biological applications).

Chapter XIII presents some critical standpoints on non-isothermal kinetics.

Finally Chapter XIV contains information on recent developments in the field based on the latest literature data.

The book is meant to meet the requirements of specialists in chemical kinetics and chemical engineering as well as students in chemistry, physics, chemical technology and metallurgy.

The book was published Roumanian. The interest and achievements in this field make the book worth translating into an international language and publishing in that language.