

BOOK REVIEW

Kinetic and Thermodynamic Stability of Cerium(IV) Complexes with a Series of Aliphatic Organic Compounds

Author: Olga Voskresenskaya

The book of Dr. Olga Voskresenskaya, a well-know expert in the field of coordination chemistry, is devoted to kinetic and thermodynamic aspects associated with the formation and redox decomposition of cerium(IV) complexes with various organic ligands. Cerium(IV) solutions, being a strong oxidation and complexation reagents, are widely applied in many analytical procedures. By the use of redox and complexation reactions, they are extensively employed in determination of diverse inorganic and organic compounds. There are numerous applications linked with cerium solutions, they include the separation of rare-earth elements, the initiation of polymerization reactions and the oxidation of phenols, hydrocarbons, aldehydes, alcohols and other organic compounds. Thus, cerium solution chemistry having a long history of investigations continue to be a very active area of basic and applied research.

In this book Olga Voskresenskaya successfully demonstrated the possibility to apply in rather complex formation processes some generalized thermodynamic methods for equilibrium and non-equilibrium states and to combine them with rather sophisticated kinetic representation of undergoing chemical reactions. There is a vast amount of material examining the existence, stoichiometry of cerium complexes, its thermodynamic stability, decomposition, reactivity, mechanism and kinetic parameters of redox reactions between cerium and organic compounds. Besides, substantial part of the book is dedicated to 'organic subset' of catalytic oscillatory reactions in the presence of cerium ions, to experimental side of complex formation and decomposition reactions, their mathematical representation and computer calculations associated with them. Thus, it is of considerable interest not only to people directly involved with cerium complexes, but to anyone involved with coordination chemistry in general. This is an important addition to the literature dealing with physicochemical aspects of cerium solution chemistry. This well and competently written book is strongly recommended to researchers and graduate students who are involved in the study of mechanism, kinetic and thermodynamic parameters of complexation and redox reactions involving coordination compounds.

Alexander Apelblat, Professor Emeritus, Ben Gurion University of the Negev, Chemical Engineering Department, Israel