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Autore	Temkin O. N
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Nota di contenuto	Homogeneous Catalysis with Metal Complexes; Contents; Notations and Abbreviations; Preface to English Edition; Preface; Acknowledgments; About the Author; Introduction; 1 State-of-the-Art in the Theory of Kinetics of Complex Reactions; 1.1 Main concepts of the Horiuti-Temkin theory of steady-state reactions; 1.1.1 Reaction mechanism: Stoichiometry and routes; 1.1.2 Kinetics: Reaction rates with respect to substances and over routes; 1.1.3 Kinetic polynomial; 1.1.4 Determining the number of independent parameters in a kinetic model. The problem of identifiability of parameters 1.2 Quasi-steady-state and quasi-equilibrium approximations in chemical kinetics1.2.1 Theoretical criteria of quasi-steady-state intermediate concentrations and quasi-equilibrium steps; 1.2.2 Experimental criteria of applicability of quasi-steady-state approximation in various systems; 1.3 Methods of graph theory in chemical kinetics and in theory of complex reaction mechanisms; 1.3.1 Linear mechanisms; 1.3.2 Nonlinear mechanisms; 1.3.3 Other fields of application of kinetic and bipartite graphs in chemical kinetics and in theory of complex reaction mechanisms 1.4 Elementary steps - Selection rules1.4.1 Main postulates, laws, and principles; 1.4.2 Energy selection rules for elementary steps; 1.4.3 Quantum-chemical selection rules for elementary steps; 1.4.4 Topological selection rules for elementary steps; References; 2 Complexity Functions of Catalysts and Reactants in Reactions Involving Metal Complexes; 2.1 Mononuclear metal complexes; 2.1.1 Complexity functions: variants I and II; 2.1.2 Complexity functions: variants III and IV; 2.1.3 General problems and recommendations 2.2 Polynuclear complexes in homogeneous catalytic and noncatalytic reactions2.2.1 Systems with formation of associates; 2.2.2 Systems with mononuclear and polynuclear complexes of various types; 2.3 Catalysis with polynuclear copper(I) halide complexes in superconcentrated solutions; 2.3.1 Copper(I) chloride complexes in solution and in crystalline state; 2.3.2 Kinetics of catalytic reactions of alkynes in concentrated NH4Cl-CuCl aqueous solutions at constant complexity functions FCu and FCl; 2.3.3 Determination of compositions of catalytically active copper(I) complexes in various reactions 2.3.4 Studying p and s complexes of copper(I) with alkynes in crystalline state and in solution2.3.5 Mechanisms of acetylene dimerization and hydrocyanation reactions. Crystallochemical aspects; References; 3 Multi-Route Mechanisms in Reactions Involving Metal Complexes; 3.1 Factors accounting for the appearance and kinetic features of multi-route mechanisms; 3.2 Analysis of multi-route reaction kinetics; 3.3 Conjugation nodes and artificial multi-route character; 3.4 Conjugate processes; 3.4.1 Classical approach; 3.4.2 Kinetic and thermodynamic conjugation in consecutive reactions 3.4.3 Conjugation in chain reactions
Sommario/riassunto	Homogeneous catalysis by soluble metal complexes has gained considerable attention due to its unique applications and features such as high activity and selectivity. Catalysis of this type has demonstrated impressive achievements in synthetic organic chemistry and commercial chemical technology. Homogeneous Catalysis with Metal Complexes: Kinetic Aspects and Mechanisms presents a comprehensive summary of the results obtained over the last sixty years in the field of the kinetics and mechanisms of organic and inorganic reactions catalyzed with metal complexes. Topics covered in