

Doctoral Theses from the C.I.S.

In the belief that information on the academic platiniferous research carried out in countries of the former U.S.S.R. is not readily available in other parts of the world, a selection of abstracts of doctoral theses will be published here from time to time; this includes the place and date of their defence.

Co-ordinative and Organometallic Compounds Based on the Stable 1-Hydroxy-2,4,6,8-Tetrakis (tert-butyl)phenoxsazine-10-yl Radical

I. V. KARSANOV, Nesmeyanov Institute of Organoelement Compounds, Russian Academy of Sciences, Moscow, 16 October 1987, 127 pages, 20 Figs., 11 Tables, 153 Refs.

Paramagnetic phenoxazinolate complexes of both transition and non-transition metals have been synthesised for the first time, and their structures and reactivities have been investigated. The presence of magnetic nuclei in the metal co-ordinative sphere has led to an increase in the stability of the complexes and added more informative features to their electron spin resonance spectra. The structures of mono-, di-, and tri-radical compounds of metals from Groups I-IV (K, Na, Tl, Zn, Cd, Al, Ga, Sn, Pb), carbonyl ion radical complexes of platinum group metals (Pd, Pt, Ru, Rh, Os) and their penta co-ordinative derivatives have been obtained.

The Magnetic Properties of Reduced PdFe Alloys at Super Low Temperatures, in the Ferromagnetic and Spin Glass States, by Mössbauer Spectroscopy

A. YU. PENTIN, Nuclear Physics Scientific Research Institute, Moscow State University, Moscow, 12 November 1987, 175 pages, 58 Figs., 5 Tables, 67 Refs.

The percolating nature of ferromagnetism in PdFe alloy (containing 0.15 at.% of Pd) was established. The broad range of relaxation times in spin-glass alloy PdFe (containing 0.06 at.% Pd) has been investigated and the temperature dependence of the giant value magnetic moment established.

Isomerisation and Other Reactions of Dialkylsulphoxide Complexes of Platinum(II) and Platinum(IV)

A. I. MOISEEV, Leningrad Technological Institute, Leningrad, 24 November 1989, 137 pages, 18 Figs., 21 Tables, 140 Refs.

Methods for preparing Pt complexes with co-ordinated sulphoxides, nitriles and amides of carbonic acids have been elaborated. The effect of sulphoxides on the reactivity of other ligands in platinum complexes has been studied; and a correlation has been found between geometrical isomerisation and the reaction conditions. The Pt(II) complexes promoted both strong hydrolysis of nitriles inside the inner sphere of the studied complexes and the deoxygenation of inner sphere sulphoxides. The possibility of using these complexes as catalysts and anti-cancer drugs is discussed.

The Synthesis and Properties of Dimeric Palladium(0) and Palladium(II) Complexes Containing Organophosphorus Ligands

I. V. LOGINOVA, Kazan Chemical Technological Institute, Kazan, Tatarstan, 13 February 1990, 119 pages, 31 Figs., 21 Tables, 112 Refs.

Methods to synthesise dimeric complexes of Pd(0) with organophosphorus ligands have been established, and the isomerisation of dimeric Pd(I) complexes was found to proceed in non-aqueous solutions. Kinetic parameters were determined for the dissociation of such complexes, which was accompanied by Pd-Pd bond cleavage. A study of the catalytic activity of both Pd(0) and Pd(I) complexes for the hydrogenation of unsaturated compounds revealed high activity for palladium phosphin oxide complexes, but inhibited action for complexes containing a bridging carbonyl ligand. The effects on the reactivity from the composition and structure of the complexes resulted from the participation of the metal-metal bond, in, for example, dissociation and hydrogenation.

Adsorption and Electrocatalytic Properties of Dispersed Rhodium and Iridium

Z. A. ZIKRINA, Moscow State University, Moscow, 23 February 1990, 141 pages, 45 Figs., 3 Tables, 150 Refs.

The aim of the study was to obtain highly dispersed rhodium and iridium doping on carbon supports and to investigate their electrocatalytic activity. Different forms of adsorbed CO molecules have been found on Ir/C electrodes, depending upon the sorption conditions. A method for preparing Ir/C electrodes, based on using reduced carbonic materials is proposed. The technique used for preparing a Rh/C electrode, which functions well as an electrocatalyst for maleic acid hydrogenation, is elaborated.

Formation of Hydrogenation Catalysts Based on Bisacetylacetonate and Bisacetate Palladium

L. B. BELYKH, Irkutsk State University, Irkutsk, 10 October 1990, 216 pages, 49 Figs., 27 Tables, 164 Refs.

Oxygen-containing palladium complexes and phosphorus (III) compounds (Pd(AcAc)₂, Pd(OAc)₂, PPh₃, and P(OEt)₃) have been studied as hydrogenation catalysts. Pd(AcAc)₂ and Pd(OAc)₂ have been reduced with hydrogen in aprotic solvents under mild conditions, promoted by water. The Pd blacks that formed were shown to be active in hydrogenation reactions. Redox interactions between Pd(AcAc)₂ and PPh₃, Pd(OAc)₂ and P(OEt)₃ were found to take place in the presence of a stoichiometric amount of water. The main stages in catalyst preparation are established.