

A B S T R A C T S

S.A. KONKOV, I.K. MOISEEV
**KETONES OF ADAMANTAN SERIES. METHODS OF SYNTHESIS
AND CHEMICAL PROPERTIES**

In this review the data on ketones of adamantan series both with carbonyl groups in frame and in side chain are presented. Various data on synthesis and chemical properties of carbonyl compounds containing the adamantan fragment have been summarized.

Key words: ketones, adamantan, carbonyl groups, synthesis, properties

R.M. ISLAMOVA
**PORPHYRIN COMPLEXES OF Fe(III) AND Co(III) IN RADICAL POLYMERIZATION
OF VINYL MONOMERS**

The influence of chlorine-containing complexes of porphyrins of the Fe(III) and acetate complexes of the Co(III) on kinetic parameters of radical polymerization process of the methylmethacrylate and styrene initiated with azodiisobutyronitrile or benzoyl peroxide has been analyzed. The influence of parameters mentioned above on molecular parameters of polymers obtained has been analyzed as well. Possible schemes of polymerization have been proposed.

Key words: controlling radical polymerization, porphyrins metal complexes, azodiisobutyronitrile, benzoyl peroxide, methyl methacrylate, styrene

A.S. POTAPOV, E.A. NUDNOVA, A.I. KHLEBNIKOV, V.D. OGORODNIKOV
**SYNTHESIS AND QUANTUM MECHANICAL STUDY OF NITRO-DERIVATIVES OF (1,2,3-
BENZOTRIAZOL-1-YL)(3,5-DIMETHYLPYRAZOL-1-YL)METHANE**

Using the reaction between 1-chloromethylbenzotriazole and 3,5-dimethylpyrazole the unsymmetrical bis(azolyl)methane ligand has been obtained. The nitration of this compound with nitric and sulfuric acid resulted in two products – mono and dinitroderivative, the structure of which were established on the base of NMR spectra and quantum mechanical calculations in the frame of DFT theory.

Key words: nitro-derivatives of (1,2,3-benzotriazol-1-yl)(3,5-dimethylpyrazol-1-yl)methane, synthesis, NMR, quantum-chemical calculations

E.V. DOROZHKO, E.I. KOROTKOVA
STUDY OF ELECTRO-CHEMICAL PROPERTIES OF GLUTATHIONE BY VOLTAMMETRY

Physical-chemical regularities of glutathione redox processes have been investigated by the voltammetry. The influence of pH, electrode materials and metal ions on electrochemical properties of glutathione has been studied. Possible mechanisms of the glutathione reaction with mercury ions on platinum electrode and with copper ions on glassy carbon electrode have been discussed. Optimal conditions of glutathione voltammetric determination in model solutions have been found. The procedure for determining glutathione in human blood has been proposed.

Key words: glutathione redox processes, voltammetry, analytical determination

**V.M. YANBORISOV, E.V. YANBORISOV, V.Z. MINGALEEV, V.P. ZAKHAROV,
I.Sh. NASYROV, Yu.B. MONAKOV**

**ESTIMATION OF DEACTIVATION CONSTANTS OF ACTIVE SITES
AT DIEN POLYMERIZATION ON ZIEGLER-NATTA CATALYSTS**

The question about influence of deactivation of the active sites on kinetic regularities of stereo specific butadiene and isoprene polymerization has been considered. The account of deactivation of the active sites has been established to be necessary condition of the correct description of kinetic curves.

Key words: polymerization, Ziegler-Natta catalysts, kinetics

A. V. ZUEV, A. V. TVARDOVSKIY

**DESCRIPTION OF MULTICOMPONENT ADSORPTION AND ABSORPTION PHENOMENA
FROM SINGLE VIEWPOINT. SPECIAL CASE OF POLYMOLECULAR ADSORPTION**

On the base of phenomenological thermodynamics an equation has been derived that provides a description of multi component adsorption and absorption phenomena from a single point of view. In special cases it passes into the well-known Henry, Langmuir and Fowler-Guggenheim equations (generalized for multi component variant). It has been shown that the special case of this equation is the classical BET adsorption equation. It has been shown that on the base of new model conceptions and derived equation one can get new multi component adsorption and absorption equations.

Key words: multi component adsorption, adsorption equation, polymolecular adsorption

L. V. KURITSYN, N. V. KALININA, Yu. S. DOROFEEVA

**INFLUENCE OF SOLVENT COMPOSITION OF DIMETHYLSULFOXIDE-WATER ON KINETICS
OF N-ACYLATION OF α -AMINOACIDES BY ESTERS OF BENZOIC ACID**

Influence of composition of the binary solvent water-dimethylsulfoxide on reactivity of α -aminoacides during interaction with nitro-substituted phenyl esters of benzoic acid has been investigated. With a help of mathematical model a complicated character of the dependence of rate constants of the reactions investigated on the solvent composition has been based. The reactivity of α -aminoacides in acylation has been shown to determine by selective solvation of functional groups of reactants and transition state.

Key words: binary solvent, α -amino acids, nitro-substituted phenyl esters of benzoic acid, rate constant

D. V. CHACHKOV, O. V. MIKHAILOV

**ABOUT STRUCTURE OF COBALT(III) MACROCYCLIC COMPOUND WITH 2,8-DITHIO-3,7-
DIAZO-5-OXANONANEDITHIOAMIDE-1,9 ARISING AT COMPLEXATION INTO GELATIN-
IMMOBILIZED MATRIXS**

Using hybrid method of density functional B3LYP with 6-31G(d) basis set by the Gaussian 98 program the calculation of geometric parameters of macrocyclic complex of the Co(III) with 2,8-dithio-3,7-diazo-5-oxanonandithioamide-1,9 forming in template processes between gelatin-immobilized cobalt(III)hexacyanoferrate(II), ethanediamine-1,2 and formaldehyde has been carried out. The bond lengths, angles between bonds and torsion angles in complex having metalchelatate junction MN_2S_2 have been presented. It has been noticed that given metalchelatate junction is practically plane however, additional six-numbered metalchelatate cycle formed as a result of template "stitching", has been orientated regarding two five-numbered cycles on extremely considerable angle (more than 75°), and atoms contained in this cycle, are not in same plane.

Key words: macrocyclic complex of the Co(III), 2,8-dithio-3,7-diazo-5-oxanonandithioamide-1,9, quantum chemical calculation, complex structure

Yu. V. POLENOV, A. V. NIKOLAEV, E. V. EGOROVA

**DECOMPOSITION OF SODIUM HYDROXYMETHANESULPHINATE IN BINARY SOLVENT
DIMETHYLSULFOXIDE -WATER**

The stoichiometrical mechanism of the process of decomposition of sodium hydroxymethanesulphinate in binary solvent dimethylsulfoxide -water at various ratios of components has been investigated. The nature of intermediates of decomposition has been established. It is revealed, that at change of a ratio of components water: dimethylsulfoxide the contribution of heterolytic and homolytic mechanisms of molecules dissociation of

sodium hydroxymethanesulphinate has been changed. The slope opposition between the rate constant of homolytic breaking the C-S bond in sodium hydroxymethanesulphinate molecule and solvent dielectric capacitance has been revealed.

Key words: hydroxymethanesulphinate, decomposition reaction, binary solvent, mechanism

M. I. GADZHIEV

SOLID – PHASE INTERACTION IN SYSTEM $K_2O - RuO_2$

The two-component system $K_2O - RuO_2$ has been studied with the differential-thermal (DTA) and X-Ray phase (RFA) methods of physical-chemical analysis. Two compounds K_4RuO_4 and K_2RuO_3 , have been established to form in that system. The thermal stability, density and specific electric resistance at 25 °C have been determined.

Keywords: physical-chemical analysis, synthesis, phase diagram, thermal analysis.

G. V. PROKHOROVA, N. A. GLUKHAREVA

COLLOID-CHEMICAL PROPERTIES OF MIXTURES OF INDIVIDUAL SODIUM SOAPS AND ALKYL POLYGLUCOSIDES

Properties of mixtures of individual sodium soaps with non-ionogenic surfactants of alkyl polyglucoside (APG) type have been studied. The Krafft points of the mixtures containing sodium laurate and myristate with the APG have been determined using polythermal conductometric method. The addition of the APG has been shown to decrease sharply the Krafft points of soaps. Critical micelle concentrations of individual soaps, APG, and their mixtures have been determined from isotherms of surface tension and specific conductivity. It has been found that CMC decreases sharply when APG was added. The parameter of molecular interaction β^m has been calculated on the base of results obtained.

Key words: sodium soaps, non- ionogenic surfactants, Krafft point, isotherms of surface tension, specific conductivity

V. D. KOSHEVAR, I. P. KAZHURO, G. V. BYCHKO

STABILITY OF MIXED DISPERSION OF KAOLIN, TITANIUM DIOXIDE AND SYNTHETIC LATEXES OF VARIOUS CHEMICAL NATURES

The sedimentation stability of mixed dispersions of mineral powders and latexes has been established to depend on their chemical nature, pH of dispersion medium and component ratio of dispersed phase. At relatively high pH the essential stabilization of mixed dispersions has been observed as comparing with dispersions of individual powders. At low pH mixed dispersions were unstable independently on chemical nature of polymeric and mineral particles.

Key words: sedimentation stability, mineral powder dispersions, pH

N. V. KOZHEVNIKOV, N. I. KOZHEVNIKOVA, M. D. GOLDFEIN

SOME FEATURES OF KINETICS AND MECHANISM OF METHYLACRYLATE EMULSION POLYMERIZATION

Kinetics and mechanism of emulsion polymerization of the methylacrylate has been investigated. Kinetics regularities of the reaction have been shown to determine by different nucleation mechanisms, appearance of gel-effect, bimolecular chain breaking in water phase, emulsifier solubility in monomer, flocculation of polymer-monomer particles proceeding at all polymerization stages. These effects lead to the dependence of particles number and reaction rate in particles on conversion and to the influence of polymerization conditions on kinetic orders with respect to initiator and emulsifier concentrations.

Key words: emulsion polymerization, methylacrylate, reaction kinetics

V. A. KRUGLOVA, I. V. KOLOSOVSKAYA, L. I. VERESHCHAGIN

SYNTHESIS AND STUDY OF 1(2)-VINYL-4-NITRO-1,2,3-TRIAZOLE POLYMERS

The formation of the 1(2)-vinyl-4-nitro-1,2,3-triazole polymers via interaction of the poly(vinyl chloride) with salts of the 4-nitro-1,2,3-triazole has been investigated. Optimal reaction conditions for achievement a highest degree of azolation have been determined. The structure, composition and some physico-chemical properties of resulting product has been studied.

Key words: 1(2)-vinyl-4-nitro-1,2,3-triazole polymers, poly(vinyl chloride), composition, physico-chemical properties, structure

A.A. BOLGOV, A.I. SLIVKIN, V.L. LAPENKO, P.I. KULINTSOV, D.A. SLIVKIN
IMMOBILIZATION OF α -AMINO ACIDS IN STRUCTURE OF GLUCANES

The water-soluble analogues of the 1,4- β -2-amino-2-desoxy-D-glucane and the 1,4 - α -D-glucane with side chains containing the α - amino acids components with the formation of covalent bonds through methylen or hydroxypropylene-spacers. As polymer matrixs for the immobilization of the glycine, L-lysine and its hydrochloride, L-glutamic acid the chitosan, N-hydroxymethylchitosan, N-chlor-2-hydroxypropylchitosan and 3-hydroxymethyl-3-desoxy-starch have been used.

Key words: analogues of the 1,4- β -2-amino-2-desoxy-D-glucane and the 1,4 - α -D-glucane, synthesis

S.V. KOVALEV, S.I. LAZAREV, K.S. LAZAREV

REGENERATION OF BACK OSMOTIC AND ELECTRO OSMOTIC FILTRATING MEMBRANES UNDER SEPARATION OF SULFATE-CONTAINING SOLUTIONS

Experimental dependences of separation coefficient and specific productivity on pressure for back osmotic and electro osmotic filtrating membranes are given under separation of sulfate-containing solutions. In developed method the back osmotic membranes regeneration accomplished with 3% solution of the acetic acid and 5% solution of the oxalic acid.

Keywords: regeneration, separation coefficient, specific productivity, membrane, concentration

A.B. SHEIN, I.L. RAKITYANSKAYA, S.P. VILESOV

INFLUENCE OF COMPOSITION OF CORROSION MEDIA ON ANODE DISSOLUTION OF SILICIDES OF IRON TRIAD

Results of investigation of anode dissolution of iron triad silicides in acid, neutral and alkaline media are presented. It has been shown that silicides possess high corrosion resistance in acids. Mechanisms of anode dissolution of silicides in acidic and alkaline media differ significantly. In acidic and neutral media the selective dissolution of metal atoms from the silicide lattice takes place and silicon stays in surface layer and forms the stable film of the SiO₂. In alkaline media the solubility of the silicon and silicon dioxide increases sharply and the kinetics of anode process is determined by the formation of protective films of metal oxides and hydroxides.

Key words: anode dissolution, metal silicides, acid and alkaline media, dissolution mechanism

T.P. PETROVA, E.E. STARODUBETS, O.S. MATVEEVA, A.M. SHAPNIK

INFLUENCE OF THIOCARBAMIDE AND THIOCYANATE IONS ON ELECTROCHEMICAL REDUCTION OF INDIUM(III) COMPLEXES FROM ACID SULFATE SOLUTIONS

The influence of the thiocarbamide and SCN⁻ ions on cathode reduction of the indium (III) complexes on the background of 0.5 M Na₂SO₄ solution with pH 2.7 on electro deposited indium electrode has been investigated by the method of voltammetry. The electro reduction rate of indium (III) ions in thiocarbamide solutions has been established to determine significantly with the SCN⁻ ions concentration. The inhibition of electro reduction of the In (III) complexes from thiocarbamide solutions has been observed if concentration of thiocyanate-ions is equal to 10⁻⁴...10⁻² M. An acceleration of the cathode process has been observed if C_{In(III)} < C_{NCS⁻}. The explanation of the experiment facts has been proposed.

Key words: In (III) complexes, cathode reduction, thiocarbamide solutions

A.V. ZHIROV, I.G. DYAKOV, P.N. BELKIN

DISSOLUTION AND OXIDATION OF CARBON STEELS AT ANODE HEATING IN AQUEOUS ELECTROLYTES

Anode dissolution peculiarities of the carbon structural steels undergoing by thermal or chemical-thermal treatment at anode electrolyte heating are considered.

Key words: anode dissolution, carbon structural steels

E.K. PAPYNOV, N.P. SHAPKIN, K.E. PAVLYUSHKEVICH, S.V. GARDIONOV

INVESTIGATION OF POLYETHYLENE TEREPHTHALATE THERMAL DECOMPOSITION

The processes of thermal decomposition of the polyethylene terephthalate have been studied. The main product of that process has been shown to be the benzoic acid and, also, the gas containing lower hydrocarbons, carbon oxide and dioxide. Catalytic systems for cracking processes have been proposed and tested. It were nat-

ural aluminosilicates modified with the ions of heavy metals Mn^{2+} , Co^{2+} , Ni^{2+} and with the acetyl acetonates of metal mentioned above. The most effective catalytic properties have been shown to possess the natural aluminosilicate modified with Ni^{2+} ions.

Key words: polyethylene terephthalate, thermal decomposition, catalysis

N.M. REPKIN, T.N. NESTEROVA, I.A. NESTEROV, E.V. GOLOVIN

THERMAL STABILITY OF ALKYLPHENOLS IN FIELD OF SUBCRITICAL TEMPERATURES

The investigation of thermal stability of the ionol and 4-tert-butyl-phenol was carried out in the temperature range of 603 -663 K and 673 – 733 K, respectively. Kinetic characteristics of reactions were determined and analyzed. Recommendations for conditions of using tert-butyl-phenols were given.

Keywords: ionol, 4-tert-butyl-phenol, thermal stability

I.M. BORISOV, I.S. FAISRAKHMANOV, G.R. SHAYAKHMETOVA, R.F. TALIPOV, N.Z. YAGAFAROV

OXIDATION OF OIL SULPHIDES. REPORT 1. KINETIC ANALYSIS OF OXIDATION SCHEME

The kinetic analysis of scheme of oil sulphides oxidation by means of hydrogen peroxide in the presence of the molybdenum acid has been carried out. The equations describing kinetic regularities of the sulphides consumption and of the sulfoxides accumulation which are confirmed by the experimental data has been obtained.

Key words: oil sulphides, oxidation, hydrogen peroxide, peroxy molybdenum acid, kinetics, mechanism

A.A. VLASYUK, E.V. BAROCHKIN, V.P. ZHUKOV, V.S. VATAGIN

RECOGNITION SYSTEM OF HARMFUL AND TOXIC SUBSTANCES LEAKAGES IN ENCLOSED SPACE

The method of analysis of harmful and toxic substances concentration fields in enclosed space based on the Markov circuit theory has been proposed. The approach to recognition of danger class of leakages of harmful and toxic substances has been developed.

Key words: Markov circuit, toxic substances, concentration field

A.A. VESHCHEV, M.S. BALANDIN, I.A. BORISOV

STUDY OF WORN DEFORMATION BEHAVIOR OF REINFORCED VULCANIZATES OF WORN TIRES

Experimental and calculation data on deformation behaviors of reinforced materials of worn tires of pneumatic tires with respect to its mechanical re-treatment is given.

Key words: deformation behaviors, worn tires, mechanical re-treatment

E.O. IL'INYKH, Yu. V. RUBLINETSAYA, I.K. GARKUSHIN

FEATURES OF LOCAL VOLTAMMETRY OF CADMIUM-LEAD ALLOYS

Features of the standard-free method of the local electrochemical analysis of thermal alloys cadmium - lead have been considered.

Key words: electrochemical local analysis, lead-cadmium alloy

A.P. ASTASHKINA, A.Yu. AYAGOVKIN, A.A. BAKIBAEV

TEMPERATURE DEPENDENCE OF TOTAL FERMENTATION ACTIVITY OF PROBIOTICS SUSPENSIONS

Dependence of total fermentation activity of probiotics suspensions «Lactobacterin», «Bifidobacterin» and «Bifidogum» on temperature was carried out by substratum method. Temperature dependencies of activities have been shown to have the specific character. It has been proposed to use these dependencies as identity parameter of investigated microorganisms.

Key words: probiotics, fermentation activity, temperature

E.Yu. MOSHCHENSKAYA, Yu.V. RUBLINETSKAYA, V.V. SLEPUSHKIN
**MODELLING OF PHASE DIAGRAMS "COMPOSITION-CURRENT" OF TWO COMPONENT EU-
TECTIC SYTEMS OF ALLOYS IN LOCAL ELECTRO-CHEMICAL ANALYSIS**

Algorithms of parameters calculation needing for calculation of theoretical values of partial currents of phase dissolution of heterogeneous alloy have been developed.

Key words: phase diagrams "composition-current", eutectic system, alloys, electro-chemical analysis

*S.V. MYAKIN, A.L. ZAGRANICHEK, M.M. SYCHEV, V.G. KORSAKOV, I.V. VASILIEVA,
A.G. RODIONOV, L.L. EZHENKOVA, I.K. YARTSEV*
**DIELECTRIC CAPACITIVITY INCREASE OF CYANIC ESTER OF POLYVINYL ALCOHOL
AND ITS COMPOSITE WITH BARIUM TITANATE BY ELECTRON BEAM TREATMENT**

The modification of the cyanic ester of the polyvinyl alcohol (CEPA) by means of treatment with accelerated electrons with energy of the 700 keV at dose of the 150 kGr has been shown to result in the increase in its dielectric capacity to 2.5 times and in the increase in optical transparence in visible part of spectrum. The dielectric capacity increase has been observed at the same treatment of the CEPA composites with the barium titanate which were used in composition of electroluminescent light sources.

Key words: cyanic ester of the polyvinyl alcohol, modification, fast electrons, dielectric capacity

D.A. PROZOROV, M.V. LUKIN, M.V. ULITIN
**INFLUENCE OF PARTIAL DEACTIVATION ON CATALYTIC ACTIVITY
OF SKELETAL NICKEL**

The study of partial deactivation process of the skeletal nickel catalyst by sodium sulfide additives was carried out. Catalytic activity parameters of the skeletal nickel and heat hydrogenation of modeling compound were determined by hydrogen adsorbed with the surface of the skeletal nickel. Conclusions were drawn on the influence of partial deactivation on skeletal nickel activity as well as the state of the adsorbed hydrogen connected by active sites of surface.

Key words: catalytic activity, catalytic poisons, adsorption, hydrogenization reaction heat

A.N. DAVYDOV, S.V. PLOKHOV
**ION EXCHANGE AND ELECTROCHEMICAL EXTRACTION OF Cd (II) FROM RINSING WATER
AFTER GALVANIC METALLIZATION**

Regularities of the Cd (II) extraction from rinsing solutions after galvanic sulfate cadmium plating with cation exchanger KU-2-8 in the H⁺-form, as well as the electrochemical recycling of cadmium ions in the form of metal are considered. Parameters of process carrying out are optimized.

Key words: ion exchange, electrolysis, rinsing water, purification, cadmium

G.M. KIMSTACH, V.A. SHCHAPOV
CONSTANT OF EUTECTIC TYPE SYSTEM

The connection between the constant of eutectic type system and difference of electro negativity of atoms of system components has been established.

Key words: eutectic, atoms electro negativity, system constant