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A.G. KASHAEV, A.V. ZIMICHEV, M.N. ZEMTSOVA
SYNTHESIS AND CHEMICAL PROPERTIES OF 4-QUINOLINE CARBOXYLIC ACID HYDRAZIDES

The methods of synthesis and chemical properties of hydrazides of 4-quinoline carboxylic acids which are of interest as potential bio-active compounds have been considered.

Key words: synthesis, chemical properties, 4-quinoline carboxylic acid hydrazides.

E.V. MELENCHUK, O.V. KOZLOVA, A.A. ALESHINA
USING DISPERSIONS OF ACRYLIC POLYMERS FOR PRINTING OF FABRICS WITH PIGMENTS

Basic requirements for dispersions of polymers applying in pigment technologies of coloration of textiles have been considered. Directions of improvements of polymer chemistry and recent achievements in emulsion polymerization have been shown. Future perspectives for development of domestic water-dispersive film-forming polymers have been determined.

Key words: acrylic copolymer, monomers, printing, pigments, properties, glass-transition temperature.

E.V. CHERKASOVA, T.G. CHERKASOVA, E.S. TATARINOVA
PHYSICAL-CHEMICAL PROPERTIES OF DOUBLE COMPLEX SALTS OF HEXA (ISOTHIO CYANATE) CHROMATES (III) OF LANTHANIDES (III) COMPLEXES OF YTTRIUM GROUP WITH E- CAPROLACTAM

Some physical-chemical parameters of new double complex salts of $[Ln(\epsilon-C_6H_{11}NO)_8][Cr(NCS)_6]$, where $Ln=Gd^{3+}, Tb^{3+}, Dy^{3+}, Ho^{3+}, Er^{3+}, Tm^{3+}, Yb^{3+}, Lu^{3+}$ are presented.

Key words: double complex salts, lanthanides, thiocyanate chromates, E- caprolactam

O.V. MIKHAIYLOV, A.V. KONDAKOV
Ag₄[Fe(CN)₆]→Ag REDOX PROCESS IN Ag₄[Fe(CN)₆]- GELATIN IMMOBILIZED MATRIXES AND INFLUENCE ON IT VARIOUS NITROGEN AND SULPHUR –CONTAINING LIGANDS

The two step process of over precipitation of elemental silver on the $Ag \rightarrow Ag_4[Fe(CN)_6] \rightarrow Ag$ scheme in gelatin-immobilized matrixes has been studied. On the first step the reagents have been kept in water-alkaline solution containing the potassium hexacyanoferrate (III) and potassium hexacyano-ferrate (II). On the second step the reagents have been kept in water solution containing the tin chloride (II) and organic or inorganic complex-forming substance forming sufficiently strong soluble coordinating compound with Ag(I). Dependences of $D = f(D^{Ag})$ and $D = f(C_{Ag}^V)$, where D is the optical density of over precipitated silver in matrix corresponding to initial density D^{Ag} and volume concentration of elemental silver C_{Ag}^V have been shown. The influence degree of complex-forming substance (D/D^{Ag}) has been established to determine with both its nature and with content in reducing solution and in the case of ethylene diamine the action is the most essential whereas for the ammonia the action is the least.

Key words: elemental silver, silver (I) hexacyanoferrate(II), gelatin-immobilized matrix, redox-process, over-precipitation.

E.V. RUMYANTSEV, S.N. ALYOSHIN, E.V. ANTINA
SPECTRAL STUDY OF DIPYRROLYMETHENES COMPLEX FORMATION WITH GALLIUM (III) AND INDIUM (III) SALTS

With the method of electronic spectroscopy the interactions of alkyl substituted dipyrrolylmethen with the Ga(III) and In(III) salts in dimethyl formamide have been studied. At 298 K the formation of In(III) complex has been shown to be the equilibrium process whereas the formation of the same complex of Ga (III) needs the heating a reacting mixture. The composition and stability of In (III) complex with dipyrrolylmethen has been determined. In spite of three charged ions of f-elements the In (III) and Ga (III) polarize the π -electron system of dipyrrolylmethen more strongly due to an essential input of co- valence constituent into coordination bond.

Key words: complex formation, dipyrrolylmethen, indium, gallium, electronic spectra, stability.

V.I. BABAYEVA, U.A. KERIMOVA, N.S. OSMANOV
SYNTHESIS AND STUDY OF RHENIUM (IV) COMPLEXES WITH SOME AMINO ACIDS

Synthesis methods of complex compounds of rhenium (IV) with some amino acids of composition $[K(LH)] [ReX_6]$, $(LH)_2 [ReX_6]$ and $[ReL_2X_4]H_2O$ (L'-glycine- NH_2-CH_2-COOH ; L-leucine - $((CH_3)_2-CH-CH_2-CH(NH_2)-COOH)$) in various media have been proposed. By methods of chemical, ESP, IR-spectral and thermo gravimetric analysis the composition and structure of obtained complexes have been established. Thermo gravimetric researches have showed that a thermal decomposition of complexes proceeds in several stages and metal rhenium is a final solid-phase product.

Key words: synthesis, rhenium complexes, amino acids, thermal decomposition.

A.M. EFREMOV, V.I. SVETSOV, A.V. YUDINA, S.S. LEMEHOV
KINETICS AND CONCENTRATIONS OF NEUTRAL SPECIES IN PLASMA OF HCl AND ITS MIXTURES WITH CHLORINE AND HYDROGEN

An investigation of the steady-state plasma composition in the HCl/Cl₂ and HCl/H₂ mixtures of variable composition under the conditions of the direct current glow discharge ($p = 30-250$ Pa, $i_p = 20$ mA) has been carried out. The balance of neutral particles has been found to form essentially by the atom-molecular reactions. It has been shown that small (up to 20%) additions of Cl₂ or H₂ to hy-

drogen chloride do not result in the essential changes of electro-physical parameters of plasma but give rise to the non-additive changes of neutral species densities.

Key words: plasma, modeling, dissociation, rate, concentration.

L.P. VOLKOV

NEW MULTIPLE INTERRELATIONS OF PHYSICAL AND CHEMICAL PROPERTIES OF IRON. DETERMINATION AND PROPERTIES PREDICTION

By the method of stepwise approximations to desired accuracy of determination and prediction of values of physical-chemical properties of substances the action intensity of proton, neutron, electrons forming substances and influencing on qualitative and quantitative manifestations of multiple interrelations of substance properties has been discovered.

Key words: protons, neutrons, electrons, substance properties.

G.I. MALTSEV, B.K. RADIONOV, S.V. VERSHININ **UTILIZATION OF ARSENIC-CONTAINING WASTES**

The existence of arsenic mobile forms in cake under precipitation with the sodium hydro sulphide from washing sulfuric acid has been revealed. Experimental data on arsenic washout kinetics and nonferrous metals with ground waters from cake of precipitating are given.

Key words: arsenic, precipitate, thio-arsenious acid, arsenic three sulphide, washout kinetics, permissible content of mobile forms, prevented ecological-economic damage.

S.I. NIFTALIEV, E.I. MELNIKOVA, A.A. SELIVANOVA, I.V. VATUTINA **MICROWEIGHING OF EQUILIBRIUM GAS PHASE OF VOLATILE AROMA-FORMING SUBSTANCES IN DIARY BUTTER ON THIN FILMS OF MODIFIERS**

By the method of piezoquartz micro weighing the general regularities of sorption of volatile aroma-forming substances of diary butter on thin films of modifiers of various nature and polarity has been studied. The film mass has been optimized. Molar sensitivity and efficiency of films has been calculated.

Key words: sorption, diary butter, volatile aroma-forming substances, micro weighing.

V.A. ALEKSANDROV, N.A. PENKINA, D.P. VLAZNEV, T.P. USTINOVA **RESEARCH OF STRUCTURAL FEATURES AND OPERATIONAL PROPERTIES OF POLYMERIC CATION-EXCHANGE COMPOSITE MATERIAL ON BASIS OF MODIFIED BASALT FIBERS**

The work presents investigation of structure and properties of cation-exchange fibrous material synthesized on the basis of preliminary modified basalt fiber. Structure properties of chemical adsorbent have been studied with the methods of IR-spectroscopy and DTA. The possibility of physical and chemical interactions between cation-exchange matrix and fibrous filler has been shown. The joint application of heat and microwave treatment has been proved to increase in the activity of fibrous filler surface. As a result the complex of operational properties of produced cation-exchange material is improved.

Key words: phenolformaldehyde sulphocation exchanger, basalt fibre, polycondensation stuffing, modification, structure, properties

P.A. PODKUIYKO, L.YA. TSARIC, K.A. ABZAEVA, O.V. TYUKALOVA **SYNTHESIS AND PROPERTIES OF BIMETALLIC SALTS OF POLYACRYLIC AND POLYMETACRYLIC ACIDS**

A simple method for the preparation of bimetallic salts of polymethacrylic acids has been proposed. The reagent ratios and reaction conditions have been optimized for the synthesis at room temperature. The compositions and properties of water-soluble bimetallic salts of polyacrylic and polymethacrylic acids have been studied. Bimetallic salts of polymethacrylic acids containing the metals of the groups of I-IV, VII and VIII of the D.I. Mendeleev's periodic table have been obtained. The elemental analysis of the bimetallic salts has been carried out and their compositions have been calculated on the base of these data. The analysis of the salts' IR-spectra has shown the presence of the bands corresponding to structure of its chemical units.

Key words: bimetallic salts, polyacrylic and polymethacrylic acids, compositions, properties, water-soluble salts, IR-spectra, elemental analysis.

O.V. ALEXEEVA, A.N. RODIONOVA, V.A. PADOKHIN **HIGH-SPEED SHIFT ACTION ON RHEOLOGICAL PROPERTIES OF AQUEOUS SOLUTIONS OF MIXTURES OF SODIUM CARBOXYMETHYLCELLULOSE AND HYDROXYETHYLCELLULOSE**

By the methods of viscosimetry and rheology the properties of dilute and moderately-concentrated aqueous solutions both of sodium carboxymethylcellulose, hydroxyethylcellulose and their mixtures have been studied. The influence of short-term actions on structure formation processes in studied systems has been established.

Key words: sodium carboxymethylcellulose, hydroxyethylcellulose, mixtures of polymers, rheology, viscosimetry, mechanical activation, sizes of super molecular particles.

A.A. KAPUSTINA, N.P. SHAPKIN, N.A. BADANOVA **STUDY OF INTERACTION OF COBALT CHLORIDE AND POLYPHENYLSILOXANE AT CONDITIONS OF MECHANO-CHEMICAL ACTIVATION**

Mechano-chemical activation of cobalt chloride and polyphenylsiloxane has been carried out in activators of two types. Reactionary mixtures have been separated on fractions. The composition of products obtained has been studied by the methods of IR spectroscopy, elemental analysis, gel-chromatography and electron microscopy. The thermo-oxidative stability of soluble and insoluble fractions has been studied.

Key words: mechanical activation, cobalt chloride, polyphenylsiloxane, IR spectroscopy, elemental analysis, gel-chromatography, electron microscopy.

O.G. KHELEVINA, E.I. PUKHOVA

STRUCTURIZATION OF LIQUID SILOXANE RUBBERS IN PRESENCE OF METALPORPHYRAZINES

A structurization of liquid low-molecular siloxane rubbers with the usage as catalysts metalporphyrines – phthalocyanines of tin (II), cooper (II), cobalt (II) as well as octaphenyltetraazoporphyrinate of cobalt (II) – has been studied. Metalporphyrines have been shown to manifest a catalytic activity at high temperatures (130 – 160°C) only. A structurization of liquid siloxane rubbers with the usage as catalysts metalporphyrines is described by kinetic equation of the first order on the gel fraction. Kinetic parameters of structurization reaction have been determined. A usage as structurization catalysts of liquid low-molecular siloxane rubbers of the metalporphyrines allows obtaining the siloxane compositions which are stable at room temperature.

Key words: siloxane rubber, structurization, metalporphyrines.

O.V. VOROBIEVA, A.M. IVANOVA, S.S. AVANESYAN, E.V. VOLOSOVA, S.F. ANDRUSENKO, A.A. KADANOVA
SYNTHESIS OF ENZYMATIC FILM MATERIALS ON BASE OF NATURAL POLYSACCHARIDES

The method of film synthesis on the base of natural polymers containing the enzyme β – hyaluronidase has been developed. Comparative characteristics of strength of the developed films with polyethylene are presented. Films containing the enzyme possess with high adhesion and hydrophilic properties, elasticity, a transparency, absence of toxicity and irritating action which will allow expanding area of application of the given materials in various spheres of activity.

Key words: β – hyaluronidase, bio polymer film.

I.V. NOVIKOV, V.V. VOLKOV, V.V. ALEXANDRIYSKIY, L.F. NOVIKOVA, V.A. BURMISTROV
DIELECTRIC ANISOTROPY AND BIREFRINGENCE OF P-NITROANILINE SOLUTIONS IN LIQUID CRYSTALLINE COMPOSITION ON BASE OF CYANODERIVATIVES OF MESOGENS

The temperature and concentration dependences of static dielectric permeability and refraction indexes of liquid crystalline solutions of p-nitroaniline in mixture LC 807 have been obtained. The influence of non-mesomorphic additive on the nematic phase stability, birefringence and dielectric anisotropy of the system liquid crystal-non-mesogen has been shown.

Key words: liquid crystals, mesogens, dielectric properties, birefringence.

L.A. KOCHERGINA, A.V. EMELIANOV, G.G. GORBOLETOVA, O.N. KRUTOVA
STANDARD ENTHALPIES OF GLYCYLGLYCINE FORMATION IN AQUEOUS SOLUTION

The heat effects of dissolutions of crystalline glycylglycine in water and potassium hydroxide solutions have been determined by direct calorimetry at 298.15K. The standard enthalpies of glycylglycine formation and its dissociation products in aqueous solutions have been calculated.

Key words: thermodynamics, solutions, dipeptides, glycylglycine, formation standard enthalpy.

A.N. ZHELEZNOVA, A.A. ILIYN, A.P. ILIYN, YU.M. KOMAROV
DEVELOPMENT OF METHOD OF ZINC OXIDE OBTAINING WITH USAGE OF MECHANO-CHEMICAL SYNTHESIS

With the methods of X-ray phase and X-ray structural analyses, thermogravimetry and volumetry the process of mechanical and chemical synthesis of zinc oxide has been studied. The oxidation degree of metal zinc as a function of time, method of mechanical activation and kind of the oxidizing medium has been calculated. The optimal conditions of zinc oxidation have been established.

Key words: zinc oxide, mechano-chemical synthesis, oxidation.

A.D. SEMENOV, N.N. SMIRNOV, A.P. ILIYN
REGULARITIES OF MECHANO-CHEMICAL ACTIVATIONS OF COAL IN DEVICE OF MODERATE ENERGY INTENSITY

The process mechano-chemical activation of coal in mills of moderate energy intensity has been studied. The application of mechano-chemical activation in vapor-air medium has been established to allow forming directly the structures with the large contents of oxidized centers on a surface of active coal. The surface oxidation degree of the sorbent and particles aggregation has been shown to be closely tied. The processes of coal particle aggregation proceed owing to the formation of bonds between oxidized groups.

Key words: mechano-chemical activation, coal, oxidation, aggregation.

N.I. RADISHEVSKAYA, A.YU. CHAPSKAYA, N.G. KASATSKIY, V.I. VERESHCHAGIN
ALUMINOTHERMIC SYNTHESIS OF COBALT-CONTAINING SPINELS

The possibility of cobalt-containing pigment obtaining of spinel type with the method of self-propagating high temperature synthesis has been shown. In the synthesis process the aluminum oxidation has been established to proceed by steps over aluminothermic reaction with the cobalt oxide and simple alumina oxidation. The process proceeds in the mode of layerwise burning starting from the temperature of 800°C. For improvement of pigment color parameters the zinc and magnesium oxides have been introduced in reacting charge of CoO-Al₂O₃ system. The pigments synthesized were fine dispersive, thermo stable, and stable to aggressive action of melted glaze.

Key words: cobalt pigments, spinel, aluminum, oxidation, self-propagating high-temperature synthesis, burning, color properties.

E.V. DOGADKINA, K.E. RUMYANTSEVA, R.F. SHEKHANOV, A.O. SEMENOV
ELECTRO DEPOSITION OF ZINC-NICKEL ALLOYS

The possibility of obtaining the electrolytic precipitates of high quality from zinc-nickel alloys having excellent mechanical and anti-corrosion properties has been shown.

Key words: scattering power (Hering-Blum method), polarization curves, atomic absorption analysis, micro hardness, corrosion stability.