

A B S T R A C T S

*D.M. GANBAROV, A.Sh. TOMUYEVA, B.T. USUBALIYEV***FORMATION OF INCLUSION COMPOUNDS OF CADMIUM (II) AND NICKEL (II) COMPLEXES WITH ORTHO- AND PARA-PHTHALIC ACID**

For the first time the channel compounds of inclusion on the base of the cadmium (II) and nickel (II) phthalate and terephthalate complexes ($\text{Cd}[\text{o-C}_6\text{H}_4(\text{COO})_2] \cdot 1,5 \text{ H}_2\text{O}$ (F); $\text{Cd}[\text{p-C}_6\text{H}_4(\text{COO})_2]$; $\text{Ni}[\text{o-C}_6\text{H}_4(\text{COO})_2]$; $\text{Ni}[\text{p-C}_6\text{H}_4(\text{COO})_2]$) have been synthesized. The identity of compounds obtained has been established on the base of the X-ray diffraction and derivatographic methods. The process of clathrates thermo destruction has been studied. The "guest molecules" content and the temperatures of their removal have been determined. Clathrates have been shown to have the following composition: $\text{CdL}^1 \cdot 0.75\text{CH}_3\text{COOH}$; $\text{CdL}^2 \cdot 0.75\text{CH}_3\text{COOH}$; $\text{NiL}^1 \cdot 0.75\text{CH}_3\text{COOH}$; $\text{NiL}^2 \cdot 0.75\text{CH}_3\text{COOH}$ (L^1 phthalate, L^2 – terephthalate).

Key words: complexes, phthalate, terephthalate, synthesis, cadmium, nickel

*V.I. PORKHUN A.I. RAKHIMOV***FOTOLYSIS MECHANISM OF 2,6-DIPHENYL-1,4-BENZOQUINONE IN PHOSPHORUS TRICHLORIDE**

Photolysis of the 2,6-diphenyl-1,4-benzoquinone in phosphorus trichloride has been shown to result in formation of the phosphonium quinone - ilide. The photolysis mechanism includes a process of formation of radicals with transition of hydrogen atom from photo-excited quinone.

Key words: photolysis, 2,6-diphenyl-1,4-benzoquinone, mechanism, products, photo excitation

*L.B. KOCHETOVA, T.P. KUSTOVA***QUANTUM CHEMICAL MODELING OF MECHANISM OF GASEOUS PHASE ARENESULFONYLATION OF GLYCINE BY BENZENESULFONYLCHLORIDE**

The quantum chemical modeling of mechanism of glycine arensulfonylation by benzenesulfonylchloride in gaseous phase has been carried out. The three-dimensional potential energy surface of reaction has been calculated and sections of this surface on possible reaction coordinates have been studied. The most preferable directions of attack of the glycine molecule on sulfonylchloride group have been established to be frontal and frontal-axial ones. The reaction has been shown to proceed on the classic $\text{S}_{\text{N}}2$ -mechanism without forming of intermediates. In activated complex the sulfonyl centre interacting with glycine could have different configuration dependently on the realizing reaction pathway – close to tetragonal-pyramidal or trigonal-bipyramidal one.

Key words: glycine, arensulfonylation, reaction mechanism, activated complex

*E.A. KURGANOVA, N.V. LEBEDEVA, E.V. SMIRNOVA, I.D. EKIMOVA, O.V. LOZINSKAYA, S.G. KOSHEL, G.N. KOSHEL***JOINT METHOD OF 3,4-XYLENOL AND CYCLOHEXANONE SYNTHESIS**

The reaction of liquid-phase initiated oxidation of cyclohexylxylenes isomers to hydroperoxides has been studied. Given hydrocarbons according to their reactivity have been found to form the following series: cyclohexyl-o-xylene > cyclohexyl-p-xylene \geq cyclohexyl-m-xylene. For co-production of xylenols and cyclohexanone has been shown to necessary use the liquid-phase oxidation of the cyclohexyl-o-xylene. The conditions providing conversion of cyclohexyl-o-xylene of 25-30 % at selectivity above 90 % have been found. The reaction of the acid-catalytic decomposition of hydroperoxide of cyclohexyl-o-xylene provides the yield of the 3,4-xlenol and cyclohexanone of 90 % and 70 %, respectively.

Key words: cyclohexylxylenes, liquid-phase oxidation, hydroperoxides, reaction conditions

*E.V. VANCHIKOVA, B.M. KONDRATENOK, M.D. ULYASHEVA***STUDY OF COMPLEX COMPOUNDS OF ZINC (II), CADMIUM (II), LEAD (II) AND COPPER (II) WITH XYLENOL ORANGE**

The copper (II), zinc (II) and lead (II) have been established to form two types of compounds with xlenol orange with composition of 1:1 and 2:3, whereas the cadmium (II) forms the 1:1 compound only. The stability of complex compounds and extinction coefficients increase in the following series of central atoms: $\text{Cd(II)} < \text{Cu(II)} < \text{Zn(II)} \approx \text{Pb(II)}$.

Key words: complexes, composition, copper, zinc, lead, xlenol orange

*T.I. CHANKINA, V.I. PARFENYUK***RESOLUTION THERMODYNAMICS OF Cu, Ca AND Cd IONS IN WATER-ETHANOL MIXTURES**

The real and chemical parameters of the Cu^{2+} , Ca^{2+} and Cd^{2+} ions re-solvation in water-ethanol mixtures have been determined by means of compensating voltage measurements of Volta circuits by Khenric's method at 295.15 K.

The assumption about surface potential stability on interface of non-aqueous solvent/gas phase starting from definite concentration of non-aqueous component of mixture has been confirmed using Kharkin's method. The dependence of thermodynamic parameters changes of cations re-solvation on their crystal radius has been established.

Key words: re-solvation, ions, copper, calcium, cadmium, water, ethanol, thermodynamic parameters

I.V. SMIRNOVA, M.P. NEMTZEVA, O.V. LEFYODOVA
EFFECT OF 2-PROPANOL–WATER SOLVENT COMPOSITION ON HYDROGENATION RATE OF SUBSTITUTED NITROBENZENES

Dependences of the observed rate of liquid-phase hydrogenation of isomers of nitrobenzoic acid and nirtophenol on skeleton nickel on the composition of the 2-propanol–water solvent are not the same type. Similar dependences for reaction rate constants on the equally accessible surface of the catalyst which were determined taking into account the hydrogen solubility and effective coefficient of hydrogen diffusion have common character with maxima at the contain of alcohol of 0.1 m. that is first of all connected with change of adsorption value of nitrocompound due to the influence of substitute nature and its position.

Key words: liquid-phase hydrogenation, nitrobenzoic acid, nirtophenol, skeleton nickel, water, 2-propanol

N.F. KOSENKO, L.A. VINOGRADOVA
INFLUENCE OF CALCIUM OXIDE ABRASIVE TREATMENT ON ITS HYDRATION RATE

The calcium oxide behavior during the hydration in water and diluted orthophosphoric acid solutions has been studied. The CaO powder mechanical pretreatment of the abrasive type has been determined to result in essential deceleration of the slaking process that is connected with the particles compacting, their specific surface area decrease and change of grain surface state.

Key words: calcium oxide, mechanical treatment, hydration

E.V. SMIRNOVA, N.V. LEBEDEVA, E.A. KURGANOVA, S.G. KOSHEL, N.D. KUKUSHKINA, G.N. KOSHEL
LIQUID-PHASE OXIDATION OF ISOPROPYLCYCLOHEXYLBENZENE ISOMERS

Kinetic regularities of isopropylcyclohexylbenzene liquid-phase oxidation have been studied. The conditions providing oxidation of the isopropylcyclohexylbenzene up to hydroperoxide content of 50 – 55 % have been found. The character of forming oxidation products of isopropylcyclohexylbenzene has been established.

Key words: liquid-phase oxidation, isopropylcyclohexylbenzene, reaction product

E.V. LOPATKIN, O.V. LEFYODOVA, A.A. KOMAROV
INFLUENCE OF BINARY SOLVENT COMPOSITION ON HYDROGENATION REACTION SELECTIVITY OF NITRO- AND AMINOCHLORBENZENES

The study of kinetic regularities of reactions of liquid-phase hydrogenation of substituted nitro- and aminochlorbenzene on skeletal nickel catalysts has been carried out. The hydrogenation of the nitro groups of the nitro chlorbenzene isomers proceeds in one step according to scheme of nitro group transformation proposed by V.P. Shmonina. The solvent composition as a component of catalytic system has been shown to influence on selectivity of hydrogenation reactions of nitrochlor and aminochlorbenzenes over change of rates ratio of separate steps of catalytic process.

Key words: liquid-phase hydrogenation, nitro- and aminochlorbenzenes, skeletal nickel

T.V. ALYKOVA, A.M. SALMAKHAEVA
SORPTION CONCENTRATING OF TETRACYCLINE AND ITS COMPOUNDS WITH Fe(III) ON KSMG SILICA GEL

The tetracycline adsorption as well as its compounds with Fe(III) on KSMG silica gel has been studied. The Fe(III) reacting with tetracycline on sorbent has been shown to form intensively colored complex with the $K_4[Fe(CN)_6]$, the coloration intensity being changed dependently on tetracycline concentration.

Key words: adsorption, tetracycline, silica gel, complex, iron

L.D. YAGODAROVA, E.A. DANILOVA, A.A. EVSEEV, M.I. BAZANOV, M.K. ISLYAIKIN
ELECTROCHEMISTRICAL PROPERTIES OF METALCOMPLEXES OF MACROHETEROCYCLIC COMPOUNDS CONTAINING THREE 1, 3, 4 – THIADIAZOLE AND THREE 5–TERT–BUTYLISOINDOL FRAGMENTS

Main regularities of electrochemical behavior for tert–butyl substituted macro heterocyclic compound of ABA-BAB- type and its complexes with copper and cobalt containing three metal atoms in coordinated cavity in system of technical carbon – fluoroplastic – compound being studied have been studied and revealed.

Key words: tert–butyl substituted macro heterocyclic compound, electrochemical behavior, complex, copper, cobalt

I.N. SHERSTOBITOVA, D.G. TOLSTIKOV, V.I. KICHIGIN
**PECULIARITIES OF CATHODE POLARIZATION OF STEEL ELECTRODE IN SULFATE CADMIUM
PLATING ELECTROLYTE WITH ADDITIONS OF OS-20 AND PGU-2**

The kinetics of the cadmium deposition (galvano- and potentiostatic measurements) on the Fe electrode from sulfate electrolyte (pH 0.6) containing OS-20 or OS-20 and PGU-2 additions has been studied. The limiting current (ca. 50 A/m²) on the polarization curves in the cadmium plating electrolyte containing surfactants has been explained by the Loshkarev' effect manifestation on the surface of depositing metal.

Key words: kinetics, cadmium deposition, polarization, surfactants

M.M. SHALAMBERIDZE, Z.V. KOPADZE, N.Z. LOMTADZE
**STUDY OF STRUCTURIZATION PROCESS OF POLYURETHANE GLUES WITH THERMAL
ANALYSES METHODS**

The physical, phase and temperature transitions of structurization and destruction processes of urethane polymers on the base of polyesters of UK-1 type (product of interaction of the polybutyleneglycoladinate, 2,4- toluylenediisocyanate and low molecular glycol of the 1,4-butandiol as chain extender) of Russian production and imported rubber "Des-mocall" of the Bayer firm with latent hardener (dicyandiamide) have been studied.

Key words: urethane polymers, phase transitions, structurization, destruction

G.R. TIMERBAEVA, I.A. BONDAREVA, I. M. BORISOV
COMPLEXES OF PECTIN WITH IODINE

The forms of interactions at formation of clathrate compound of pectin biopolymer with iodine possessing with physiological activity have been considered.

Key words: pectin biopolymer, iodine, clathrate compound

V.G. STOKOZENKO, Yu.V. NEMANOVA
**STUDY OF HYDROLYTIC DESTRUCTION KINETICS OF VARIOUS TYPES OF CELLULOSES UNDER
SODIUM HYDROXIDE ACTION**

Kinetic processes of glucose formation under hydrolytic destruction of the cellulose of various origins in alkaline media have been studied. The effective values of rate constants and activation energy of hydrolysis process for each type of cellulose have been calculated and their comparison has been carried out. The explanation of rate differences of detachment and transition into solution of glucose under destruction of various cellulose samples has been proposed.

Key words: kinetics, glucose, cellulose, hydrolytic destruction

N.V. KONOVALOVA, A.D. KOTOV, V.V. GANZHA, T.N. ORLOVA, V.Yu. ORLOV
**REGULARITIES OF FORMATION REACTION OF 2-[4-(HYDROXYIMINO)CYCLOHEXA-2,5-DIEN-1-
YLIDENE]ARYLACETONITRILES**

For the first time, the process of interaction of nitrobenzene with phenylacetonitrile in alcohol solution of alkali has been established to be reversible. By-products of given reaction the {4-[(4-benzoylphenyl)-NNO-azoxy]phenyl}(phenyl)methanone and benzoic acid have been identified. Optimum conditions for obtaining of 2-[4-(hydroxyimino)cyclohexa-2,5-dien-1-ylidene]phenylacetonitrile have been established: time - 6 hours, temperature -350C, concentration of potassium hydroxide - 1.14 mole/L at condition that the [PhCH₂CN]₀ = 0.24 mole/L, [PhNO₂]₀ = 0.16 mole/L, solvent - propanol-2.

Key words: 2-[4-(hydroxyimino)cyclohexa-2,5-dien-1-ylidene]phenylacetonitrile, synthesis, nitrobenzene, phenylacetonitrile

**Yu.N. SHALIMOV, V.I. PARFENYUK, Yu.V. LITVINOV, V.I. KUDRYASH, E.L. KHARCHENKO,
N.V. GAVRILOVA, D.L. SHALIMOVA, E.S. MILENINA**
INTERRACTION PROCESSES OF HYDROGEN AND METALS IN ELECTROCHEMICAL SYSTEMS

Questions of hydrogen interaction and metals during their electro crystallization as well as the hydrogen behavior in metal structures have been considered in the wide temperature range. It has been shown that in process of electro crystallization the heat evolution effects appeared which were connected with the energy of total electro chemical process consisting of number of steps of chemical and electro chemical reactions.

Key words: electro crystallization, hydrogen, metal, electrochemical reactions

B.A. KHORISHKO, O.V. IVANOVA, A.D. DAVYDOV, I.V. MEKAEVA, A.L. TRAVIN, N.F. KIZIM
EQUILIBRIUM THERMODYNAMICS OF IRON AND ITS COMPOUNDS WITH AQUEOUS MEDIA

Data on equilibrium thermodynamics of iron and its compounds in aqueous media have been added and systematized. Thermodynamic parameters of reactions ($E^0_{\text{orp}}(T)$, $dE^0_{\text{orp}}(T)/dT$, $\Delta_r G^0(T)$, $K_a(T)$) have been calculated on the base of

properties of individual components. The expressions for functional dependencies of $\sum v_i \lg a_i = f(K_a(T), pH)$, $E_{\text{оф}} = f(pH, \sum v_i \lg a_i)$ have been obtained.

Key words: iron compounds, aqueous solution, thermodynamic parameters of reactions

S.V. KHITRIN, A.A. TOKAREV, E.G. SHEKHIREVA, A.A. VIHLYANTSEVA

ALCOHOLYSIS OF ϵ -CAPROLACTAM IN PRESENCE OF RARE METAL SALTS

Reactions of the ϵ -caprolactam and various structure alcohols in the presence of metal salts have been studied. A number of new oligomers containing oligoamide fragments has been synthesized.

Key words: alcoholysis, caprolactam, alcohol, metal salts

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

DIOXIDE THIOUREA DECOMPOSITION IN SOLVENTS: DIMETHYLSULFOXIDE AND DIMETHYLSULFOXIDE-WATER

The stoichiometric mechanism of process of dioxide thiourea decomposition in dimethylsulfoxide and dimethylsulfoxide-water mixture has been studied. The nature of decomposition intermediates has been established with the polarographic analysis. The kinetic scheme of reactions proceeding in systems mentioned above has been proposed on the base of analysis of kinetic regularities.

Key words: dioxide thiourea, mechanism of decomposition process, reactions scheme

A.V. BELYI, S.V. DROZDOV, V.G. KULEBAKIN, V.V. LEBEDEVA

INFLUENCE OF MECHANOCHEMICAL ACTIVATION ON SULFIDES LEACHING IN COMPOSITION OF Au-CONTAINING CONCENTRATE AND ON SUBSEQUENT EXTRACTION OF GOLD BY CYANIDATION

The results of study on the influence of mechanochemical activation of Au-containing concentrate in planetary mill M-3 and in vibration mill SVU-2 on the oxidation of sulfides in concentrate composition and on the subsequent extraction of gold by leaching and cyanidation are given.

Key words: mechanochemical activation, Au-containing concentrate, leaching, cyanidation

M.N. TARASOVA, Yu.S. LAZUTKINA, L.F. KOMAROVA

STUDY ON CREATION OF LOW-WASTE TECHNOLOGY OF MIXTURE SOLVENTS SEPARATION IN ENAMELS PRODUCTION

This work is devoted to study of creation of low-waste technology in production of silicon organic enamels. The main sources of formation of liquid waste have been determined. The thermodynamic-topological analyze has been carried out. As a result the main principle technological schemes of mixture solvents separation after local purification of waste water in silicon organic enamels production have been offered.

Key words: low-waste technology, silicon organic enamels, water purification, solvents

Z.V. KOPADZE, M.M. SHALAMBERIDZE, N.Z. LOMTADZE

DEVELOPMENT OF MODIFIED HIGH-CONCENTRATED (POLY) CHLOROPRENE GLUES FOR BASE FIXATION OF SHOES BOTTOM

The method of modification of chloroprene glue containing aqueous solutions of surfactants is given. That method allows: to obtain the glues of high concentrations (35-40%) under conservation of technological viscosity, to reduce the drying time of glued films up to 40-45 min at natural conditions; to decrease a consumption of expensive solvents in 2-2.5 times; to reduce the fire and explosion safety and to improve ecological parameters of environment.

Key words: (poly) chloroprene glue, surfactants, viscosity, drying, film, solvent

V.M. SUTYAGIN, O.V. BONDALETOV, E.P. FITERER, L.I. BONDALETOVA,

V.G. BONDALETOV, O.N. GRIGORIEVA

SYNTHESIS AND PROPERTIES OF PETROLEUM RESINS MODIFIED BY ACRYLATES

The copolymerization of C_9 fraction of liquid pyrolysis products of once-run gasoline with methylmethacrylate, butylmethacrylate and hexylacrylate under the action of the Ziegler - Natta catalysts has been studied. That copolymerization results in obtaining of modified petroleum resins with improved technical parameters.

Key words: copolymerization, methylmethacrylate, butylmethacrylate, hexylacrylate, catalyst, petroleum resin

V.Kh. AFANASOV, V.E. MIZONOV, N.N. YELIN

MATHEMATICAL MODEL OF FORMING OF TEMPERATURE DISTRIBUTION IN CELL OF SECTIONED VOLUME

On the basis of cell presentation of a one-dimensional sequence of sections heated by a gas flow above them, which, in turn, is heated by heating elements placed above it, the mathematical model of forming of temperature distribution over the sections has been proposed, and influence of basic process parameters on the distributions has been studied.

Key words: modeling, temperature distribution, sectioned volume

E.N. VYASILEVA

DEPENDENCE OF HEAT EXCHANGE IRREVERSIBILITY ON MODELS OF IDEALIZED FLOWS

Production of entropy has been calculated as functions of external parameters for double flows heat exchangers depending on models of idealized flows and organization of heat exchange.

Key words: entropy, heat exchange, heat exchanger

D.F. ZIATDINOVA, N.F. TIMERBAEV, R.G. SAFIN, A.N. SMIRNOVA

IMPROVEMENT OF TECHNOLOGY OF FATTY ACIDS EXTRACTION FROM SOUP STOCK

Improved technological scheme of fatty acids extraction from soup stock has been proposed. The mathematical model of process has been created. An example of set up construction allowing not only to eliminate the emission of vapor and aerosol of sulfuric acid but to intensify considerably the decomposition process of soap stock soap has been considered.

Key words: fatty acids, extraction, modeling

A.E. LEBEDEV, A.I. ZAITSEV, A.B. KAPRANOVA, I.O. KUZMIN

**MATHEMATICAL MODEL OF MOVEMENT MECHANICS OF BULK MATERIALS
IN DISPERSED FLOWS OF DEVICES WITH ELASTIC WORKING ELEMENTS**

The mathematical description of dispersion process of bulk materials in device with elastic working elements is presented. The function of distribution of solid particles on corners of scattering has been obtained.

Key words: modeling, bulk materials, dispersion process

Yu.P. OSADCHYI, S.V. FEDOSOV, T.E. NIKIFOROVA, V.N. BLINICHEV

EXTRACTION OF VALUABLE COMPONENTS FROM INDUSTRIAL WASTEWATER AND THEIR REUSE

Positive results on separation, concentrating and purification of waste water containing acrylic dispersions, polyvinyl alcohol, disperse, vat and direct dyes by ultra filtration and nano filtration under industrial conditions have been obtained. Characteristics of membranes, optimum parameters of process accomplishing and power consumption of baro-membrane devices have been studied. The possibility of reuse in industrial cycle up to 35 % acrylates, 10-25 % of dyes and 40 % of polyvinyl alcohol has been established.

Key words: separation, concentrating, purification, waste water, baro-membrane

A.I. KRISTOPHOROV, V.V. SEYMIN

**DEPENDENCE OF REMANENT INDUCTION OF HARD-MAGNETIC MATERIALS BASED ON FERRITE-
STRONTIUM POWDER ON MODIFYING ADDITIVES**

The problem of the increase in remanent induction of magnetic materials from 0.33 T to 0.4-0.405 T is considered. Experimental studies on interrelation of charge composition and product properties using active experiment on Box-Benkin' plan of K=3 dimension under introduction of modifying additives have been carried out.

Key words: ferrite, powder, strontium, modification, magnetic field strength

V.G. MARKELOV, A.B. RAUKHVARGER, M.E. SOLOVYEV

**QUANTUM-CHEMICAL STUDY OF COMPLEXES OF ACCELERATORS AND ACTIVATORS
OF SULFUR CURING OF UNSATURATED RUBBERS**

By semi-empirical Hartree-Fock method PM3 the structure and formation energy of complexes of accelerators of sulfur curing of unsaturated rubbers and zink salts of carbonic acids has been studied. On the base of that analysis the conclusion has been made that the formal kinetic scheme of vulcanization proposed earlier could be corrected with the aim of increasing of numerical calculations productivity and stability of algorithms of numerical estimation of kinetic parameters of curing reaction.

Key words: kinetics, sulfur curing, rubber, formation energy

*N.V. LEBEDEVA, M.V. POSTNOVA, G.N. KOSHEL, E.A. KUZNETZOVA, E.A. KURGANOVA,
E.V. SMIRNOVA, N.D. KUKUSHKINA*

SYNTHESIS OF TERPHENYL AND ITS ALKYL DERIVATIVES

The synthesis reaction of terphenyl and its alkyl derivatives based on dehydrogenation process of products of alylbenzenes cycloalkylation with cyclohexanol has been studied. Conditions providing the high yield and purity of target product have been chosen.

Key words: terphenyl, synthesis, dehydrogenation, alylbenzene, cyclohexanol

V.I. PORKHUN A.I. RAKHIMOV

PHOTOCHEMICAL REACTIONS OF 2,6-DIPHENYL-1,4-BENZOQUINONE IN THREE AND TETRAETHOXY SILANE

Photochemical reactions of the 2,6 - diphenyl - 1,4 -benzoquinone and ethoxy silanes result in formation of the silanehydroquinones, diphenylhydroquinone and photodimers. The assumption about decisive role of supramolecular structure of quinones in obtaining of reaction final product has been found.

Key words: photochemical reactions, 2,6 - diphenyl - 1,4 -benzoquinone, ethoxy silanes

Yu. V. STULNIKOVA, N. I. VOLODIN, A. V. NEVSKY
HEAVY METALS IMPACT ON ECOSYSTEMS OF SUBURBAN TERRITORIES

The sources of heavy metals anthropogenic coming in environment and character of their distribution on Tula-city suburban territory ecosystems and their components have been studied. The guidelines on reduction of negative effect of industrial and agricultural production as a result of heavy metals pollution of environment have been developed.

Key words: heavy metals, vegetative components, ecosystem

N. A. TARATANOV, G. Yu. YURKOV, Yu. A. KOKSHAROV, I. D. KOSOBUDSKIY
**MOLIBDENUM-CONTAINING NANO-PARTICLES STABILIZED ON MICRO GRAINS SURFACE
OF POLYTETRAFLUOROETHYLENE**

A number of composite nano-materials have been obtained by means of thermal decomposition of the molybdenum carbonyl. Those materials present the molybdenum-containing nano-particles stabilized on the micro grains surface of polytetrafluoroethylene. The nano-composites obtained have been characterized with TEM, XPS and ESR methods. On the base of data obtained it has been concluded that synthesized composites consist of metal molybdenum nucleus and surface layer consisting of the MoO₂ and MoF₄. The molybdenum-containing nano-particles have been established to have the average size of 4±0.5 nm.

Key words: molybdenum, carbonyl, nano-particles, composite, polytetrafluoroethylene, surface