

A B S T R A C T S

*A.G. KASHAEV, A.V. ZIMICHEV, M.N. ZEMTSOVA***SYNTHESIS AND CHEMICAL PROPERTIES OF 4-AMIDE AND 4-AMINE QUINOLINES**

Methods of synthesis and chemical properties of the 4-amide and 4-amine quinolines which are of interest as biological active compounds have been considered.

Key words: synthesis, 4-amide and 4-amine quinolines, biological-active compounds

*M.Yu. KRASAVIN, E.E. BUSHKOVA, V.Z. PARCHINSKIY, M.V. DOROGOV***SYNTHESIS OF N-ACYL-N'-ALKYLHYDRAZINES VIA MODIFIED UGI REACTION**

The Ugi reaction of acylhydrazides, aldehydes and isocyanides with trifluoroacetic acid has been studied. That reaction has been shown to result in formation of expected trifluoroacetylated adducts. However, treatment of the reaction mixture with 10% aqueous sodium carbonate leads to a complete removal of the trifluoroacetyl group and the appropriate, hitherto undescribed N-acyl-N'alkylhydrazines are evolved with high yields of column chromatography. This new type of unsymmetrically substituted hydrazines contains a reactive nitrogen center and it is expected to be suitable as a building block for pseudopeptide synthetic design.

Key words: Ugi reaction, acylhydrazides, N-acyl-N-alkylhydrazides, pseudopeptide scaffolds

*M.Yu. KRASAVIN, E.E. BUSHKOVA, V. PARCHINSKIY, M.V. DOROGOV***FURTHER MODIFICATION OF N-ACYL-N'-ALKYLHYDRAZINES SYNTHESIZED VIA MODIFIED UGI REACTION**

N-acyl-N'alkylhydrazines synthesized by us earlier contains a reactive nitrogen center. It has been shown that this new type of hydroxyl peptides can be used for synthesis of more complex pseudo peptide structures via reductive alkylation with aliphatic aldehydes. The possibility of the second Ugi reaction accomplishing on the base of such N-acyl-N-alkylhydrazides has been shown using single model experiment as well.

Key words: Ugi reaction, reduction alkylation, acylhydrazides, N-acyl-N-alkylhydrazides, pseudopeptide scaffolds

Yu.V. NOVOZHILOV, M.V. KARABANOVA, M.K. KORSAKOV, E.V. SEMENYCHEV, O.A. YASINSKIY
SYNTHESIS OF SULFAMIDES CONTAINING 5-VINYLIISOXAZOLE FRAGMENT

A number of unknown early potentially biological active sulfamide compounds containing the 5-vynilizoazole structural fragment have been synthesized.

Key words: 5-vynilizoazole, sulfamide functionalisation, nitrogroup, condensation, aromatic aldehyde, reduction.

M.V. KARABANOVA, M.K. KORSAKOV, V.V. PLAKHTINSKIY, M.Yu. KRASAVIN, M.V. DOROGOV
INTERACTION OF 3-METHYL-4-NITRO-5-ARYLVINYL-ISOXAZOLE WITH HYDRAZINE AND POSSIBLE MECHANISM OF GIVEN PROCESS

An early unknown type of transformation of the 3-methyl-4-nitro-5-(2-p-tolyl-vinyl)-isoxazole into 1-(5-p-tolyl-2H-pyrazole-3-yl)-propane-2-one oxim under the action of the hydrazine has been discovered. The probable mechanism for this transformation has been proposed.

Key words: the opening of the isoxazole cycle, rearrangement, isoxazoles derivative

*I.A. VIKHROV, A.V. SMIRNOV, A.V. IVASHCHENKO, A.V. SAPEGIN,
T.A. KHRISTOLUBOVA, E.E. SHALYGINA*
**APPLICATION OF DENITROCYCLIZATION REACTION FOR SYNTHESIS
OF BENZOANYLATED LACTAM SYSTEMS**

The synthesis possibility of benzoanylated lactame systems in conditions of denitrocyclisation reaction on the base of the *o*-nitroaryloxy - and *o*-nitroarylthioalkylcarbamides containing in the own molecule the additional activating electron-accepting substituent has been studied. From all used variety of initial substrata has been established the only nitril derivatives of the *o*-nitroaryloxyalkylcarbamides to be suitable for realization of denitrocyclization way.

Key words: denitrocyclisation, benzoxazepinone, benzothiazole 3-oxide, benzoannelated lactame systems

*A.V. IVASHCHENKO, O.D. MIT'KIN, M.G. KADIEVA, E.S. DUBROVSKAYA, I.M. OKUN,
S.E. TKACHENKO*
**SUBSTITUTED 2, 3, 4, 5-TETRAHYDRO-1N-PYRIDO [4, 3-B] INDOLES – ANTAGONISTS
OF HISTAMINE H₁ RECEPTORS**

Using the terms “structure-property” the antagonist activity of synthesized library of new γ -carbolines - derivatives of 2, 3, 4, 5-tetrahydro-1N-pyrido [4, 3-b] indole with respect to histamine H₁ receptors has been studied. In set under discussed the anti-histamine properties have been discovered to depend essentially on nature of substitute in 2, 5 and 8 positions of heterocyclic system, the 5-benzyl-2-methyl-2, 3, 4, 5 –tetrahydro-1N-pyrido [4, 3 –b] indole hydrochlorides and its 8 – fluoro analogue being the most active.

Key words: γ -carbolines, 2, 3, 4, 5-tetrahydro-1H-pyrido [4, 3-b] indoles, derivatives, synthesis, anti-histamine properties

A.V. IVASHCHENKO, O.D. MIT'KIN, I.V. KUZNETSOVA, M.G. KADIYEVA, A.N. IVCHENKO
**SYNTHESIS OF 2, 3, 4, 5-TETRAHYDRO-1N- γ -CARBOLINE CARBOXYLIC ACIDS
AND THEIR DERIVATIVES**

New representatives of the 2, 3, 4, 5-tetrahydro-1N- γ -carbolines containing in its structure carboxylic, carboxylalkylic and carboxamide groups, which are potential antagonists of H₁ histamine receptors, have been obtained. Highly effective antiallergic agents which do not possess the side sedative effect have been discovered in the series of synthesized compounds. The structure of obtained γ -carbolines has been proved by ¹H NMR spectroscopy and LCMS.

Key words: 2, 3, 4, 5-tetrahydro-1H- γ -carbolines, derivatives, synthesis, highly effective antiallergic agents

V.V. POTAPOV, A.P. ILYN, N.A. FETISOVA, D.V. KRAVCHENKO, A.V. IVASHCHENKO
**SYNTHESIS OF SUBSTITUTED 3-METHYL-1-OXO-2, 3, 4, 5-TETRAHYDRO-1N-BENZO[C] AZE-
PINO-3-CARBOXAMIDES**

The combinatorial library of new 3-methyl-1-oxo-2,3,4,5-tetrahydro-1N-benzo[c]azepines, including the carboxamide fragment has been obtained by three-component and four-center reaction of the 2-(3-oxo-butyl)-benzoic acid with primary amines and the 3-methyl-butyliisocyanide in methanol. The structure of obtained compounds has been proved by LCMS and ¹H NMR spectroscopy.

Key words: 3-methyl-1-oxo-2, 3, 4, 5-tetrahydro-1N-benzo[c]azepines, derivatives, carboxamide fragment, combinatorial synthesis

A.V. IVASHCHENKO, A.P. ILYN, D.V. KRAVCHENKO, V.V. POTAPOV
**ONE-POT SYNTHESIS OF 5-OXO-1, 3, 4, 5-TETRAHYDRO-PYRROL [4, 3, 2-de] ISOQUINOLINE-3-
CARBOXAMIDES**

The combinatorial library of new 5-oxo-1, 3, 4, 5-tetrahydropyrrol [4, 3, 2-de] isoquinoline-3-carboxamides has been obtained by interaction of the 3-formyl-1N-indole-4-carboxylic acid with primary amines and isocyanides. Distinctive peculiarity of this proposed approach consists in usage of bifunctional rea-

gent, in which two reacting centers (aldehyde and acid) are located in two different cycles of annelated heteroaromatic system. The parallel liquid-phase synthesis has been shown to proceed selectively. The final purification is extremely simple. The structures of all target compounds have been proved by LC MS and ^1H NMR spectroscopy.

Key words: 5-oxo-1, 3, 4, 5-tetrahydropyrrol [4, 3, 2-de] isoquinoline-3-carboxyamides, combinatorial synthesis, bifunctional reagents

A.V. IVASHCHENKO, E.B. FROLOV, O. D. MIT'KIN, S.E. TKACHENKO, A.V. KHVAT
SYNTHESIS OF 5- AND 8-SUBSTITUTED 2-METHYL-2, 3, 4, 5-TETRAHYDRO-1N- γ -CARBOLINES

The synthesis of representatives of four groups of new 5, 8-disubstituted derivatives of the 2-methyl-2,3,4,5-tetrahydro-1N-pyrido[4,3-b]indoles, which are potential candidates for treatment of central nervous system diseases has been carried out with various methods. Possibilities of few synthetic approaches for substitute introduce into the position 5- of the heterocycle have been considered. The structure of obtained compounds has been proved with LCMS, ^1H NMR and ^{13}C NMR spectroscopy. The ability of synthesized new γ -carbolines to interact with serotonin 5-HT₆ receptors has been studied and evaluated and highly active compounds which represent further interest as candidate- drugs have been revealed. The nature of substitutes in positions 5- and 8- of the heterocycle has been established to act determinative influence on the activity of studied γ -carbolines.

Key words: 2-methyl-2, 3, 4, 5-tetrahydro-1H-pyrido [4, 3-b] indoles, derivatives, synthesis, biological activity, serotonin 5-HT₆ receptors

E.V. SEMENYCHEV, M.K. KORSAKOV, Yu. V. NOVOZHILOV, O.A. YASINSKIY, S.A. IVANOVSKIY
SYNTHESIS OF SULFAMIDE DERIVATIVES OF 4-ARYLOXAZOLE

A number of unknown early potential biological active sulfamide derivatives containing the 4- aryloxazole structural fragment has been synthesized.

Key words: 3- aryloxazole, 4- aryl -3, 5-dialkyloxazole, cyclocondensation, sulfamide functionalization, nitro adduct

A.V. IVASHCHENKO, E.B. FROLOV, O.D. MIT'KIN, E.S. DUBROVSKAYA, E.S. GOLOVINA, I.M. OKUN, S.E. TKACHENKO, A.V. KHVAT
SYNTHESIS OF SUBSTITUTED 1, 2, 3, 4, 5, 6-HEXAHYDROAZEPINE [4, 3-b] INDOLES

The synthesis of unknown previously 1, 2, 3, 4, 5, 6-hexahydroazepine [4, 3-b] indoles has been carried out for the purpose of development of high efficient neuroprotector, antihistamine and antiarithmetic drugs. In the studied series, antihistamine properties and ability to block calcium channels depend considerably on the nature of substituents in the positions 2-, 6- and 9- of the annelated heterocyclic system. At the same time, 1,2,3,4,5,6-hexahydroazepino[4,3-b]indoles are not active with respect to serotonin 5-HT₆ receptors. The structure of obtained compounds has been proved by LCMS and ^1H NMR spectroscopy data.

Key words: 1, 2, 3, 4, 5, 6-hexahydroazepine [4, 3-b] indoles, derivatives, synthesis, antihistamine properties, calcium channels

A.V. IVASHCHENKO, E.B. FROLOV, O.D. MIT'KIN, E.S. GOLOVINA, E.S. DUBROVSKAYA, S.E. TKACHENKO, A.V. KHVAT
SYNTHESIS OF SUBSTITUTED 6-BENZYL- AND 6-PYRIDINYLMETHYL-1, 2, 3, 4, 5, 6-HEXAHYDROAZEPINE [4,3-b] INDOLES

Optimal methods of obtaining and synthesis of previously unknown substituted 1, 2, 3, 4, 5, 6- hexahydroazepine [4, 3-b] indoles have been proposed and have been carried out. Some of obtained compounds have been discovered to manifest antihistamine properties and ability to effectively block the calcium channels. However, 1, 2, 3, 4, 5, 6-hexahydroazepine [4, 3-b] indoles are not active with respect to serotonin 5-HT₆ receptors. Named biologic properties depend considerably on nature and amount of substituents in positions "2", "6" and "9" of the heterocyclic system. Structure of obtained compounds has been proved by ^1H NMR spectroscopy and LCMS.

Key words: 1, 2, 3, 4, 5, 6- hexahydroazepine [4,3-b]indoles, derivatives, synthesis, antihistamine properties, serotonin receptors

A.V. IVASHCHENKO, O.D. MIT'KIN, V.M. KISIL, E.B. FROLOV, S.E. TKACHENKO
SYNTHESIS OF SUBSTITUTED 5-SULFONYL-2, 3, 4, 5 -TETRAHYDRO-1N- γ -CARBOLINES

A number of new 5-sulfonyl substituted 2, 3, 4, 5 -tetrahydro-1N- γ -carbolines has been synthesized as potential antagonists of 5-HT₆ receptors. Structure of obtained compounds has been proved by ¹H NMR spectroscopy and LCMS. The activity of new γ -carbolines with respect to serotonin 5-HT₆ receptors has been studied.

Key words: 2, 3, 4, 5 -tetrahydro-1N- γ -carbolines, 5-sulfonyl derivatives, synthesis, biological activity, 5-HT₆ receptors

A.V. IVASHCHENKO, O.D. MIT'KIN, V.M. KISIL, E.B. FROLOV, S.E. TKACHENKO
SYNTHESIS OF SUBSTITUTED 2-SULFONYL-2,3,4,5-TETRAHYDRO-1N- γ -CARBOLINES

As potential antagonists of 5-HT₆ receptors a number of new 5-sulfonyl substituted 2, 3, 4,5-tetrahydro-1N- γ -carbolines has been synthesized. Structure of obtained compounds has been proved by ¹H NMR spectroscopy and LCMS. The activity of new γ -carbolines with respect to serotonin 5-HT₆ receptors has been studied.

Key words: 2, 3, 4, 5-tetrahydro-1N- γ -carbolines, 5-sulfonyl derivatives, synthesis, biological activity, 5-HT₆ receptors

A.V. IVASHCHENKO, O.D. MIT'KIN, E.B. FROLOV, E.S. GOLOVINA, I.M. OKUN, S.E. TKACHENKO,
A.V. KHVAT

SYNTHESIS OF 6-SUBSTITUTED 1,2,3,4,5,6-HEXAHYDROAZEPINE [4,3-b]INDOLES.

A number of previously unknown substituted 1,2,3,4,5,6-hexahydroazepine[4,3-b]indoles containing hetaryl or sulfonyl substituents in position «6» have been synthesized. The obtained compounds have been established to manifest the low antagonist activity with respect to serotonin 5-HT₆ receptors. Nevertheless, 2,9-dimethyl-6-(p-tolylsulfonyl)-1,2,3,4,5,6-hexahydroazepine [4,3-b]indole has been proved to be closed to famous drug Dimebon on interaction with various 47 receptors. Structures of obtained compounds have been proved by ¹H NMR spectroscopy and LCMS.

Key words: 1, 2, 3, 4, 5, 6- hexahydroazepine [4, 3-b] indoles, 6-sulfonyl derivatives, synthesis, anti-histamine properties, Dimebon, serotonin receptors

M.S. GRUZDEV, U.V. CHERVONOVA, E.P. GRISHINA
MODIFIED SYNTHESIS OF 1-BUTYL-3-METHYL-N,N'-IMIDAZOLE BROMIDE

The 1-butyl-3-Methylimidazole bromide is the most asked-for ionic liquid. Therefore, it is necessary to obtain this product by an efficient method in which the 1-butyl-3-methylimidazole bromide is prepared with high yields (>95 %) and purity. We have proposed and carried out the modified method of synthesis of the thermal stable 1-Butyl-3-Methylimidazole bromide with low content of water (0.6 ÷ 0.7 %). The product has been characterized by melting point, thin-layer chromatography, elemental analysis, chromatography-mass spectrometry, NMR and IR spectroscopy.

Key words: 1-butyl-3-Methylimidazole bromide, synthesis

I.Sh. KHUSNUTDINOV, A.Yu. KOPYLOV, I.N. GONCHAROVA, V.I. GAVRILOV, L.M. PETROVA,
A.G. KHANOVA

INFLUENCE OF ROW MATERIAL PREPARING REGIME ON RESULTS OF DE-ASPALTIZATION PROCESS

The study of various variants of primary treatment technology of natural bitumenes and super viscosity oils for the purpose of their preparing to pipeline transfer and for obtaining the high quality non-oxidated bitumene binding agent has been carried out. The influence of regime of row material preparing and solvent ratio to row material on results of de-asphaltization process has been studied for purpose of bitumene binding agent obtaining. The possibility of obtaining of commodity bitumene binding agents corresponding to requirements of State Standard and EC Standard during the de-asphaltization process has been shown.

Key words: bitumene, oil, treatment, bitumene binding agents

A.I. RAKHIMOV, O.S. BOGDANOVA
**PECULARITIES OF DI [2-METHYL-3-DIALKYLPHOSPHONPROPYL] PEROXIDES
AS CO-INITIATORS OF VINYL MONOMER POLYMERIZATION**

The polymerization kinetics of styrene and vinylchloride in mass and suspension polymerization has been studied in the presence of phosphor-containing peroxides as co-initiators with lauroil peroxide. Their application has been shown to allow accomplishing a process with high constant rate and lower gel-effect.

Key words: styrene, vinylchloride, block-polymerization, suspension polymerization, phosphor-containing peroxides, lauril peroxide

V.P.MESHALKIN, A.A. OBRAZTSOV
**DECOMPOSITION-HEURISTIC ALGORITHM OF OPTIMAL PLACEMENT
OF TECHNOLOGICAL EQUIPMENTS OF CHEMICAL PRODUCTION**

The decomposition-heuristic algorithm of chemical production equipments placement in three-dimensional space has been presented. That algorithm allows obtaining the optimal arrangement decisions providing minimization of expenses of material and energy taking into account the physical-chemical limitations of arrangement. The arrangement results for unit of synthesis gas obtaining of ammonia production are presented.

Key words: design of technological productions, optimal arrangement, optimal placement of equipments, pipelines layout, genetic algorithms

I.V. DYUMAeva, N.A. EGOROV, Sh.F. REKUTA, E.M. MOVSUM-ZADE
**SYNTHESIS OF AMINONITRILES AND ITS DERIVATIVES COORDINATED
WITH d-ELEMENT SALTS**

Possibilities of synthesis of some amine nitriles have been considered in given study. As catalysts of addition reaction the chlorides of metals of transition valency have been used. The yield of substituted nitriles has been established to depend on salt nature forming complexes with initial nitriles.

Key words: nitriles, coordinated molecules, complexes

I.G. DMITRIeva, L.V. DYADYUCHENKO, V.D. STRELKOV, A.A. CHESNYUK
SYNTHESIS OF N-SUBSTITUTED 2-(4-CHLORPHENOXY) NICOTINAMIDES

By means of chain of consecutive transformation both the N-substituted 2-(4-chlorphenoxy) nicotinamides has been synthesized from the 4, 6 dimethyl-5-chlorine-2-(4-chlorphenoxy) nicotinnitrile and its antidotic properties have been studied.

Key words: synthesis, 4, 6 dimethyl-5-chlorine-2-(4-chlorphenoxy) nicotinnitrile, 2-(4-chlorphenoxy) nicotinamides

I.G. DMITRIeva, L.V. DYADYUCHENKO, V.D. STRELKOV, A.A. CHESNYUK
SYNTHESIS OF PHENOXYSUBSTITUTED 4-METHYLNICOTINONITRILES

Reactions of mono- and dichloronicotinonitryles with the 4-chlorphenol, 3-aminophenol and hydroquinone were studied. The substitution in 4-methyl-2,6-dichloronicotinenitrile on phenoxy-group has been established by means of NMR ¹³C method to carry out according to position 6 of the pyridine cycle.

Key words: synthesis, nicotinonitrile, nucleophilic reagents

O.V. UGRYUMOV, O.A. VARNAVSKAYA, G.V. ROMANOV
**SYNTHESIS AND STUDY OF SURFACTANT PROPERTIES OF FUNCTIONAL-SUBSTITUTED
ARYL-POLY (ETHYLENE) PHOSPHORYL HETERYLONIUM SALTS**

Sets of functional-substituted aryl[poly(ethyleneoxy)] phosphoryl pyridine and aryl[poly(ethyleneoxy)] phosphoryl quinolyne salts have been synthesized. Their surfactant properties have been studied. Those sub-

stances have been established to decrease in surface tension on interface of solution-air and solution-toluene. The application of given compounds in composition of reagents for oil treatment – demulsifiers allows to decrease of oil product content in water being extracted from water-oil emulsions.

Key words: corrosion inhibitors, surfactant properties, demulsifiers

S.V. ALEEVA, G.V. CHISTYAKOVA, S.A. KOKSHAROV
**SPECTROPHOTOMETRIC METHOD OF METHOXYLATION DEGREE DETERMINATION
OF POLYURONIDE COMPOUNDS OF LINEN FIBER**

The differential estimation of chemical condition of carboxyl groups in pectin of linen fibre has been carried out by the IR-spectroscopy methods on the base of measurements of intensity of ionized carboxyl band $\nu(\text{COO}^-)=1615 \text{ cm}^{-1}$. The method application provides series of operations with polymeric pectin films for consecutive chemical transformation of free galacturonic acid residue and its methoxylated units to the calcium pectate. The content of appropriate forms for monomeric residues in pectin extracted from Kaluga flax was: methoxylated units – 61.1 %, unetherized units – 19.4 %, pectinate units – 19.5 %.

Key words: linen fibre, pectin, IR-spectroscopy, carboxylic groups

A.A. SMOLIN, A.V. YAKOVLEV, S.L. ZABUD'KOV, E.V. YAKOVLEVA, A.I. FINAENOV
ELECTRO CHEMICAL OXIDATION OF DISPERSION GRAPHITE IN SULPHURIC ACID

The electro chemical behavior of dispersion graphite in sulphuric acid has been studied. The component ratio in mixture for providing possibility of anode synthesis of thermo expanded compounds of graphite (TECG) has been determined. The principal possibility of the TECG obtaining without forced pressing of graphite powder wetted with sulphuric acid to current collector of anode has been shown.

Key words: dispersion graphite, sulphuric acid, thermo expanded graphite, anode synthesis

A.O. RYBALTOVSKIY, K.V. ZAITSEVA, N.N. KONONOV, P.A. STOROZHENKO, A.A. ISHCENKO
**EFFECTS OF CARBON IMPURITIES ON THERMAL OXIDATION PROCESSES IN NANO-SIZE
SILICON POWDERS**

Effects of carbon impurities in NC-Si powders on spectroscopic properties have been studied and the comparative analysis of carbon impurity effect on thermal oxidation processes (annealing in air-containing atmosphere) for samples, synthesized by plasma-chemical and laser chemical technologies has been accomplished. Effects of samples annealing and atmospheric air exposition time on ESR signal have been observed. The experimental observations demonstrated clearly the multichannel nature and complexity of the thermal oxidation processes. The mechanism determines by the interface charge transfer effects, existence of impurities and structure irregularities.

Key words: carbon, silica, nano-particles, surface thermo oxidation, ESR

G.I. KOSTRYKINA, M.V. TSVETKOV, S.I. KARVONEN
**INFLUENCE OF MODIFIED MILLED VULKANIZATE ON STRENGTH PROPERTIES
OF RUBBERS**

The influence of milled vulkanizate on strength properties of tread type rubbers has been studied at various speeds of deformation. Constant coefficients in the equations of durability have been calculated.

Key words: rubber, vulkanizate, milling, deformation, durability

A.V. BORISOV, O.K. SHVETSOV, E.Yu. DUROSOVA, A.V. KOMIN, G.V. KATYSHEVA
**OBTAINING FEATURES AND PROPERTIES OF NITRILE-BUTADIENE RUBBERS SYNTHESIZED
WITH USING OF ANIONIC POLYMERIC SURFACTANT AS EMULSIFIERS**

Latex nitrile-butadiene rubbers (NBR) have been synthesized with use of the anionic polymeric surfactants as emulsifiers. The influence of polymeric surfactants on stability of obtained latexes of NBR has been shown. Their saltfree coagulation has been studied. The contents of polymeric surfactants in sewage has been

determined, and properties of the NBR (on example of the SKN-26AM) obtained in the presence of polymeric surfactants in comparison with industrial rubber have been estimated.

Key words: nitrile-butadiene rubber, emulsifier, latex stability

V.F. KOVTUN, V.A. KOZLOV

BASIS OF OPTIMAL CONDITIONS OF LIQUID-PHASE CATALYTIC REDUCTION OF FAT FROM WASTES OF INDUSTRIAL TREATMENT OF POULTRY

The conditions of obtaining of organic fat hydrogenizat have been found by theoretically and experimentally. Optimal parameters uncluding concentration, time and temperatures have been developed.

Key words: fat, hydrogenizat, obtaining conditions, poultry fat

V.A. TRUBCHANIN, V.P. ZHUKOV, E.V. BAROCHKIN

LOAD OPTIMUMAL DISTRIBUTION BETWEEN HEAT ENERGY CONSUMERS

The task of load optimumal distribution between heat energy consumers has been formulated, it's computational and analytical solutions have been found. Variant calculations for determination of load optimumal distribution for a number of schemes have been carried out.

Key words: heat load, optimal distribution, consumption

A.G. NAGIEV, G.I. MAMEDOV

MODELING OF NON-STATIONARY PROCESSES OF SUBSTANCE TRANSFER AND ADSORPTION IN POROUS MEDIUM BASED ON FRACTAL « MENGER SPONGE»

Models of fractal structures known as Menger's sponge have been proposed as statistical equivalent of high porous catalysts and adsorbents. Such structures allow identifying effectively the processes of diffusion, adsorption and chemical reactions onto surface which proceed in that structure. The approach connecting parameters of fractal structures with kinetic parameters of transfer process in porous media on the base of pseudo channel has been proposed. Efficiency of applicaiton of fractals concept reveals that such models allow not to simulate equilibrium phenomena in porous media only but these model are available for including it in differential equations of dynamics.

Key words: modeling, transfer process, fractal, kinetics

S.Z. KALAEVA, V.M. MAKAROV, O.P. FILLIPPOVA, A.G. BAZHANOVA, A.M. CYROVAROVA **UTILIZATION OF MAGNETIZED OIL PRODUCT AS MODIFYING ADDITION TO BITUMEN MATERIAL**

In given article results of application as modifying agents into a bitumen material of magnetized oil product obtained as a result of purification of water surface from oil product by means of magnetic liquid from ferriferous production wastes are resulted.

Key words: water purification, oil product, magnetic liquid

O.G. LYSENKO, S.S. POPOVA

INFLUENCE OF POTENTIAL OF LANTANUM CATHODIC INCORPORATION TO LEAD ON NEXT CATHODIC INCORPORATION – ANODIC DISSOLUTION OF LITHIUM

The influence of cathode pretreatment of the lead electrode in solution of salicilate lanthanum in dime-thylformamide on next the cathodic incorporation – anodic dissolution of the lithium has been studied. The supposition has been made that in the range of the $E_{K,La} = -2.4 \div 3.0$ V two different phases of the La_xPb have been formed. The pretreatment of the lead in the range of $E_{K,La} = -2,4 \div 3,0$ V has been established to provide the increase in electrode capacity in 1.5 times and above.

Key words: lead cathode, lanthanum, lithium, cathode incorporation, electro-chemistry

S.Z. KALAEVA, V.M. MAKAROV, A.G. BAZHANOVA
DETERMINATION OF FUNCTIONAL GROUPS ON MAGNETITE SURFACE

The results of study of quantitative and qualitative content of basic and acid sites on the surface of the magnetite obtained with electrochemical method in aqueous solution of sodium chloride have been presented. The benzoic acid has been used for determination of basic sites as molecular probe whereas ammonia adsorption has been used for determination of surface acidity. The absence of ammonia adsorption proved the absence of acid sites on magnetite surface.

Key words: magnetite, acid and basic sites, surface, electrochemical treatment

A.I. KHRISTOFOROV, V.V. SEMIN
INFLUENCE OF MODIFYING ADDITIVES ON MAGNETIC PROPERTIES OF MATERIALS

Results of studies on influence of modifying additives of the silicon oxide, calcium carbonate and a boric acid on magnetic properties of materials from the strontium ferrite have been presented (koercitive force). The nonlinear dependence in system "mixture composition- magnetic material properties" has been established. Extreme values of parameters have been determined.

Key words: magnetic properties, strontium ferrite, additives