

# Summaries

UDC 544.5

**Ilyin A.P., Tikhonov D.V., Nazarenko O.B.**  
**PROTECTIVE COATINGS AND THERMAL STABILITY**  
**OF ALUMINUM NANOPOWDERS OBTAINED**  
**AT ELECTRICAL WIRE EXPLOSION**

Modern stabilization methods of aluminum nanopowders have been analyzed. Properties of freshly prepared nanopowders and those 13 years later passivated by coating refractory boron compounds at conductor electrical wire explosion in gas environment were studied. It was ascertained that inorganic coatings (AlB<sub>2</sub>, AlN, BN) do not save metal aluminum at nanopowders long-term storage in normal conditions in conditionally-sealed container as well as the organic ones.

UDC 546.82:539.374.2/6:66.094.3-926-217:543.573

**Korshunov A.V., Ilyin A.P., Lotkov A.I., Ratochka I.V.,**  
**Morozova T.P., Lykova O.N.**  
**FEATURES OF SUBMICROCRYSTALLINE TITANIUM**  
**OXIDATION AT AIR HEATING**

Air oxidation process of titanium samples with submicrocrystalline structure (average size of the elements of grain-subgrain structure is 0,46 and 0,15  $\mu\text{m}$ ) obtained by plastic deformation technique has been studied. It was shown that the dissolved oxygen content in titanium increases under deformative effect conditions. It results in  $\alpha$ -phase stabilization and temperature shift of polymorphic transition  $\alpha$ -Ti $\rightarrow$  $\beta$ -Ti to higher temperature region. Nonmonotonic change of sample mass increase velocity is observed at linear air heating. It is connected with nonuniform character of grain growth and boundary migration. By the results of studying Ti oxidation kinetics in isothermal conditions in the range of 600...800 °C it was shown that the process occurs in diffusion mode owing to dense oxide layer formation on metal surface. Decreasing grain average size in the samples the active energy of oxidation process activation reduces owing to increase of metal diffusion penetration. TiO<sub>2</sub>-rutile is the main crystalline phase formed at Ti oxidation in the given temperature range regardless of metal structure.

UDC 546.82:539.374.2/6:546.226-325:544.653:620.193.41

**Bozhko P.V., Korshunov A.V., Ilyin A.P., Lotkov A.I.,**  
**Ratochka I.V.**  
**ELECTROCHEMICAL BEHAVIOR OF PLASTICALLY DEFORMED**  
**TITANIUM IN SULFURIC ACID SOLUTIONS**

Electrochemical behavior of large-grained (average grain size is 15  $\mu\text{m}$ ) and submicrocrystalline titanium (average size of the elements of grain-subgrain structure is 0,15 and 0,46  $\mu\text{m}$ ) in 1..5 M H<sub>2</sub>SO<sub>4</sub> solutions has been studied. Significant differences in velocity ratio of anode and cathode processes as well as potential values of titanium transition into passive state depending on its structure and oxide layer composition were shown. The influence of Ti structure on its hydrogenation level and the type of sample corrosive attack in H<sub>2</sub>SO<sub>4</sub> was shown. The explanation of Ti behavior differences considering the increase of the content of oxygen dissolved in metal during severe

plastic deformation while forming submicrocrystalline structure was proposed.

UDC 544.723

**Mitkina V.A., Yurmazova T.A., Galanov A.I.**  
**DETERMINING ADSORPTION THERMODYNAMIC**  
**PARAMETERS ON NANOSIZE CARBON-IRON SORBENT**

Isotherms of doxorubicine adsorption on nanosize carbon-iron sorbent in temperature range 18..60 °C have been obtained; kinetic ( $E_s=29$  kJ/mole) and thermodynamic parameters of adsorption ( $\Delta H^{\circ}=26,6$  kJ/mole,  $\Delta S^{\circ}=182,5$  J/(K·mole)) have been determined. The dependences of surface electrokinetic potential on doxorubicine concentration were obtained for specifying interaction mechanism.

UDC 628.16.081:549.67

**Nazarenko O.B., Zarubina R.F., Veysgeym A.S.**  
**APPLYING SAKHAPTINSKY ZEOLITE FOR**  
**IMPROVING DRINKING WATER QUALITY**

Physicochemical properties of natural zeolite of Sakhaptinskoe deposit in Krasnoyarsk Territory and possibility of its use for improving drinking water quality in dynamic conditions have been studied. The efficiency of well water purification in Kozhevnikovskiy district of Tomsk region amounted to Fe<sub>gen</sub> – 96...100 %, Ca<sup>2+</sup> – 62,9...100 % depending on impurity original concentration.

UDC 537.52;54.058

**Khaskelberg M.B., Shiyan L.N., Kornev Ya.I.,**  
**Galanov A.I., Titova N.A., Devyanin D.S.**  
**THE INCREASE OF THE EFFICIENCY OF PETROLEUM**  
**PRODUCT REMOVAL FROM WASTE WATERS**

Complex method for water purification from petroleum product has been proposed. It consists in oxidation processes activation on interface «gas-liquid» under the influence of pulsed electric discharge; the filtration stage on grain natural loads or sorbents follows this. The technique allows decreasing petroleum product content in water from 2 to 0,07 mg/l; it approximates to quality standards for waters wasted to the basins of commercial fishing purpose.

UDC 628.336.3:667.622.117.225

**Usova N.T., Kutugin V.A., Lotov V.A., Lukashevich O.D.**  
**COMPOSITE MATERIALS ON BASIS**  
**OF HIGH-IRON SLUDGE OF WATER RECLAMATION**

Chemical and mineralogical compositions of sludge formed at filter washing at water reclamation plant of Tomsk water intake have been studied. The method of obtaining pigment from high-iron sludge was developed and tested experimentally. The opportunity of using the obtained pigment in manufacturing composition building materials was shown. Combination of water purification with waste use makes prerequisites for developing wasteless technologies in water reclamation.

UDC 666.016.2

**Usova Z.Yu., Pogrebenkov V.M.  
CaO INFLUENCE ON SYNTHESIS AND MICROSTRUCTURE  
OF CERAMICS ON ALUMINUM BORATE BASIS**

Aluminum borate on basis of natural raw materials has been synthesized; CaO additive influence on material structure and properties has been studied. It was ascertained that CaO introduction into original raw mix composition stimulates needle crystals formation and increase of aluminum borate phase output as well as the material density decrease. It was shown that two-stage burning allows increasing strength of the samples with CaO additive retaining low density.

UDC 544.774.2

**Borilo L.P., Petrovskaya T.S., Lyutova E.S., Spivakova L.N.  
SYNTHESIS AND PHYSICOCHEMICAL PROPERTIES  
OF THIN-FILM AND DISPERSE FUNCTIONAL  
SILICOPHOSPHATE MATERIALS**

Silicophosphate films and disperse materials on basis of  $\text{SiO}_2\text{-P}_2\text{O}_5\text{-CaO}$  system have been synthesized from film-forming solutions by sol-gel method. The principle physicochemical processes occurring in film-forming solutions as well as the processes at oxide film formation after covering film-forming solutions on substrates and temperature effects were studied. Phase composition and physicochemical properties of the obtained materials were determined.

UDC 666.973.6.572

**Dolotova R.G., Vereshchagin V.I., Smirenskaya V.N.  
PROCESSES OF PHASE FORMATION AND FORMATION  
OF POROUS STRUCTURE OF GAS CONCRETE ON BASIS  
OF PORTLAND CEMENT USING FELDSPAR-SILICA SAND  
AND ASBESTOS FIBERS**

Processes of phase-formation, the structure of pore space and inter-pore partitions of non-autoclave gas concrete with density of  $500 \text{ kg/m}^3$  on basis of Portland cement have been studied using siliceous filler of feldspar-silica sand and asbestos fibers. The conditions of forming the uniform porous structure of gas concrete and generating low-base calcium hydrosilicates in fine-dispersed state with crystal habit in the form of needles and fibers were considered.

UDC 666.1.022.8

**Kazmina O.V., Kuznetsova N.A.,  
Vereshchagin V.I., Kazmin V.P.  
OBTAINING FOAM GLASS MATERIALS ON BASIS  
OF ASH-AND-SLAG WASTES OF THERMAL  
POWER STATIONS**

The possibility in principle of using ash-and-slag wastes of burning coals at Tomsk GRES for obtaining foam glass materials by low-temperature synthesis of quenched cullet has been shown. The compositions of original batches and modes of their thermal treatment were determined. The results of investigations of the material oxidation-reduction characteristics were introduced. It was shown that the obtained foam glass material has high strength characteristics in comparison with that one on basis of broken glass.

UDC 661.865.7:661.482

**Sofronov V.L., Buinovskiy A.S., Makaseev Yu.N.,  
Makaseev A.Yu., Dogaev V.V., Lebedev V.A.  
PROCESSING FLUORIDE SLAGS OF MANUFACTURING  
Nd-Fe-B MAGNETIC ALLOYS AND REM-Fe  
ADDITION ALLOYS**

The possibility of using the wastes of manufacturing Nd-Fe-B magnetic alloys and REM-Fe addition alloys as the original raw material for producing water-free hydrogen fluoride has been considered. The results of studying the interaction of magnetic manufacture fluoride slag with hydrofluoric acid solutions were given. It was ascertained that external diffusion is fluorination limiting stage. Slag fluorination level dependences on temperature, process behavior time and hydrofluoric acid concentration were determined.

UDC 64.066+661.487

**Boyko S.V., Kladiyev S.N., Kolodnikov I.A.  
CALCULATION OF EQUIPMENT RELIABILITY  
IN MANUFACTURING WATERLESS FLUORIC HYDROGEN**

The equipment reliability in manufacturing waterless fluoric hydrogen has been calculated. It was shown that firing house is a weak link in production string of manufacturing waterless fluoric hydrogen. The references on measures increasing the processing reliability were given.

UDC 546.46;546.281;546.28-121

**Grineva O.V., Kantaev I.S., Kiselev A.D., Kraydenko R.I.  
AMMONIUM CHLORIDE SEPARATION OF MAGNESIUM  
AND SILICON OXIDES OBTAINED BY THE METHOD  
OF SILICON DIOXIDE AGNESIUM THERMY**

The interaction process of ammonium chloride with magnesium oxide in temperature range  $20\text{...}600 \text{ }^\circ\text{C}$  has been studied by the methods of kinetic studies and thermogravimetry. The reaction products were identified by the method of infrared spectroscopy and X-ray phase analysis. It was ascertained that magnesium chloride is formed in the course of reaction through the stage of ammonium chloromagnat decomposition.

UDC 543.063

**Slepchenko G.B., Pikula N.P., Zakharova E.A.,  
Pichugina V.M., Filichkina O.G., Cherempey E.G.,  
Shchukina T.I., Dubova N.M.  
APPLICATION OF VOLTAMMETRIC METHODS  
FOR CONTROLLING BIOLOGICAL  
OBJECTS MICROELEMENT CONTENT**

The possibilities of applying voltammetric methods for controlling biological objects basic microelement content have been considered on basis of scientific sources. The results of voltammetric conditions development research of multielement determination of Zn, Cd, Pb, Cu, Mn, Fe, Ni, Hg, As, U, Se, I were given. The algorithm of preliminary biomaterial probes pretreatment was proposed. Voltammetric methods for controlling blood, urine, hair, mother's milk and cancer cell strains microelement content were developed and metrologically certified.

UDC 543.257:546.24:556.314.6

**Kambalina M.G., Pikula N.P.  
IMPROVING THE TECHNIQUE FOR MEASURING BORON  
CONTENT IN NATURAL WATERS BY IONOMETRICAL  
TITRATION**

The upgrade technique for determining boron content by pH-metric titration with a stage of additional concentration has been proposed. In this case a lower boundary of boron determination range in natural ground and surface waters is reduced from 0,2 to 0,02  $\text{mg/dm}^3$ .

UDC 547.567:[543.552+543.554.2]:544.654.076.324.4:547

**Gavrilova M.A., Slepchenko G.B., Mikheeva E.V.  
pH-ENVIRONMENT INFLUENCE ON ELECTRO-OXIDATION  
OF DIHYDROXYBENZENE ON MODIFIED GLASS-CARBON  
ELECTRODE**

Electrochemical oxidation of hydroquinone and pyrocatechin on glass-carbon and organo-modified electrode depending on pH base electrolyte has been studied by differential voltammetry method. The efficient constants of dissociation of hydroquinone and pyrocatechin various forms were calculated.

UDC 543.253

**Chemezova K.S., Khlynova N.M., Serov V.V.  
THEORETICAL TREATMENT OF INITIAL STAGES  
OF ANODIC FILM FORMATION ON METAL ELECTRODE**

The process of forming new phase on the boundary electrode-solution has been discussed. The results of mathematical simulation of anodic film electro-sedimentation process for the case of simultaneous forma-

tion of two forms of sediment: monolayer film and three-dimensional phase film of slightly soluble compound on electrode surface were given.

UDC 620.193.004.2

**Khizhnyakov V.I., Kudashkin Yu.A.,  
Khizhnyakov M.V., Zhilin A.V.  
CORROSION CRACKING OF STRESSED-DEFORMED  
PIPELINES AT OIL AND GAS TRANSPORTATION**

Corrosion remaining velocity and intensity of electrolytic hydrogenation of pipe steel 17GS in through defects and under spalled isolation at various values of dimensionless criterion: the oxygen excess degree of cathodic protection current density over limiting current density, have been experimentally determined. It was shown that at oxygen excess of cathodic protection current density over limiting current density in 10...100 and more times the sample attitude position relative to pipeline of major diameter (at upper, lateral and lower generator) does not influence greatly on the degree of corrosion suppression. The corrosion remaining velocity regardless of attitude position is suppressed to the values 0,005...0,007 mm/year. The amount of steel occluded hydrogen at the same values of dimensionless criterion is maximum at lower generator (under the pipe). The amount exceeds it at upper and lateral generators in 1,5...2 times that conditions the formation of stress-corrosion cracks under the spalled isolation, mainly at lower generator of stressed-deformed pipelines of major diameter.

UDC 66.048.3

**Samborskaya M.A., Kravtsov A.V., Mityanina O.E.  
THE FORMATION OF MATHEMATICAL MODEL  
AND INVESTIGATION OF STEADY STATE MULTIPLICITIES  
OF REACTIVE-DISTILLATION PROCESS**

The approach to formation of equilibrium mathematical model of methyl-tret-butyl ether synthesis in reactive distillation column has been shown. The steady state multiplicity of the process was analyzed; the areas of unique steady state were determined and practical recommendations on the unit maintenance were given.

UDC 665.64.097.38

**Ivanov S.Yu., Zanin I.K., Ivashkina E.N.,  
Ivanchina E.D., Kravtsov A.V.  
SIMULATING THE REGENERATION OF PT-CATALYSTS OF GASOLINE REFORMING AND HIGH PARAFFIN DEHYDROGENATION**

The issues of simulating regeneration of platinum catalysts on basis of experimental data of operating facilities have been considered. Mathematical model adequacy to experimental data obtained by the method of derivatographic analysis was shown. The fulfilled calculations showed the possibility of computing the regeneration of catalysts of gasoline reforming and higher paraffin dehydrogenation.

UDC 66.011

**Romanovski R.V., Ivashkina E.N., Dolganov I.M.,  
Ivanchina E.D., Kravtsov A.V., Frantsina E.V.  
STUDYING THE KINETIC LAWS OF HIGH PARAFFIN  
DEHYDROGENATION ON Pt CATALYSTS  
BY THE EXPERIMENT AND CALCULATION COMBINATION**

The method of quantitative estimation of activity, selectivity and stability of Pt-catalysts of high paraffin dehydrogenation has been proposed. The industrial experiments results in a wide range of changing the process conditions and hydrocarbon composition of the processed raw materials were used. The influence of chemical composition and structural characteristics of the catalyst samples on their kinetic properties was shown.

UDC 665.64

**Ivanchina E.D., Deriglazov V.V., Zanin I.K.  
THE INCREASE OF TECHNO-ECONOMIC EFFICIENCY OF CATALYTIC REFORMING USING COMPUTER SIMULATING SYSTEM**

Techno-economic efficiency of applying the computer simulating system in upgrading the operating conditions of production unit of gasoline catalytic reforming LCh-35-11/1000 has been shown. Software product

«Control system of catalyst operation» was used for monitoring catalytic reforming. It was shown that optimal activity operation allows increasing the end product output at process cost level constancy as well as obtaining the assessment of operation condition of Pt-Re catalyst surface.

UDC 66.01;004.422.8

**Dolganova I.O., Ivashkina E.N., Ivanchina E.D.  
MATHEMATICAL MODELING IN PROBLEMS  
OF INCREASING THE EFFICIENCY OF LINEAR  
ALKYLBENZENE MANUFACTURING UNIT OPERATION**

The computer modeling system for benzene alkylation by higher olefins has been developed. The algorithm for searching optimal process variables using the developed software product was proposed. The possibility of applying the mathematical simulation methods to solving the optimization problems of interrelated processes of catalyst alkylation and regeneration was shown.

UDC 665.63:665.637.64:544.47:544.344

**Murzagaleev T.M., Vosmerikov A.V., Golovko A.K.  
TRANSFORMATION OF HEAVY HYDROCARBON RAW  
MATERIAL WITH ZEOLITE CATALYSTS  
OF VARIOUS STRUCTURAL TYPES**

Heavy oil cracking with and without zeolite of structural types – ZSM-5, mordenite,  $\gamma$ ,  $\beta$  – in active hydrogen form has been studied. The process was carried out at 450 °C, pressure 0,5...0,7 MPa and reaction duration 60 and 120 min. It was determined that the highest output of distillate fractions boiled away to 350 °C is observed at cracking oil with 7 % HY zeolite during 60 min. The data of elemental, type and material composition of the products of thermal and catalytic cracking of heavy oil were obtained and discussed.

UDC 665.66

**Krivtsova K.B., Krivtsov E.B., Golovko A.V.  
SULFUR COMPOUND REMOVAL OUT OF DIESEL FRACTION  
BY OXIDATION AND EXTRACTION**

The results of oxidative desulfurization (combination of oxidation with after-extraction) of straight-run diesel fraction with high original sulfur content have been introduced. Typical changes of the obtained products group composition were shown. The laws of changing individual composition of sulfur compounds and various hydrocarbons occurring at sample oxidation and after-extraction refining of the obtained product were determined.

UDC 665.613

**Chuiкина D.I., Serebrennikova O.V.,  
Stasyeva L.A., Asevedo Forero R.  
STUDYING THE INFLUENCE OF OIL-DISPLACING  
COMPOSITIONS ON STRUCTURE AND PROPERTIES  
OF HEAVY-PARAFFIN OILS**

The influence of oil-displacing compositions NINKA, containing various surface-active substances, on structure and physicochemical properties of heavy-paraffin oils of Festivalnoe and Mayskoe deposits (Tomsk region) at thermostating at 125 °C in laboratory environment has been studied. It was shown that composition oil action influenced the content of oils, gummy-asphaltene substances, nitrogen and resulted in a change of oil aromaticity.

UDC 665.77:665.64:665.6-404:(543.54+543.51)

**Antipenko V.R.  
OIL FRACTION COMPOSITION IN THE PRODUCTS  
OF NON-ISOTHERMAL AQUATHERMOLYSIS  
OF HIGH-SULFUR NATURAL ASPHALTITE**

The information on composition and relative content of alkanes, alkenes, steranes and pregnanes, hopanes and heilantanes, mono-, bi-, tri- and tetracyclic aromatic hydrocarbons, bi-, tri- and tetracyclic sulfur-containing aromatic compounds in the oils of aquathermolysis products of high-sulfur natural asphaltite in a flow reactor in the temperature range 200...575 °C has been obtained by the method of chromatography mass-spectrometry.

UDC 665.6-405:543.57:(543.54+543.51)

**Antipenko V.R., Grinko A.A., Melenevsky V.N.**  
**COMPARATIVE CHARACTERISTIC OF FLASH PYROLYSIS**  
**PRODUCT COMPOSITION IN RESIN AND ASPHALTENE**  
**FRACTIONS OF USINSKAIYA PETROLEUM**

Close-cut fractions of resins and asphaltenes of Usinskoe deposit oil (Komi Republic), obtained by asphaltene fractional precipitation and resin chromatographic separation, have been characterized by the methods of pyrolytic analysis in the variant «Rock Eval» and flash pyrolysis (650 °C, 20 s) with chromatography mass-spectrometric analysis of volatile products in «on line» mode. It was shown that the examined samples contain from 2,3 to 15,3 mas. % of low-molecular organic compounds. The products of flash pyrolysis of the examined samples differ in relative content of such types of compounds as normal and isoprenoid alkanes,  $\alpha$ -olefins, cyclohexanes, heilantanes and hopanes, hopenes, pregnanes and steranes, alkyl benzenes, naphthalenes, phenanthrenes and anthracenes, benzo- and dibenzothio-phenes as well as unidentified coke-forming fragments.

UDC 547-31/-31.543.57(543.54+543.51)

**Cheshkova T.V., Sagachenko T.A.,**  
**Bushnev D.A., Burdelnaya N.S.**  
**CHANGING THE COMPOSITION OF OXYGEN-ORGANIC**  
**COMPOUNDS AT THERMAL AGEING OF RECENT SEDIMENT**

Distribution and composition of oxygen-containing components in free and bound lipids of the recent sediment of continental type and products of their thermal transformation in temperature range 150...250 °C have been studied. It was shown that in the original lipids oxygen compounds are represented by aliphatic ethers, acids and alcohols. Thermolysis is conducted by the decrease of a part of aliphatic compounds and occurrence of naphthenic and aromatic structures. Both compounds attending in oils and the compounds having the structure close to the oil ones were identified in oxygen compounds of the products of sediment thermal transformation.

UDC 678:532:7:621.317.33

**Dmitrieva Z.T.**  
**STUDYING COMPLEXING IN THE SOLUTION OF B, Al**  
**AND Li ALKOXIDES BY <sup>1</sup>H NMR SPECTROSCOPY METHOD**

Complexing of B, Al and Li alkoxides in CCl<sub>4</sub> and C<sub>6</sub>H<sub>12</sub>-D<sub>2</sub> solutions at different mole ratios in temperature range from 80 to 355 K has been studied by <sup>1</sup>H NMR spectroscopy method. After interaction of B and Al alkoxides in the solution at mole ratios 1:1, 1:3 and 3:1 the equilibrium mixture of complexes of two types, containing B and Al atoms as a cation, is formed. The alkoxide mixture heating in solution to 340 K stimulates mainly the formation of B[Al(OR)<sub>4</sub>].

UDC 547.539.04

**Hay Min Nguen, Chaikovsky V.K., Funk A.A.**  
**CHROMATOGRAPHY-MASS SPECTROMETRIC**  
**INVESTIGATION OF COMPOSITION OF THE REACTION**  
**PRODUCTS OF 1,3,5-TRI-*TERT*-BUTYLBENZENE WITH**  
**2,4,6,8-TETRABROM-2,4,6,8-TETRAAZABICYCLO-**  
**[3.3.0]OCTANE-3,7-DION**

It was shown that at interaction of 1,3,5-tri-*tert*-butylbenzene with 2,4,6,8-tetrabrom-2,4,6,8-tetraazabicyclo[3.3.0]octane-3,7-dion in acetic and trifluoroacetic acids the processes of *ipso*-substitution of *tert*-butyl groups, diarylation and hydroxylation of the original substrate occur along with the formation of electrophilic bromination products.

UDC 541.64:547.759.32

**Ionova E.I., Lyapkov A.A., Bondaletov V.G., Karmanova O.I.**  
**THE LAWS OF VINYLTOLUENE OLIGOMERIZATION UNDER**  
**THE ACTION OF CATALYSTS ON BASIS OF TITANIUM**  
**TETRACHLORIDE**

The laws of vinyltoluene oligomerization under the action of catalysts on basis of titanium tetrachloride in toluene solution have been studied using adiabatic reactor. The efficient values of the rate constant for the chain growth both at pure titanium tetrachloride and at its complex with diethylaluminium chloride of the composition 1:1 were calculated. It was shown that the presence of slower stage stimulates S-type kind of kinetic curves. During this stage the active center concentration may increase to steady state.

UDC 541.64:547.759.32

**Sutyagin V.M., Shepel O.M., Lyapkov A.A.**  
**THERMODYNAMIC AND KINETIC ASPECTS OF RADICAL**  
**POLYMERIZATION OF N-DIPHENYLACRYLAMIDE**  
**IN SOLUTION**

The kinetics of radical polymerization of N-diphenylacrylamide in temperature range from 66 to 80 °C with dinitrile azo-*bis*-isobutyric acid has been studied by thermometric and gravimetric methods. The orders of reaction velocity by monomer and initiator, polymerization activation energy and system enthalpy were determined. The correlation between the reaction rate constant and solvent dielectric constant were ascertained.

UDC 541.64

**Bondaletov V.G., Bondaletova L.I., Varakina Yu.B.**  
**STUDYING OIL-RESIN COMPOSITIONS INCLUDING**  
**PETROLEUM RESINS MODIFIED WITH VINYL BUTYL ESTER**

Oil-resin compositions have been obtained at room temperature mixing petroleum resins modified with vinyl butyl ester and oxidized sunflower oil. It was shown that the use of modified resins in oil-resin compositions allows saving to 60 % of oxidized sunflower oil preserving properties.

UDC 678.743.2

**Trubchenko A.A., Meshcheryakov E.P.,**  
**Koval E.O., Mayer E.A.**  
**SYNTHESIS OF PROPYLENE-ETHYLENE BLOCK**  
**COPOLYMER ON A CATALYTIC SYSTEM**  
**OF THE IV GENERATION IN SUSPENSION**

The results of experimental estimate of propylene-ethylene block copolymer on titanium-magnesium catalyst in respect to process flowsheet of polypropylene manufacturing have been introduced. The conditions of synthesis and properties of the produced polymers were given. The possibility in principle of manufacturing was shown.

UDC 547(09)

**Chaikovsky V.K.**  
**THE DEPARTMENT OF BIOTECHNOLOGY**  
**AND ORGANIC CHEMISTRY OF TPU IS 110.**  
**THE HISTORY OF ESTABLISHMENT AND DEVELOPMENT**

The establishment and development of one of the oldest departments at Tomsk polytechnic university, its reformation, scientific and education schools formation have been shown. The most significant success of the department professors and graduates was introduced.