CONTENTS, ABSTRACTS AND KEYWORDS OF PAPERS

METHODOLOGICAL APPROACHES TO THE DEVELOPMENT AND QUALITY ASSESSMENT OF NEW DRINKS OF THE GROUP OF DISTILLATES. PART 1. FORMULATION OF THE NEW DRINK

E.Ju. Egorova, Ju.V. Morozhenko

The article is devoted formulation to the technology of new drink based on water-alcohol extracts of pine nut, chamomile flowers and herbs of Hypericum perforatum. According to the results of experimental studies determined the main technological parameters of obtaining the extracts; determined the best mixture of the obtained extracts. It is shown that the studied water-alcohol extracts can be used for directional changes "bouquet" of the alcoholic beverages.

Keywords: liqueurs and spirits products, technology, extracts of plant materials, Pinus sibirica nuts, Chamomílla recutita Rauschert, Hypéricum perforatum, bitters.

SPONGE METHOD OF DOUGH MAKING IN THE PRODUCTION OF MIXED CROP BUNS

A.S. Zakharova

The paper studies the influence of crop mixture in the production of buns using the sponge method of dough making. It has been observed that it is feasible to add up to 7 % of crop mixtures instead of straight white wheat flour in the dough or predough.

Keywords: buns, crops, quality, dough, millet, crushed grain, rice.

CRYOPRESERVATION OF A BACTERIAL CONCENTRATE OF TECHNOLOGY SYMBIOTIC STARTERS FOR BAKERY PRODUCTION

I.V. Boyarineva, I.S. Khamagaeva, A.S. Stoliarova, Y.G. Kaluzhskih

Optimal parameters of culturing microorganisms ferment combined to ensure the maximum yield of biomass in the production of liquid bacterial concentrate. Matched protective environment, including distilled water, sodium citrate trisodium and sucrose, which helps to maximize the preservation of cells during freezing and storage. It is shown that cryopreservation significantly prolong the storage time of a bacterial concentrate.

Keywords: leaven, the leaven of the concentrate symbiotic consortium, a breeding ground biomass.

THE USE OF CHEESE WHEY FOR PRODUCTION OF VITAMIN DRINKS AS A FACTOR ENHANCE THE COMPETITIVENESS OF ENTERPRISES

V.A. Krieger, Yu.G. Sturova

Effective organization of most complete milk processing, introduction of waste less technologies, optimization of production, today it is the main task of cheese-making enterprises. The introduction of the manufacture technology of whey processing is one of the leading, highly profitable segments of business Economics. Expanding the range of drinks from whey is carried out by introducing in their composition components of plant origin that allows us to supplement organic complex compounds of whey and forming the original organoleptic characteristics of the product.

Key words: production, cheese whey, vitamin drinks, cheese-making enterprises competitiveness.

RESEARCH COMMODITY RESEARCH ESTIMATES HONEY FILLINGS FOR CONFECTIONERY PRODUCTS

E.V. Pisareva

The conducted study aimed at the description of the profiles of organoleptic and structural-mechanical and technological parameters of the honey and honey nut toppings on the basis of natural honey and cream honey. The studies identified assessment profile, necessary for a detailed consideration in conducting commodity research estimates toppings on the basis of natural honey.

Keywords: natural honey, honey filling, honey nut fillings, confectionery, evaluation.

LIGHT WATER (DEITERIUM-DEPLETED WATER) IN KAZAKHSTAN

S.M. Sergazina, G.A. Loskutova, Z.B. Zhakupova, E.A. Pyatov, O.V. Koltugina

There have been studies of water sources used for drinking bottled water, the content of deuterium and investigated the effect of «light water» in the growth and development of plants in comparison with normal tap water and water from the well. It determined that the content of deuterium in water from wells № 2-B field «Kuskol» is 133 ppm.

Keywords: deuterium, «light water», the isotopes, the region, the «heavy water», oxygen, hydrogen.

THE RELEVANCE OF THE USE OF FLAX FLOUR AND MIXTURES OF CEREALS IN THE PRODUCTION OF BAKERY PRODUCTS

A.S. Zakharova, S.I. Koneva

The article is devoted to the study of the composition of the composite blends of wheat flour, linseed meal and mixtures of cereals and their use in the production of bakery products. According to the results of experimental studies of defined formulations of bakery products from a mixture of cereals and Flax flour, set the main parameters of technological process. It is shown that the active components of Flax flour and mixtures of cereals can be used for directional changes of taste, aroma and appearance of products to enrich and expand the range of products.

Keywords: linseed meal, rice grits, buckwheat, oatmeal, millet, recipe.

FEATURES OF USING BY-PRODUCTS OF FLAX IN BAKERY PRODUCTS PRODUCTION

S.I. Koneva

This article discusses the possibility of using Flaxseed meal and flax seeds in the production of bakery products. Theoretically and experimentally investigated the combined effects of products of processing of flax seed for protein and carbohydrate complexes of wheat and rye flour. Defined by the recipes of bakery products and main modes of the technological process. It is shown that the active substances of flax seed is dietary fiber, unsaturated fatty acids and lignans – can be used for directed increase of food value of bakery products.

Keywords: flax flour, flax seeds, bakery products, carbohydrate-amylase complex, protein-proteinase complex nutritional value.

INVESTIQATION OF ORGANOLEPTIC CHARACTERISTICS OF MEAT QUENELLE WHEN MAKING SPROUTED LEGUMES

M.A. Vaytanis, Z.R. Khodyreva

The analysis of the range of meat chopped semi-finished products and the structure of the used raw meat. Developed recipes quenelle meat elk meat, poultry, and beef liver. The evaluation of organoleptic characteristics of meat quenelle with the addition of sprouted legumes. The optimal amount of making minced meat of sprouted legumes.

Keywords: sensory characteristics, meat dumplings, deer meat, chicken meat, beef liver, ground beef, sprouted legumes, lentils, chickpeas.

RESEARCH OF CONSUMER PROPERTIES FROZEN DESSERTS

Z.R. Khodyreva, M.P. Shchetinin, M.A. Vaitonis, N.A. Neverova

Presents an analysis of the market for the production of ice cream and frozen desserts. Of considered the possibility of using honeysuckle and apples in the manufacture of a frozen dessert. Studied consumer properties sorbets using different stabilization congestion.

Keywords: frozen dessert, sorbet, honeysuckle, stabilizer, agar, pectin.

GLUTEN-FREE BREAD WITH FLOUR FROM THE SEEDS THISTLE

E.O. Zhuravleva, O.O. Pasko, L.A. Kozubaeva

It analyzes the market gluten-free flour-based products from of milk thistle seeds. The compounding based on a mixture of flour and rice flour thistle seed in the production of gluten-free bread. The results of the study, the impact of flour from the seeds of milk thistle on the nutritional value of gluten-free bread.

Keywords: celiac disease, gluten-free products, rice flour, thistle, food and energy value.

USING OF THE GLUTEN FOR IMPROVE OF BAKING WHEAT FLOUR QUALITY WITH REDUCED AMOUNT OF GLUTEN

G.A. Loskutova, I.M. Dubinets, O.V. Koltyugina, M.M. Zhakupov

Some indicators of quality of Kazakhstan wheat breeding were investigated. Their features related with weather conditions were identified. The factors affecting the change in the quality indicators of gluten and its rheological properties were established. Using dry wheat gluten to eliminate the negative effects was proposed. This will improve the elastic and plastic properties of the flour with low amount of gluten.

Keywords: wheat, rheological properties, gluten, baking benefits.

IMPROVEMENT OF TECHNOLOGICAL PROCESSES THE MANUFACTURE OF PARTS USING THE METHOD FUNCTIONAL COST ANALYSIS

E.Y. Tatarkin, A.M. Ikonnikov, R.V. Grebenkov, S.S. Prosekov

The methodology of improvement of technological methods of manufacturing parts based on the common methodology of value analysis and search the design used in the solution of practical problems in terms of production of the factory of the fuel equipment MA «Barnaultransmash». Provided analysis and recommendations on the improvement of technological processes of parts fuel injection equipment (nozzle body, a housing of a slit filter slit filter). The nomenclature of parts is determined on the basis of the increased requirements for accuracy, as well as a large issuance programme, the high cost and the complexity of their manufacture.

Keywords: cost-benefit analysis, magnetic-abrasive machining, technological process, technological recommendations, fuel equipment.

THE METHOD OF QUALITY EXPLOITATION RUN OF FRICTION WEDGE

A.V. Gabets

The exploitation stage of service life the three-piece friction wedge 18–100 were connected with its heavy duty details. One of them is friction wedge of oscillation suppression unit. Improvement in quality of properties can be obtained in updating of work material, whereof it made. Solution to this problem requires the definition of serface damage of friction wedge. We offer the method of friction wedge comparative valuation, which were made by different work materials.

Keywords: oscillation suppression unit, friction wedge, serface damage of friction wedge.

DESIGN FEATURES OF TECHNOLOGICAL ADJUSTMENT IN ROTATIONAL MILLING

V.A. Khomenko, S.L. Leonov, A.O. Cherdantsev, P.O. Cherdantsev, V.N. Nekrasov, A.V. Dybaylo

Proposed principles for the design of technological adjustment in rotary milling. The described algorithm allows a rational way to assign parameters to rotary processing.

Keywords: rotational milling, mill turning, imitation simulation, cutting, accuracy, surface quality, cutting process.

RESEARCH FORMATION PROCESSES OF SURFACE FINISH WHEN TURNING

V.N. Nekrasov, A.O. Cherdantsev, P.O. Cherdantsev

The approach of modeling microprofile when turning, depending on the process technology factors, forming systematic and random geometric parameters of the cut surface.

Keywords: turning cut, stochastic modeling, roughness, submicroroughness, surface quality.

THERMOELECTRIC SYSTEM FOR SHORT-TERM STORAGE AND TRANSPORTATION OF BIOLOGICAL MATERIALS

T.A. Ismailov, I.Sh. Mispakhov, O.V. Yevdulov, D.V. Yevdulov

Describes the design of a prototype thermoelectric system for short-term storage and transport of biological substances implemented on the basis of cascading relevant consume of the battery. Feature of the system is the possibility of simultaneous short-term storage and transportation of multiple types of biological objects that have different storage temperatures. The dependence of temperature change in control points of the system time at various values of supply currents of TEB, types of fillers compartments with biological material, temperature the environment. Established that the required storage temperature of biological material can be used in standard thermoelectric modules. Thus, it is appropriate to fill the space of the storage compartment of the biological sub-station of high thermal conductivity filler.

Keywords: thermoelectric system, biological material, short-term storage and transportation, prototype, experimental research, measurement.

INSTRUMENTS FOR INCREASE OF RELIABILITY OF VERTICAL ECHELONMENT OF AIR SHIPS BY MEANS OF THE SURFACE STATION OF AUTOMATIC DEPENDENT SUPERVISION OF VOICE TYPE (IADS-B)

B.V. Lebedev, E.V. Yurckevich, N.I. Romancheva, A.N. Stratienko, V.V. Solomentzev

The mechanisms of application of surface equipment of automatic dependent supervision of type (IADS-B) are described in monitoring of air space of vertical echelonment of air ships software in space of RVSM. As factors influencing on the parameters of flying descriptions of air ships (AS), descriptions of height-indicator and navigation facilities, necessary for passing of Russian Federation to space of RVSM, are considered. The article describes the possibility of using ground equipment of automatic dependent surveillance broadcast type (IADS-B) in a software implementation, the development of a method for monitoring the air space of the vertical separation between aircraft in RVSM airspace. The method takes into account the factors influencing the parameters of the flight characteristics of the sun, such as the characteristics of the altimeter and navigation aids in the transition of Russia in the space of RVSM.

Keywords: method for monitoring, vertical separation, aero navigation, lADS-B.

DETERMINING THE STATE OF A TECHNICAL OBJECT ON THE BASED PROBABILISTIC METHOD

G.V. Sukhankin

The article describes methods of determining the condition of a technical object on the basis of Bayes. Consider the specific example of diagnosing electrical devices.

Keywords: diagnosis, diagnostic symptom, the Bayesian method, the prior probability.

CALCULATION OF AXIAL ABERRATIONS OF VOLUME HOLOGRAPHIC OPTICAL ELEMENT BY THE INTERFERENCE METHOD AND THE METHOD OF CHARACTERISTIC FUNCTION

Yu.Ts. Batomunkuev, A.A. Dianova

Results of calculations of the transverse axial aberrations of volume holographic optical element (HOE) for the interference method and the method of characteristic function are presented. Both methods allow to investigate numerically the dependence of radius of transverse aberrations from the distance between the HOE and the image plane. Comparison is made of the results of calculations by the interference method and the method of characteristic function. It is shown that there exists a range of values of distances between HOE and image plane in which the interference method and the method of characteristic function are applicable.

Keywords: holographic optical element, the interference method, the method characteristic function.

METHOD OF STUDYING THE STRUCTURE OF SPRAY OF EJECTION NOZZLE

V.A. Arkhipov, A.L. Astakhov, S.A. Basalaev, S.Ye. Orlov, A.S. Usanina, E.V. Muravlev

Method and experimental set up for determining the spatial concentration distribution of droplets in the spray jet ejection nozzles using the method of spectral transparency are considered. The method is based on measuring the spectral transmittance at a laser scanning along chords of the spray jet in a given cross section with the subsequent solution of the corresponding inverse problem (Abel equation).

Keywords: ejection nozzle, spray pattern, droplets concentration, a scanning device, spray jet structure, laser, optical system.

OPTIMIZATION OF A SOLID PROPELLANT GRAIN OF THE HYBRID PROPULSION SYSTEM

V.A. Arkhipov, S.S. Bondarchuk, A.S. Zhukov, N.N. Zolotorev

Method for increasing the energy tractive characteristics of hybrid propulsion system by means of optimization of the solid propellant grain is considered. It has been shown that the introduction of additional oxidizing component with the specified grain length distribution in the composition of the solid fuel ensures uniformity and high combustion completeness of solid fuel and, consequently, high values of density propulsive burn.

Keywords: hybrid rocket engine, solid propellant grain, additional oxidizing component, combustion completeness, density propulsive burn.

INFORMATION-MEASURING SYSTEM OF THE PERSON IDENTIFICATION ALGORITHMS FOR IRIS

N.N. Minakova, I.V. Petrov

The article presents an approach to the development of biometric systems, using tools of computer modeling. Iris recognition biometrics model has been developed based on of existing methods. Measured performance of biometric system. The developed model was tested on a test database of pictures of the iris. The results of the selection the most optimal parameters of the localization algorithm have been presented.

Keywords: biometrics, iris recognition, modeling, measuring, efficiency.

THE ANALYSIS OF EFFICIENCY OF SOLID PROPELLANT ACCELERATOR ACTIVE-REACTIVE PROJECTILE

V.A. Arkhipov, S.S. Bondarchuk, A.I. Konovalenko, K.G. Perfilieva

Describes a new scheme of solid propellant accelerator of active-reactive projectile, providing reliable initiation and burning of the solid propellant charge by eliminating exposure to combustion products of the powder charge into the gun barrel on the accelerator. The results of the analysis of efficiency using of accelerator with a ballistite and mixed propellants on the characteristics of the movement of the active-reactive projectile are presented.

Keywords: active-reactive projectile, solid propellant accelerator, solid propellant charge, ballistite propellant, mixed propellant, pyrotechnic initiator, free volume of the combustion chamber, range of flight.

METHODS OF STUDYING THE GRAVITATIONAL SEDIMENTATION OF CONSOLIDATED PARTICLES SYSTEM

A.A. Antonnikova, V.A. Arkhipov, A.S. Usanina, S.S. Titov

Methods for experimental study of gravitational sedimentation of consolidated system of solid spherical particles based on immersing the particles in a liquid and their visualization during the motion have been proposed. These methods have different mechanism of immersing the particles system in liquid. It has been shown that the methods proposed provide an accuracy increase of determination of main characteristics and dynamics of particles system sedimentation by means of formation of initially spherical cloud with specified particles concentration and zero initial setting velocity.

Keywords: consolidated particles system, monodispersed particles, gravitational sedimentation, device for immersing the particles, experimental study.

MODIFICATION OF POLY-N-METHYLALLYL-5-VINYLTETRAZOLE FOR EXAMPLE, THE GAS GENERATING ELEMENTS

E.A. Paznikov, V.B. Markin, P.V. Petrekov

The paper discusses a method of increasing the physico-mechanical characteristics of gas-generating elements by means of polymer modification of the binder tetraisostearate polyetherurethane rubber.

Keywords: physical-mechanical characteristics (FMH), modification, polymer binder, polymer composites, curing.

INFLUENCE OF TREE SPECIES ON PROPERTIES OF SLABBY MATERIALS

N.P. Musko, N.V. Koreneva

The method of explosive autohydrolysis has carried out activation of wood of deciduous and coniferous breeds. By hot pressing slabby materials are made of the received press weight. Influence of breed of a tree and a condition of production of slabby materials on their physicomechanical properties is studied.

Keywords: explosive autohydrolysis, slabby material, cellulose, lignin, reducing agents.

PERFECTION OF HARDWARE-TECHNOLOGICAL REGISTRATION OF THE ALLOCATION PHASE OF TECHNICAL CELLULOSE FROM MISKANTUS

M.S. Vasilishin, O.S. Ivanov, V.V. Budaeva, I.N. Pavlov,
V.N. Zolotukhin, Yu.A. Gismatulina

The advanced hardware-technological circuit design of the allocation phase of technical cellulose from miskantus, based on use of the high-duty equipment of rotor-stator type is offered. The circuit design can be adapted for working off of technological regimes of cellulose allocation from the other types of not wood vegetative raw materials.

Keywords: miskantus, allocation of technical cellulose, equipment of rotor-stator type.

INFLUENCE OF AIR FILTRATION ON EVAPORATION DROPS WATER FROM THE SURFACE OF POROUS MATERIALS

V.N. Letushko, M.I. Nizovtsev, A.N. Sterlyagov, M.Yu. Shlyupikov

The paper presents the results of experimental studies of the effect of air filtration on the evaporation of water droplets on the surface of porous materials. In the experiments measuring the surface temperature drops and the geometric dimensions of the droplets. Temperatures drop surface is determined by IR-thermography. The porous materials used as a porous polypropylene fiber and porous copper.

Keywords: evaporation, drop of water, porous material, air filtration, pinning, depinning, infrared thermography.

STUDY OF THE INTERACTION MODEL LIGNIN COMPOUNDS WITH ACYLATING SYSTEM «CARBOXYLIC (ACETIC) ACID – THIONYL CHLORIDE – TOLUENE – SULFURIC ACID»

D.D. Efryushin, V.V. Konshin

With the quantum-chemical calculations acylation process model compounds of lignin system «carboxylic acid – thionyl chloride – toluene – sulfuric acid» established preferential direction of the reaction. As a result, the practical realization of the interaction of lignin model compounds with acylating this system to obtain a product whose structure was confirmed by IR spectroscopy.

Keyword: acylation, acetylation, model lignin compounds, phenol, benzyl alcohol, vanillyl alcohol, quantum-chemical calculation, phenylpropane unit.

BASALT INFLUENCE OF VARIOUS FIELDS ON THE PROPERTIES OF POLYETHYLENE

P.A. Bredihin, A.S. Nurtazina, Y.A. Kadykova

It is shown that the introduction of the polyethylene dispersion of basalt, regardless of its deposits allows to increase the whole complex of physical-mechanical characteristics, there is also an improvement of combustibility developed polymertechnik composites.

Keywords: polyethylene, dispersed basalt, physical and mechanical properties, indicators of combustibility.

VALUE OF OXYGEN AT DESIGN OF VEHICLE FOR CULTIVATION OF MICROORGANISMS

G.E. Kokieva, I.B. Shagdyrov, Yu.A. Shaposhnikov

A study of a method for supplying oxygen in the equipment. Gas content is one of the main controlled hydrodynamic parameters affecting occurring hydrodynamic and chemical processes, heat and mass transfer. The process proceeds in biotechnological equipment – fermenter, structural feature which can solve the technical problem – namely, the supply of oxygen to the nutrient medium.

Keywords: hydrodynamics of chemical processes, oxygen supply, equipment performance.

AUTOCLAVE-SODA LEACHING WOLFRAM FROM MINERAL

A.N. Dyachenko, R.I. Kraydenko, Yu.V. Perederin, A.Yu. Velizhansky

The aim of this study was to determine the conditions in which most of wolfram compounds transfer to solution from mineral that made by JSC «Zakamensk». The following parameters were varied in research: ratio of «soda/water», ratio of «wolfram concentrate/water». The relevance of the study connected with the need to reduce the cost of the reactants in the production of wolfram products and consequently reducing the cost of finished products in order to increase its competitiveness. Presents graphs that showing content of wolfram and trace elements, depending on the ratio of components in the initial loading.

Keywords: autoclave leaching, wolframtrioxide, beneficiation, hydrometallurgy.

THERMODYNAMIC ANALYSIS OF DIFFUSION LAYERS FORMATION OBTAINED BY BOROALUMINIZING IN PASTES

I.P. Polyansky, U.L. Mishigdorzhiyn, I.G. Sizov

The thermodynamic calculations of chemical reactions occurring at boroaluminizing are presented in the paper. The reactions result in the formation of the diffusion-active atoms of boron and aluminium. The effect of saturating paste composition upon boroaluminized layer structure obtained on steel 20 is investigated. XRD analysis data of boroaluminized layer are presented as well.

Keyword: thermo-chemical treatment, boroaluminizing in pastes, thermodynamics, Gibbs energy, diffusion.

ABOUT THE INFLUENCE OF ALLOYING ELEMENTS ON THE MECHANICAL PROPERTIES OF SPEED STEEL WITH INTERMETALLIC HARDENING

L.D. Sobachkina, V.B. Butygin, A.S. Demidov

Were analyzed the ways of alloying high-speed steel by elements in an amount, which effective to improve the mechanical properties and heat resistance.

The test steel additionally doped with Al, Cr, Ti, Si, Zr, Nb, N and examined after annealing and tempering.

Developed modes of annealing and quenching in different types of doping.

Keywords: heat treatment, alloying, heat resistance, intermetallic compounds, hardness, phase composition, mechanical properties, carbides, hardening, high-speed steels.

GEONICS: FROM GEOCHEMISTRY OF BORON TO ARTIFICIAL BORON-BASED BINDERS

Yu.S. Sarkisov, N.P. Gorlenko, I.A. Rakhmanova

In the light of the natural science paradigm and the concept of geonics, this paper considers the different aspects of the geochemistry of boron, its distribution in nature, origins and evolution of boron crystals in nature. This knowledge is useful for the creation of artificial boron-based binders. It is shown that the formation of boron minerals in different geological environments is determined by the boron/chlorine ratio. Since boron compounds possess a range of specific properties, such as the ability to absorb neutrons, the compositions and production technique are suggested for composite materials based on boron compounds using the earlier studies of this type of systems. The experiments show that a pair-wise combination of acid-base interaction systems, namely $BeO - B_2O_3 - H_2O$ *and* $CdO - B_2O_3 - H_2O$ *leads to the improvement of not only the strength of composite materials but also their service properties.*

Keywords: geonocs, geochemistry, boron, borates, borate anions, composite material, acid-base interaction, strength, neutron absorption.

APPROBATION OF SHS-TECHNOLOGY FOR RECEPTION POROUS FILTER ELEMENTS BASED ON SILICON OXIDE

A.Yu. Miasnickov, A.A Sitnikov, V.I. Yakovlev, A.V. Sobachkin, M.V. Loginova, Yu.E. Gribov

The work is devoted to the production of porous filter elements based on silicon oxide by SHS with preliminary mechanical activation. According to the results of modeling by software package Aster - 4 were obtained parameters that allow the flow of the reaction SiO2 + Al = Al2O3 + Si, as well as the temperature data 2227 °C and lower internal energy of 69693 kJ/kg. In carrying out field experiments for the implementation reaction the temperature of combustion was 1000 °C. The establishment phase composition after synthesis was performed on the X-ray diffractometer general purpose DRON - 6.

Key words: SHS, mechanical activation, aluminum, silicon oxide, filtration.

EXPERIMENTAL INVESTIGATION OF THE DEPENDENCE PHYSICAL-MECHANICAL PROPERTIES MODIFIED EPOXY COMPOSITES OF THE DEGREE FILLING THE CARBON PARTICLES

E.S. Ananieva, E.A. Novikovsky

Method of modifying epoxy compositions of «cold» and «hot» curing were investigated. The content of carbon nanotubes and ultrafine carbon particles in the composition was changed. The impact of technology sample the properties of the material were analyzed. Compositions with high strength characteristics were obtained.

Keywords: modification, nanotube, carbon ultrafine particles.