SUMMARY
APPROXIMATE SOLUTION TO THE PLANE DYNAMIC PROBLEM OF THERMODIFFUSION
Bezhuashvili Yu.A.
Georgian Technical University
The approximate solution to the plane dynamic problem of the conjugate theory of thermodiffusion is constructed by the method of generalized Fourier series.
Keywords: thermodiffusion, plane dynamic problem, Fourier series, partial derivatives.

SUMMARY
SOLUTION OF COMPLEX BOUNDARY PROBLEMS OF MATHEMATICAL PHYSICS BY USING THE THREE-DIMENTIONAL EQUATIONS
Natroshvili O.G., Robitashvili A.G. and Berianidze T.O.
Georgian Technical University
The paper considers the solution of complex boundary problems of mathematical physics by using the three-dimensional equations. The methods and computational facilities of specialized complexes based on optoelectronics are discussed.
Keywords: boundary problems, mathematical physics, computational complexes.

SUMMARY
THE PROSPECTS OF IMAGE REPRESENTATION AND PROCESSING BY OPTOELECTRONIC METHODS AND COMPUTATIONAL FACILITIES
Natroshvili O.G., Robitashvili A.G. and Berianidze T.O.
Georgian Technical University
The paper considers the prospects of image representation and processing by optoelectronic methods and computational facilities. The topicality of real-time data processing is shown.
Keywords: image representation, image processing, real-time data processing.

SUMMARY
ALGORITHMIC LANGUAGE PYTHON REVIEW
Kamkamidze K.N. and Razmadze D.G.
Georgian Technical University
The interpreted programming language Python is one of the most discussed and rated programming languages. Due to the fact that one can easily learn it and quickly write the programming code, programming language Python has not lost its relevance over the years and still remains popular. Python is recognized as one of the most convenient languages for scenarios, which allows you quickly and efficiently provide the project to the customer.
Keywords: algorithmic language, Python, scenario.

SUMMARY
APPLICATION OF PROGRAMMING LANGUAGE PYTHON TO BIOINFORMATICS
Kamkamidze K.N. and Razmadze D.G.
Georgian Technical University
The paper discusses the application of programming language Python to bioinformatics. There is considered the algorithm that helps biological laboratories to perform efficiently polymerase chain reaction (PCR) analysis at a relatively reasonable price.
Keywords: bioinformatics, DNA, Python, Greedy motif search, algorithm, nucleotide.

SUMMARY
THE ROLE OF COMPUTER TECHNOLOGIES IN EDUCATION
Khartishvili M.P. and Epitashvili I.Z.
Georgian Technical University
It is justified that the use of information and communication technologies improves the quality of education.
Keywords: computer technologies, education, informatization, intensification, multimedia technologies, optimal complexes.

UNCERTAINTY OF PROJECT RISKS AND THE POSSIBILITY OF REDUCING IT BY USING THE ENTROPY

Magrakvelidze D.G.
Georgian Technical University

Abstract. The key problem of quantitative risk assessment of the investment project is to reduce the degree of uncertainty system. Under the uncertainty we mean incompleteness or inaccuracy of information under the conditions of realization of the project, including the associated costs and benefits. The uncertainty associated with possible occurrences of adverse events or the project results is an essential characteristic of the concept of the risk of the investment project. In the implementation of investment projects, most of the risks arise as a consequence of the uncertainty of the system and of the problems arising while obtaining the reliable information. We present the way of reducing the degree of uncertainty of realization of the investment project by means of information theory tools. To achieve this goal, the possibility of using the entropy is considered.

K**eywords:** entropy, uncertainty, investment project, risk, information theory.

OPTTIMAL MANAGEMENT OF TASK TRANSFORMATION

Kadagishvili L.G.
V. Chavchanidze Institute of Cybernetics, Georgian Tbilisi University
Georgian Engineering Academy

Abstract. The paper deals with the optimal management of task transformation. The case of two projects (tasks) is discussed. The tasks are considered as two systems with basic functions united by a single equation. These tasks have phases that pass one into another. In this process, the third phase represents banking transactions.

Keywords: optimal management, task transformation, banking transaction.

SUMMARY

CORRELATION RELATIONSHIP BETWEENTHE VALUES OF UNIAXIAL COMPRESSIVE STRENGTH, DENSITY AND THE MODULI OF ELASTICITY OF SANDSTONE AND ARGILLITE FROM TBILISI REGION

Baliashvili G.I., Sardzhvelladze N.V., Tkemaladze L.V., Rukhadze T.A. and Djgamaia V.T.
LPPL Grigol Tsulukidze Mining Institute
Georgian Technical University

The establishment of the correlation relationship between basic properties (strength, the modulus of elasticity and density) of rocks, especially of the rocks of certain regions, is a topical scientific and practical problem. This paper presents the correlation relationship between compressive strength, density and the moduli of elasticity of the sandstone and argillite from Tbilisi region. In our opinion the obtained result can be of interest for researchers, engineers and specialists engaged in this field, as well as for students.

Keywords: sandstone, argillite, strength, density, modulus of elasticity.

SUMMARY

INVESTIGATION FOR IMPROVEMENT OF THE METHOD OF TESTING THE IMPACT RESISTANCE OF CONCRETE

Baliashvili G.I., Bezhanovi P.K., Sardzhveladze N.V. and Gotsadze B.Z.
LPPL Grigol Tsulukidze Mining Institute

Currently the method of a free-fall hammer is a relatively acceptable method of determination of the impact resistance of concrete. There is no standard for this method, it requires improvement. For instance, it is necessary to establish the technique of the contact between a hammer and a specimen from the standpoint of the accuracy of obtained results. The paper discusses the results of testing the concrete samples with plate- and ball-shaped hammers. In both cases, almost identical coefficients of variation were obtained. It is noted that the difference between the values of relative impact energy obtained with the plate- and ball-shaped hammers is the subject of a separate study.

Keywords: concrete, impact hammer, impact resistance, impact energy.

SUMMARY

GROUND-ANCHORRETAINING WALLS FROM MONOLITHIC REINFORCED CONCRETE

Bakanidze Sh.T. and Zambakhidze L.I.
Georgian Technical University

The paper discusses two versions of the design of ground-anchor retaining walls from monolithic reinforced concrete: anchors are arranged in the upper part of the wall, and anchors are arranged as in the upper part of the wall, so also in

the lower part of the wall at the level of foundation.Based on the techno-economic design carried out, the advantageous design of the retaining wall was revealed.
Keywords: retaining wall, ground anchor, design, techno-economic indices.

SUMMARY
DESIGN OF TRADITIONAL RETAINING WALLS
Bakanidze Sh.T. and Zambakhidze L.I.
Georgian Technical University
The paper considers three versions of the design of retaining walls: concrete, massive concrete vertical, massive concrete angled and monolithic reinforced concrete cantilever.Based on the techno-economic design carried out, the advantageous design of the retaining wall was revealed.
Keywords: retaining wall, design, techno-economic indices.

SUMMARY
GEORGIA'S RESETTLEMENT SYSTEM IN ANTICIPATION OF MODERNIZATION
Gventsadze N.A. and Chkheidze N.A.
Georgian Technical University
The paper discusses the role of cities in the formation of a stable resettlement framework in Georgia. There are outlined cities-centers of different hierarchical levels which have different opportunities and risks of development. One thing is obvious - the country does not have and will not have in the near future other development centers. Therefore, the main task of the government is to promote maximally the natural factors of growth of these cities, to conduct a balanced equalizing and stimulating policy in the form of innovative economic and social programs which will be based on competitive advantages of the territories and will expose the maximum potential of the urban development of the cities. Then the growth impulse will spread in a normal evolutionary way - from ciies-centers to periphery.
Keywords: resettlement system, modernization, cities-centers, city growth.

SUMMARY
DEVELOPMENT OF THE POWEREFFICIENT SYSTEM OF MONITORING AND ACCOUNTING OF CONSUMED ELECTRIC POWER IN BUILDINGS
Kakhiani K.
Georgian Technical University
The paper deals with the assessment of technical and economic indices of active and reactive power metering systems in buildings. To improve the accuracy of accounting and monitoring, it is proposed to unite the existing electricity counters in one system. The power efficient counting and monitoring system was developed, and the examples of its realization in practice are given.
Keywords: electricity metering, power efficient system, monitoring.

SUMMARY
UNIFICATION OF GEORGIA AND EUROPE'S ENERGY: THE WAY TO ENERGY SECURITY OF THE COUNTRY
Vezirishvili-Nozadze K.O., Pantskhava E.V., Papava L.P., Jikhvadze M.J., Mchedlidze K.G. and Razmadze M.D.
Georgia is greatly dependent on the energy imported from other countries, but a well thought political document about reducing the dependence of the country on imported energy and increasing the energy security has not been worked out yet. Furthermore, only in 2014 careful accounting of country's energy resources was made, which is usually done for establishing the energy balance of the country. This is an important precondition to form opinions about energy security and to work out an appropriate policy regarding this issue.
Keywords: energy security, energy policy, unification.

SUMMARY
CONSIDERATION FORAN ABRUPT CHANGE IN STIFFNESS AND EXTERNAL LOAD IN BEAM FOUNDATION DESIGNS
Vacharadze V.V.
Georgian Technical University
It is proposed to represent the earth reactive pressure as a sum of two functions. One of the functions in the form of the fourth-degree polynomial describes the general background of reactive pressure, and the other one in the form of a decreasing function describes an abrupt change in the band stiffness and external load. By integration of Flaman

equation, the expression for the dependence of the base surface settlement on the band load and hence for the dependence of complete settlement on the reactive pressure was derived.
Keywords: ground, base, beam foundation, reactive pressure**,** settlement.

SUMMARY
IDENTIFICATION OF TOPOLOGICAL SYSTEMS OF ARTIFICIAL AND NATURAL ORIGIN
Dadunashvili S.A.
Georgian Technical University
In this paper, topological parameters are considered, since topology gives the initial meaning to the structure of networks. There is proposed a technique that allows determining the key topological characteristics of networks and giving them quantitative and qualitative estimates. To determine the direction of development of structures, there has been developed a principle that is capable of recording all the multifacetedness and "multidimensionality" of integral systems of reality. By examples of the functioning of consciousness, the existence of the studied topological structures in the human brain is shown.
Keywords: topological systems, network structure, consclousness.

SUMMARY
STUDY OF THE SERVICE LIFE OF PLASMATRON IN A SUPERHEATED STEAM MEDIUM OF HIGH PRESSURE
Sabashvili Z.V., Loladze T.O., Metreveli-Mandaria A.B. and Kenchiashvili N.A.
Georgian Technical University
Currently, on machine-building plants, they use plasmatrons acting directly on the treated surface. One of economic indicators of plasma cutting is the service life of theplasmatron. During operation, a thermochemical cathode and a nozzle are subjected to main head load. In this regard, it is of great interest to study the service life of the cathode and nozzle in a superheated steam medium. We present the comparative analysis of the data on the service life of the cathode in the superheated steam medium of high pressure. It was established that high pressure and temperature of steam at the plasmatron inlet promote the reduction of heat load.
Keywords: plasmatron, cathode, hafnium, thermal power, arc current, arc voltage.

MAGNETIC NANOCLUSTER DOPED CARBON NANOPARTICLE SYNTHESIS AND STUDY OF SELF-HEALING AND SELF-ASSEMBLY PROCESSES IN POLYMER NANOCOMPOSITES ON THEIR BASIS
Gavasheli T.A., Gegechkori T.O., Mamniashvili G.I., Gventsadze D.I. and Rukhadze L.N.
E. Andronikashvili Institute of Physics, Iv. Javakhishvili Tbilisi State University
Iv. Javakhishvili Tbilisi State University
Abstract. The self-healing and self-organization processes were studied in the magnetic polymer nanocomposites synthesized on basis of carbon nanoparticles doped by cobalt nanoclasters, synthesized by original CVD technology developed by authors. These processes were taking place under combined stimulated diffusion of magnetic nanoparticles by outer alternative and steady magnetic fields, as well as heating and pressure. Polymeric composite samples have good electric and adhesive properties and are perspective for potential practical applications
Keywords: magnetic carbon nanopowders, polymer composites, stimulated diffusion, self-healing, self-organization, resistance

SUMMARY
THEORETICAL CALCULATION OF THE TRANSITION ENERGY IN HIGH-CHARGE IONS
Georgian Technical University
Tsirekidze M.A., Bjalava T.N. and Shengelia M.A.
The paper presents the results of theoretical calculation of the spectral characteristic of high-charge ions. It is shown that the consideration of the higher orders of perturbation the oryleads to the improvement of the calculation accuracy with out complicating the process of calculation. The achieved accuracy of calculation allows to assess the quality and to find errors in the experiments on the certain levels of atomic systems.
Keywords: Dirac equation, perturbation theory, model potential, high-charge ions, polarization effect, overlay of configurations.

SUMMARY

APPLICATION OF SOME MECHANICAL METHODS FOR MEASUREMENT OF THE RADII OF SPHERICAL SURFACES TO CONTROL THE PRODUCTION OF OPTICAL COMPONENTS

Zardiashvili D. G., Dolidze S.V., Shalamberidze D.M., Kordzakhia I.I. and Avaliani I. M.

LEPL Institute "Optica"

The paper deals with designing and production of polymer optical components for optical instrumentation at LEPL |Institute "Optica".The paper describes some mechanical methods for measuring the geometric parameters of the surfaces of spherical lenses. These methods are used in the Institute "Optica" to measure the radiuses of curvature of surfaces and the thickness in the production of optical parts, and the analysis of unfamiliar lenses.

Keywords: optics, lenses, polymer materials, polishing

SUMMARY

STUDY OFDYNAMIC MODES OF THE ELECTRIC DRIVE OFTHE VERTICAL DISPLACEMENT MECHANISM OF THE MIRROR OF A SOLAR POWER PLANT

Turdzelidze D.A., Siradze J.S. and Luashvili G.S.

Georgian Technical University

The dynamic processes proceeding in the electric drive of the vertical displacement mechanism of the mirror of a solar power plant were studied. The results of experimental studies showed that the amplitude of the actuating shift speed depended on the rate of motion and the resonant frequency of the system. There were derived mathematical expressions for the amplitudes of automatic speed fluctuations, which allows determining the amplitude values of fluctuations and positioning accuracy of the electric drive.

Keywords: solar power plant, mirror, vertical displacement, electric drive.

SUMMARY

DEVELOPMENT OF AN INNOVATIVE COMPLEX FOR PRODUCTION OF PIPES FROM CONTINUOUSLY CAST STEEL SHEETS

Jaliashvili T.I. and Mikadze O.Sh.

Georgian Technical University

Currently, in world practice, the production of steel pipes suture consists of two stages: steel smelting, manufacture of steel sheets and production of pipes from steel sheets. We have developed the technological scheme providing for the integration of the two stages within a single metallurgical complex. The enterprise of this type will guarantee 1) fulfillment of orders in the shortest possible time; 2) reduction of production costs; 3) reduction in capital construction costs due to compactness; 4) high quality of environmental protection.

Keywords: steel sheet, pipes, continuous casting, metallurgical complex.

SUMMARY

PROSPECTS FOR CONSTRUCTION OF THE ANAKLIA PORT

Margalitadze I.N. and Gabidzashvili L.G.

Georgian Technical University

Maastricht University, the Netherlands

The construction of Anaklia Deep-SeaPort at the InguriRiver mouth could become the key point in economic development of Georgia. Completion of construction of this global project will open new opportunities to launch fully the Silk Road idea in Georgia and South Caucasus transport route, and gain new possibilities to increase the turnover of goods. Anaklia Deep-Sea Port will increase trade between Europe and Asia.

Keywords: deep-sea port, Anaklia, construction, transport route, port capacity.

DEVELOPMENT OF A METHOD AND A DEVICE FOR IMPROVEMENT OF ECOLOGICAL PROPERTIES OF LIQUID HYDROCARBON FUEL

Akhvlediani Z.G., Gelashvili G.V., Gongadze A.D., Kiladze A.A., Rekhviashvili A.G. and Sokhadze V.M.

E.Andronikashvili Institute of Physics, Iv. Javakhishvili Tbilisi State University

Abstract. The method and the device providing an improvement of the quality of automobile fuel are presented. The proposed device makes it possible to remove compounds that produce toxic components during the combustion process in the engine from automobile fuel. The use of the described method and of device promotes the establishment of the rational regime of fuel combustion in the engine fuel economy, and significantly decreases the harmful influence of the exhausted gases on the environment.

Keywords: automobile fuel, exhaust gases, method, device, ecology.

SUMMARY
BIOGAS PLANTS DESIGNED FOR INDIVIDUAL FARMS
Megrelishvili Z.N., Loria M.D., Chkhaidze D.T., Gobadze L.N. and Khutsishvili B.G.
Shota Rustaveli State University, Batumi
The paper deals with biogas plants for application on farming economies. It is possible to produce a high-quality organic fertilizer along with biogas. The fertilizer can also be used on individual farms. There are given recommendations on building of individual biogas plants.
Keywords: biogas, biogas plant, farm.

SUMMARY
ASSESSMENT OF THE ECOLOGICAL STATE OF SOIL AND ARTIFICIAL RESERVOIRS IN THE ALAZANI VALLEY
Bakradze E.M., Shavliashvili, L.U., Kuchava G.P. and Khmiadashvili S.A.
National Environmental Agency of the Ministry of Environment and National Resources Protection of Georgia
Institute of Hydrometeorology at the Georgian Technical University
The paper deals with the assessment of the ecological state of artificial reservoirs, located on saline soil,and the soil ofadjoining territories in the Alazani Valley, Georgia. The impact of saline soil and groundwater on the chemical composition of the water of artificial reservoirs was studied. It was revealed that the concentration of some elements was higher than maximum allowable concentrations, while the concentration of heavy metals (Cu, Pb, Ag, etc.) was within the permissible limits. Saline massif soils that are not subject to anthropogenic influence areaffected by groundwater and undergo capillary moistening. The climate factor also plays an important role. The soil is subjected to alternating salination and desalination. The composition of salts generally varies in the upper half-meter soil profile. The process of salination prevails, because there does occur flushing of soil due to the fact that the massif has no natural draining.
Keywords: ecological state, artificial reservoir, saline soil, groundwater, salination, desalination.

SUMMARY
ON THE DEVELOPMENT OF ANANALYTICAL DEVICE FOR MEASURING NITRATES IN AGRICULTURAL PRODUCTS
Iashvili N.G., Makhashvili K.A., Tkemaladze G.Sh., Kvartskhava G.R., Padiurashvili V.N. and Jokharidze Z.G.
Georgian Technical University
The paper deals with the issues of development of an analytical device for measuring nitrates in agricultural products. The device is designed not only for detection of nitrates in agricultural products, but also for express analysis of the concentration of nitrates in potable water and soil. The measurement range is from 10 to 999 mg/kg; relative error – no more than 3%. Power supply: mains or battery.
Keywords: analytical device, nitrates, agricultural products, express water analysis.

SUMMARY
ESTIMATION AND PREDICTION OF THE IMPACT OF POSSIBLE ADDITIVITY DEVIATION ON THE VALUE OF SYSTEMATIC ERRORS IN THE MULTIWAVE SPECTRAL ANALYSIS OF BINARY MIXTURES
Makhviladze M.G., Jincharadze D.G., Amashukeli N.Z. and Kargareteli G.T.
Georgian Technical University
The research is related to the impact of nonadditivity of binary mixtures on the results of multiwave spectral analysis. The derived formulas provide optimal selection of analytical wavelengths and can be used for prediction of absolute and relative systematic errors based on the value of molar absorption coefficients of mixture components.
Keywords:multiwave spectrometry, binary, additivity mixtures, systematic errors.

SUMMARY
PROSPECTS FOR APPLICATION OF BIO- AND ELECTROCHEMICAL METHODS TO LEACHING OF FLOTATION TAILS OF GOLD-BEARING REFRACTORY SULFIDE ORES
Lomidze N.N., Arabidze Z.D., Kakulia J.V. and Kandelaki M.Sh.
Georgian Technical University
The collective sulfide concentrate obtained from stocked copper tails from the Madneuli deposit were processed by using bacterial chemical and electrochemical leaching methods. By a series of experiments, optimal parameters of the

processes were established. Both bacterial chemical and electrochemical leaching led to effective decomposition of sulfide minerals. In the result, copper passed into solution (copper concentration in the solution made up 1.73 and 1.81 g/l, respectively), while residues were enriched with liberated gold and prepared for cyanidation. The concentration of gold passed into solution in the result of cyanidation of bioleaching residues made up of 85.8% and of electrochemical leaching – 84.4%, whereas the concentration of gold passed into solution from unoxidized concentrate made up 30.0%. This clearly indicates the efficiency of using the described methods.
Keywords: gold, bacterial chemical leaching, electrochemical leaching, thiobacteria, oxidation of sulfides,cyanidation.

SUMMARY

SOME ISSUES OF DRESSING AND DEWATERING OF FINE-GRAINED COAL SLUDGE FROM TKIBULI-SHAORI DEPOSIT

Abshilava A.V. and Dolidze N.R.
Georgian Technical University

The paper considers the prospects for production of commercial products from the fine-grained waste of coal mining and processing atTkibuli-Shaori Deposit. There are discussed the issues of dewatering and briquettingof the obtained products, which makes them suitable for using forhousehold purposes. Development of fine-grained coal stocks will improve the ecological state of the environment.
Keywords: fine-grained coal, waste, dewatering, briquetting.

SUMMARY

SYNTHESIS OF AZO DYES IMMOBILIZED ON THE SILICA GEL SURFACE

Gogaladze Kh.V. and Karkusashvili T.G.
Georgian Technical University

The paper deals with the production of composites, the study of their spectral, technological, physical and chemical properties, and their application to art paints technology.When fabricating the composites, silica gel was used as an art paint base and azo dyes with different substitutes - as surface modifiers.We synthesized benzene-containing silica gels by interaction of thionyl chloride with activated silica gels and lithiated aniline. Weelaborated the preparation methods of diazotization and azo coupling of amino groups in the organic fragments immobilized on the inorganic matrix. Six new pigments were synthesized by the method developed.
Keywords: immobilization, azo dyes, azo pigment, composites,inert materials

SUMMARY

SYNTHESIS OF BENZIDINE AZO DYES IMMOBILIZED ON THE INORGANIC MATRIX

Gogaladze Kh.V., Shengelia T.A., Karkusashvili T.G. and Geliashvili Z.E.
Georgian Technical University

Acylation, bromination, lithiation and reduction synthesis ofbenzidine was performed. We used the method of immobilization of benzidine on activated silica gel which involved the interaction of a preliminarily chlorinated inorganic matrix with the lithiatedbenzidine derivative. We elaborated the method of immobilization of benzidine on activated silica gel which involved the interaction of silica gel preliminarily activated with thionyl chloride with lithiatedprimary aromatic amine. We also developed the preparation methods of diazotization and azo coupling of amino groups in the organic fragments immobilized on the inorganic matrix. Six new pigments were synthesized by the method developed.
Keywords: immobilization, azo dyes, azo pigment,composites, benzidine, inorganic matrix.

SUMMARY

SYNTHESIS AND STUDY OF THE BIOCOMPLEXES OF ANTIFUNGAL MEDIFICATION CLOTRIMAZOLE WITH 3D METALS Mn(II), Ni(II), Cu(II), Cu(II) AND Zn

Tsivtsivadze T.I., Japridze R.J., Petriashvili Zh.D., Chigogidze N.Sh. and Kldishvili R.Sh.
Research Center of Biologically Active Substances of Georgian Technical University

Thebiocoordination compounds of clotrimazole, a medification with a wide range of antifungal nd antibacterial properties, with metals Mn(II), Ni(II), Cu(II), Cu(II) and Zn were synthesized. The expected composition of obtained biocomplexes was studied, and X-ray transformations of the synthesized compounds were determined by IR spectroscopy. The ways of possible coordination of organo- andacido-ligands with metal complex formators were determined. Immunocytologic assay of complex compounds was carried out. The investigation results enable us to conduct a targeted synthesis of highly effective antimicrobial biocomplexes, which is currently quite topical.
Keywords: clotrimazole, biocomplex, 3d metals, targeted synthesis, organoligands, acido ligands.

SUMMARY

ASSIMILATION OF MAGNESIUM AND MANGANESE BY LACTIC ACID BACTERIA

Rcheulishvili N.A., Kakabadze E.G., Rcheulishvili A.N. and Rcheulishvili O.A.

Iv. Javakhishvili Tbilisi State University

The process of assimilation of Mg and Mn by bacteria *Lactobacillus* spp. E11K3 and *Streptococcus thermofiles*2NK2 was studied. The bacteria were grown in media for 12, 20, 36, 44 and 68 hours. The bacteria were separated from the media and washed. Bacterial masses were dried, weighed and placed in test tubes. The bacterial sampleswere turned into a liquid state and analyzed for the content of Mg and Mn using the atomic absorption spectrometer Analyst 800 (Perkin Elmer). The assimilation of Mg and Mn was more intensive during the first hours of bacterial growth and reached the maximum in 20 hours. Then the metal ions were extracted from bacteria. The concentration of Mg in*S. thermophiles* 2NK2 decreased by a factor of 2.4 and the concentration of Mn – by a factor of 3.6after 68 hours of growth as compared with the maximum concentration. The concentration of Mg in *Lb.* spp.E11K3 decreased by a factor of 1.4, and the concentration of Mn – by a factor of 5.3 as compared with the maximum concentration.

Keywords: manganese, magnesium, lactic acid bacteria, assimilation.

RESEARCH OF SOME PHENOLIC COMPOUNDS IN OAK CHIP EXTRACTS

Zakalashvili S.G. and Bezhuashvili M.G.

Agricultural University of Georgia

Abstract. Based on the analysis of spirit extracts of industrial oak chips, some phenolic compounds they contain were studied. We analyzed the spirit extracts of oak chips of different degree of baking: light, medium and strong. In the extracts we determined the following low molecular phenolic compounds: vanillin, vanillic acid, syringic aldehyde, syringic acid, coniferylic aldehyde, sinapic acid, syringol, gallic acid, gayacol, 4-vinylphenol and 4-ethylphenol. The variation of concentration of the above-listed compounds depending on the degree of baking of oak chips: light, medium and strong. It was inferred that the spirit extracts of oak chips aresuitable for production of alcoholic beverages.

Keywords: oak chips, phenolic compounds.

SUMMARY

AMINO-ACID PROFILE OF WINES ACCORDING TO THE GAS CHROMATOGRAPHIC ANALYSIS

Shatirishvili Sh.I., Zakalashvili G.N., Kiladze M.T. and Shatirishvili I.Sh.

Georgian Technical University

JSC Chandari Winery

To analyze Kakheti and Rkatsiteli wines for amino-acids by traditional gas chromatography, we analyzed the samples at 50°C depending on the duration of heat treatment using the methods of derivatizationsignificantly different from the accepted ones. It is shown that thermal treatment allows reaching rapidly the amount of amino-acids close to that contained in wines produced by a classical method.

Keywords: wine, amino-acids, gas chromatography, derivatization.

SUMMARY

THE FIRST GEORGIAN ENDEMIC WINE YEAST STRAIN GE02 SUBJECTED TO LIOPHILICDRYING

Salia E.Sh., Gvinadze T.O. and Ortoidze T.V.

Institute of Viticulture, Viniculture and Oenology, Agricultural University of Georgia

Wine yeast strain GE02 was isolated and subjected to liophilic drying. The strainis characterized by high activity and provides high-intensity fermentation of grape juice both under laboratory and industrial conditions as well as production of wine materials of high quality. The yeast strain GE 02 is recommended for production of table wines in Georgian wine-making.

Keywords: wine yeast, strain, liophilic drying, fermentation, wine materials.

SUMMARY

TECHNOLOGY OF PRODUCTION OF ALCOHOLIC BEVERAGES USING THE RESIDUE OF ALCOHOL DISTILLATION

Oshakmashvili Ts.L. and Khositashvili M.L.

Georgian Technical University

The paper deals with the study of the residue of honey alcohol distillation for biologically active substances. The experiments carried out showed that the residue of honey alcohol distillation is rich in biologically active substances

such as organic acids, total nitrogen, phenolic compounds and carbohydrates. High concentration of these substances in the residue of honey alcohol distillation is due to their concentration in the process of distillation of honey wine materials. The main difference between the residue and its appropriate wine material consists in the composition of aromatic components.

Keywords: wine materials, honey alcohol, distillation residue, biologically active substances.