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Verba volant,
scripta manent

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1. Agrarian-Economic Science and Technologies. – 2016. – #2(31); #3(32)
2. Air Transport. – 2016. – #1(11)
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B1. NATURAL SCIENCES

b1.1. Mathematics

b17.1.1.1. Definition of optimal interval between time series terms. /M. Meskhi, S. Piralishvili, R. Inadze/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 79-87. – geo.; abs.: geo., eng., rus.
This article presents an analysis of time series using the parametric method of identification of autoregressive models, parameters least squares method and adequacy of diagnostic examination issues, also practical application matters of the finally obtained models, including forecasting, process control and determining the optimum interval between the time series terms. The article emphasizes that in application of models for predicting processes preference is given to probability, stochastic model, and not to deterministic methods, because the latter gives less accurate forecasts. Another subject discussed is the determination of water level in the reservoir and optimal value of interval between the time series terms of inclination indicators readings in the transfer function of input and output processes in the unified Enguri HPP high dam general technical system. Analyzed are the autoregressive, multiplier type models obtained by sampling of given time series and aggregation of the new time series containing various intervals. Obtained are the probable values of optimal interval according to the readings of inclination measuring devices located in different places of dam, with the residual errors in the mean square error criteria. The results of analysis are presented in the form of tables and drawings showing that the optimal time interval between the time series terms has different magnitude in different areas of the dam. Tab. 3, Fig. 3, Ref. 7.

Auth.

b17.1.1.2. Discrete dynamic fractals and sets of Zhyulia. /T. Obgadze/. Automated Control Systems. – 2016. – #1(21). – pp. 218-229. – geo.; abs.: geo., eng., rus.
In work the fractals arising in discrete dynamic systems are considered. The system of the iterated functions arising at square displays is studied. Sets of Zhyulia and Mandelbrot·s great number of the corresponding constants of display are constructed. Fig. 17, Ref. 22.

Auth.

b17.1.1.3. On the approximation of periodic functions in variable exponent Lorentz spaces. /I. Gabisonia, V. Kokilashvili, D. Makharadze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 7-11. – eng.; abs: eng., geo.
The paper presents results on approximation by trigonometric polynomials in Lorentz spaces with variable exponents. The inequalities are obtained, which establish the connection between the best approximation by trigonometric polynomials and the generalized modulus of smoothness so that the exponents of space metrics are different on both sides of the inequalities. The analogues of Jackson's and inverse inequalities are proved in variable exponent Lorentz spaces. Ref. 3.

Auth.

b17.1.1.4. On D-equivalence classes of some graphs. /S. Jahari, S. Alikhani/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 12-19. – eng.; abs: eng., geo.
Let G be a simple graph of order n. The domination polynomial of G is the polynomial $D(G,x)=\sum_{i=1}^{n} d(G,i)x^{i}$ where $d(G,i)$ is the number of dominating sets of G of size i. The n-barbell graph Bar_n with $2n$ vertices, is formed by joining two copies of a complete graph K_n by a single edge. We prove that for every $n \geq 2$, Bar_n is not D-unique, that is, there is another non-isomorphic graph with the same domination polynomial. More precisely, we show that for every n, the D-equivalence class of barbell graph, $[Bar_n]$, contains many graphs, which one of them is the complement of book graph of order n - 1, B_{n-1}^{c}. Also we present many families of graphs in D-equivalence class of $K_{n1} \cup K_{n2} \cup \ldots \cup K_{nk}$. Fig. 5, Ref. 14.

Auth.

b17.1.1.5. On the asymptotic estimation of the generalized Cesàro means. /T. Akhobadze, G. Gognadze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 7-9. – eng.; abs: eng., geo.
The behaviour of generalized Cesàro means of trigonometric Fourier series in the space of continuous functions is studied. In particular, deviation of these means from the corresponding continuous functions is established. Ref. 15.

Auth.

b17.1.1.6. On regular cohomologies of biparabolic subalgebras of sl(n). /A. Elashvili, G. Rakviashvili/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 10-13. – eng.; abs: eng., geo.
It is proved that if *P* is a biparabolic subalgebra of the special linear Lie algebra *sl* (n) over the field of complex numbers and Z(P) is its center, then H^n (P, P)= H^n(P, Z(P)), n≥0; if P is an indecomposable biparabolic subalgebra, i. e. for corresponding two partitions (a_1, a_2,…, a_r) and (b_1, b_2, …, b_s) of n partial sums of this partitions never equal each other then Z(P)=0 and, consequently, H^n (P, P)=0, n≥0. Analogous results, for Borel and parabolic subalgebras of semisimple Lie algebras respectively, were obtained by G. Leger, E. Luks [1972] and A. Tolpygo [1972]. Fig. 1, Ref. 7.

Auth.

b17.1.1.7. Multiplicative versions of Zagreb indices under subdivision operators. /M. Azari, A. Iranmanesh/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 14-23. – eng.; abs: eng., geo.
In this paper, we compare the multiplicative versions of Zagreb indices under the subdivision operators L, S, R, Q and T. Results are applied to obtain several interesting inequalities for the multiplicative Zagreb indices and multiplicative-sum Zagreb index of these operators in terms of the order, size, first Zagreb index, first and second multiplicative Zagreb indices and multiplicative-sum Zagreb index of the primary graph. Ref. b17.

Auth.

b17.1.1.8. Good and evil in mathematical matrices. /G. Gabrichidze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 24-28. – eng.; abs: eng., geo.
The paper presents the study about the question of the nature of the matrix determinant and its transformation while interacting with the other matrices. With this aim two possible forms of matrices interaction are considered: the form of addition A+B=C and the form of multiplication AxB=C. On the basis of the obtained results issues of interaction between two individuals or two origins, good and evil, are discussed. Fig. 4, Ref. 1.

Auth.

b17.1.1.9. On one way of effective solution of the first boundary value problem of statics of the theory of elastic mixture for an infinite plane with an elliptical hole. /K. Svanadze/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 135-144. – geo.; abs.: geo., eng.
In the work, for the homogeneous equation of the theory of statics of the theory of elastic mixtures, in the case of first boundary value problem (when the movement vector on the boundary is given, the probem solution, when the boundary is ellipse, is obtained in the form of the Poisson-type formula. Ref. 2.

Auth.

b17.1.1.10. Mathematical modeling of horizontal circulation of water flows in reservoirs. /A. Girgvliani/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 145-151. – geo.; abs.: geo., eng.
A mathematical model describing the horizontal movement of water flows is discussed. The model is based on a system produced by integration of the vertical of complete differential equations of water hydrodynamics. The initial and boundary conditions are studied for solving the produced two-dimensional system. Ref. 5.

Auth.

b1.2. Computer and information sciences

b17.1.2.1. The modern approaches in parallel programming. /N. Archvadze, M. Pkhovelidze, L. Shetsiruli, O. Ioseliani/. Computer Sciences and Telecommunications. – 2016. – #3(49). – pp. 30-33. – eng.; abs.: geo., eng.
The technologies of traditional parallel programing MPI (Message Passing Interface) and OpenMP are discussed together with the role of these technologies and inabilities. The directions of modern parallel programming, which appeared by using functional languages, are presented. The parallelizing of the programs using competition are reviewed. Ref.3.

Auth.

b17.1.2.2. New fuzzy probabilistic aggregation operator in the information system implementation management problem. /G. Sirbiladze, I. Khutsishvili, O. Badagadze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 59-66. – eng.; abs: eng., geo.
In this article a new generalization of the probabilistic averaging operator -Associated Fuzzy Probabilistic Averaging (As-FPA) operator is used in the MADM problem of information system implementation management. Experts evaluations as arguments of the aggregation operator are described by triangular fuzzy numbers (TFN). Some propositions on the correctness of generalization are presented. Tab. 3, Ref. 6.

Auth.

b17.1.2.3. System of analytical models for evaluation of server performance. /A. Dzneladze/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 67-75. – geo.; abs.: geo., eng.
The general algorithm for evaluating temporal features when designing server-computers is prposed. The algorithm is based on a system of hierarchically arranged analytical models. Fig. 1, Ref. 9.

Auth.

b1.3. Physical sciences

b17.1.3.1. Obtaining matrix elements for 5-point on-shall Feynman diagrams. /Z. Merebashvili/. GESJ Physics. – 2015. – #1(13) – pp. 10-19. – eng.; abs.: geo., eng., rus.
Analytical results on the representation of the one-loop five-point on-shell amplitudes as a pertubative series up to O(epsilon^2) in the dimensional regularization parameter(epsilon) are obtained. The results are relevant for the next-to-next-to-leading-order (NNLO) quark-parton model description of the hadroproduction of heavy quarks. These one-loop matrix elements can also be used as input in the determination of the corresponding NNLO cross sections for heavy flavor photoproduction, and in photon-photon reactions. Fig. 7, Ref. 19.

Auth.

b17.1.3.2. Unpolarized distributions with transverse momenta in the chiral quark-solution models: t-odd structure functions in the skyrme-like solitonic NJL model. /A. Khelashvili/. GESJ Physics. – 2015. – #1(13)– pp. 20-25. – eng.; abs.: geo., eng., rus.
The formalism for calculating the T-odd structure functions of nucleon in the chiral (Skyrme-like) solitonic model of Nambu and Jona- Lasinio (NJL) is considered. The corresponding confirmation is discussed. The relevant relations are exposed and corresponding explanations are given. The forms, exhibited below, may be used for further application in calculation of corresponding structure functions. The role of chiral symmetry breaking is underlined. Ref. 10.

Auth.

b17.1.3.3. The electron-impact double ionization of helium: dynamical variational treatment. /A. Dorn, Z. Machavariani/. GESJ Physics. – 2015. – #1(13). – pp. 26-35. – eng.; abs.: geo., eng., rus.
Two-electron emission from an atom is considered. Based on the Hulth´en-Kohn dynamical variational principle the effective charge seen by the ejected electrons is determined for a certain type of trial wave functions. Validity of the elaborated approach is assessed by calculating fully differential cross section (FDCS) for electron-impact double ionization of helium. The relatively

small momentum transfer (q = 0.5 a.u.) at 2 keV impact energy and equal energy sharing between ejected electrons (5eV, 10eV, 20eV) provides reasonable kinematical conditions for application of the First Born Approximation (FBA). The calculated five fold differential cross section (FDCS) is in reasonable agreement with the corresponding experimental observations. Fig. 2, Ref. 46.

Auth.

b17.1.3.4. The orographic factor's role in the atmosphere surface layer during development of the wind field. /Z. Khvedelidze, I. Samkharadze, N. Zotikishvili/. GESJ Physics. – 2015. – #1(13). – pp. 73-79. – eng.; abs.: geo., eng., rus.

Studying the mode of a wind in a given territory is of theoretical and practical value, given the practical use of its many properties. This question has always been topical, especially for mountain regions. For determining the vertical speed of a wind, a formula, in which the additional new member reflecting influence of orography fuctions, by whuich the formula differ from similar dependence, is obtained. The orographic effect was estimated within the concrete territory of Georgia, and good results were obtaained. In particular, the calculated size of vertical speed almost equals to its value on the flat area. Therefore, an increase of air speed stream in mountain areas becomes clear, which is observed in practice. Also the ""spline " method for determining the speed of wind in the region of Imereti, in Tskhaltubo, Kutaisi, Zestafoni was for the first time used. The model calculated speed within (2-18) % coincided with the observed value in expeditious practice that for a field of a wind it is recognized as admissible result. The received conclusions give us the chance to apply the given models to study a field of a wind in any mountain regions. Fig. 1, Ref. 8.

Auth.

b17.1.3.5. Electron in magnetic field under restricted geometry. /M. Eliashvili, G. Tsitsishvili/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 53-58. – eng.; abs: eng., geo.

Eigenvalue problem related to planar electron subject to homogeneous orthogonal magnetic field is considered on a stripe. It is discussed how the dispersion relation becomes affected by boundary conditions supplied. Comparison is carried out between Dirichlet and Neumann boundary conditions and essential differences leading to distinct physical outcomes are pointed out. Fig. 2, Ref. 7.

Auth.

b17.1.3.6. The influence of the law on maintenance of movement frequency on the Earth tectonics, when the Earth has to cross the neutral phase of interplanetary magnetic field of at times of a strong sun blaze up. /N. Khazaradze, L. Kordzadze, T. Bakradze, M. Elizbarashvili, E. Bazerashvili, Z. Kvavadze, I. Tuskia/. Roceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 46-51. – rus.; abs.: geo., eng.

New interpretation of the law on maintenance of movement frequency has been discussed, that is vital in foracasting strong and destructive earthquaks of magnitude $M \geq 6$. Based on long-term research and practical data [1] the validity of the adopted law has been proven, especially when the Earth has to cross the neutral phase of interplanetary magnitic field of at times of a strong sun blaze up. Fig. 3, Ref. 6.

Auth.

b17.1.3.7. Generation of zonal flows by magnetized Rossby waves shear flow driven dissipative ionophere. /G. Aburjania, O. Kharshiladze, K. Chargazia/. Proceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 58-76. – rus.; abs.: geo., eng.

The features of generation of the zonal flows by magnetized Rossby waves in the shear flow drioven dissipative ionosphere are considered. The modified Charney-Obykhov type equation describing the nonlinear interaction of amplitudes of five different scale modes is obtained. These modes are: ultra low frequency (ULF) primary magnetized Rossby wave, two satellites of this wave, long wavelength zonal mode and large scale background mode (inhomogeneous wind). The roles of effects of nonlinearities (scalar, vector) in formation of the large scale zonal flows by magnetized Rossby waves with finite amplitudes in the dissipative ionosphere is studied. Modified

parametric approach is used. On the basis of theoretical analysis of the corresponding system for amplitudes of the perturbations the new features of energy pumping from comparably small scale ULF magnetized Rossby wave and the background flow into the large scale zonal flows and nonlinear self-organization of collective activity of above mentioned five modes in the ionosphere medium. Generation of the zonal flow is caused by the Reinolds stress of the magnetized Rossby wave with finite amplitude and effect of the background shear flow. Ref. 37.

Auth.

b17.1.3.8. Semiconductor optical amplifiers in communication. /D. Lapherashvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 390-394. – eng.; abs.: eng., geo., rus.

As the optical signal is translated by fiber waveguide for a long distance, it is attenuated, can become very weak and undetectable by a photo detector of the receiver. Optical amplifiers are key devices that reconstitute the attenuated optical signal, thus expanding the effective fiber span between data source and destination. For fiber optical communication needs amplifiers at electromagnetic wavelength at 1300-1550 nm. III-V semiconductors (InP, InGaAsP) are suitable for such devices. The method fabrication and optical properties of semiconductor optical amplifiers are studied in this work. Fig. 5, Ref. 10.

Auth.

b17.1.3.9. The minimum energy of an electron in an atom. /G. Khidesheli/. Automated Control Systems. – 2015. – #1(13). – pp. 215-2b17. – geo.; abs.: geo., eng., rus.

The work discusses the minimum energy of an electron in an atom. It is opined that that minimum energy of an electron in an atom, molecule, and substance is equal and corresponds to the energy of attraction of the electron by the nucleus and steady-state of energy background energies of the environment. It is equal to the energy of environmental background energy and is regulated by absorption of energy by the electron from the environment or radiation of energy in the environment, so it does not fall into the nucleus, which leads to the stability of atoms. Ref. 4.

Auth.

b17.1.3.10. Configurations of points as Coulomb equilibria. /G. Khimshiashvili/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 20-27. – eng.; abs: eng., geo.

We discuss various aspects of a general problem naturally arising in the framework of an approach to inverse problems of electrostatics. In particular, we describe some developments in the spirit of the famous Maxwell conjecture on the number of equilibria in the case of three charges. Along the same lines we discuss the equilibrium configurations of charges confined to a system of concentric circles and their relation to reconfiguring of charged orbiting objects. We also outline possible applications of our approach to the electrostatic control of polygonal linkages. Ref. 9.

Auth.

b17.1.3.11. Statistical thermodynamics of the Fermi gas at presence of the relativistically intense EM field. /N. Tsintsadze, L. Tsintsadze, K. Sigua/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 29-38. – eng.; abs: eng., geo.

We discuss some aspects of interactions of high-frequency electromagnetic (EM) waves with quantum Fermi gas, assuming that the intensity of EM waves is sufficiently large. Relativistic statistical thermodynamics of quantum electron-ion gas at presence electromagnetic waves is considered. In this case the distribution function of particles becomes anisotropic, due to high power EM waves. By the new distribution function we study all the thermodynamic quantities as function of densities, temperatures and the amplitude of EM waves. We investigate the cavitation phenomenon of degenerate Fermi electron gas. We obtain a novel set of adiabatic equations. For two cases we obtain expressions of the specific heat, which is strongly dependent from the amplitude of EM waves, namely, the coefficient of the electron specific heat increases with the increase of the amplitude of EM waves. Fig. 3, Ref. 40.

Auth.

b17.1.3.12. Experimental study of azimuthal correlations in P(C, Ta) and He(Li, C) collisions at a momentum of 4.2, 4.5 and 10 AGeV/c. /L. Chkhaidze, G. Chlachidze, T. Jobava, L.

Kharkhelauri/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 39-45. – eng.; abs: eng., geo.
Azimuthal correlations between protons and between pions were studied in pC (4.2, 10 GeV/c), He(Li, C) (4.5 AGeV/c) and pTa (10 GeV/c) interactions. The data were obtained from the SKM-200-GIBS streamer chamber and from Propane Bubble Chamber (PBL-500) systems utilized at JINR. Study of multiparticle azimuthal correlations offers unique information about space-time evolution of the interactions. Azimuthal correlations were investigated by using correlation function $C(\Delta\varphi)=dN/d(\Delta\varphi)$,where $\Delta\varphi$ represents the angle between the sums of transverse momenta vectors for particles emitted in the forward and backward hemispheres. For protons a “back-to back” (“negative”) azimuthal correlations where observed in these interactions. The correlation coefficient $|\xi|$ decreases with the increase of momentawere per nucleon and the mass numbers of the projectile (A_P). For pions a back-to-back correlation was obtained for light targets (Li, C) and a “side-by-side” (“positive”) correlation — for a heavy target (Ta). Also, for pions $|\xi|$ insignificantly increases with the increase of the momenta per nucleon and almost does not change with the increase of the mass numbers of projectile A_P and target A_T nuclei. Tab. 1, Fig. 4, Ref. 29.

Auth.

b17.1.3.13. The study of jet quenching effect in nucleus-nucleus collisions. /L. Abesalashvili, L. Akhobadze, V. Garsevanishvili, I. Tevzadze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 46-52. – eng.; abs: eng., geo.
According to modern theoretical concept, hadronization of produced quark can proceed into one or several cumulative particles, which form cumulative jets outside the nucleus. Jet is the set of cumulative particles (in our case protons), which fly in the approximately same direction and have relatively small transverse momenta. Jet can consist of 1,2,…,n particles. The production of cumulative protons is connected with the existence of the multiquark states (fluctons). In nucleus angular widening of the produced jets and softening of the momentum spectrum can take place. This is called the jet quenching effect. The study of average kinematic characteristics of cumulative jets and surrounding particles in (p, d, He, C) (C, Ta) collisions leads to the conclusion that jet quenching effect takes place. Tab. 3, Fig. 4, Ref. 10.

Auth.

b1.4. Chemical sciences

b17.1.4.1. Multifunctional inorganic core-shell hybrid nanoparticles; synthesis and applications. /M. Donadze, M. Gabrichidze, P. Toidze, T. Agladze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 263-271. – eng.; abs.: eng., geo., rus.
Binary and ternary multifunctional hybrid “core (Ag)-shell (Mn, Cr oxides)” nanoparticles were synthesized by means of heterogeneous oxidation of oleic acid ligand (stabilizer of Ag NPs) by Mn and Cr oxides precursors. High catalytic activity of AgMnOx nanoparticles toward carbon monoxide oxidation reaction as well as bactericidal action in relation of gram-positive and gram-negative bacteria was observed. Fig. 13, Ref. 14.

Auth.

b17.1.4.2. Thermal characteristics of spinel-type complex oxides $Me_{1-x}Zn_xFe_2O_4$ (with me=Cu or Mg). /T. Machaladze, V. Varazashvili, M. Tsarakhov, M. Khundadze, T. Pavlenishvili, N. Lezhava, R. Jorbenadze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 281-284. – eng.; abs.: eng., geo., rus.
To determine the influence of thermal processing on the metastable state, the dependence of heat-resistant ferrites of copper-zinc and magnesium-zinc on the heat capacity temperature have been studied. The values of enthalpy in transition from metastable to stable condition and the optimum temperatures of annealing effect was established. Tab. 1, Fig. 4, Ref. 4.

Auth.

b17.1.4.3. Determination of condition of complete solid solubility in the system $Li_{0,5}Fe_{2,5-x}Al_x0_4$ by means of calorimetric investigation of excess mixing parameters ΔH_{mix}^{ex} and ΔS_{mix}^{ex}. /N. Lezhava, M. Khundadze, V. Varazashvili, T. Machaladze, T. Pavlenishvili, M.

Tsarakhov/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 285-291. – eng.; abs.: eng., geo., rus.
The energy of solid solubility of the system $Li_{0,5}Fe_{2,5}O_4$ – $Li_{0,5}Al_{2,5}O_4$ with general formula: $Li_{0.5}Fe_{2.5-x}Al_xO_4$ have been investigated using the method elaborated in laboratory by A Landia, in order to determine the borders of region of the broken solubility. On the base of the complex calorimeter experiments and semi-empirical calculation method, the phase diagram of state of investigated system was built and the top of the “dome of decomposition” of solid solution was fixed. The special thermal treatment provides receiving of single phase composition. Tab. 5, Fig. 6, Ref. 10.

Auth.

b17.1.4.4. Production of potassium permanganate in the flow electrolyzer. /V. Kveselava/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 295-297. – eng.; abs.: eng., geo., rus.
The paper presents the electrochemical process of oxidation of potassium manganate into permanganate ($KMnO_4$) in a flow reactor of tubular (hollow) shape. The internal surface of the stainless steel tube serves as an anode and a current-carrying wire, which is coaxially fixed inside of the tubeserves as a cathode. At high current densities to decrease cathode reduction obtained at the anode $KMnO_4$, the ratio of the cathode and anode surfaces should be 1:100. Therefore, the surface of the coaxially disposed wire was covered with an insulating material at some equal intervals. The current efficiency of the final product in the presented reactor was more than 80%. Fig. 1, Ref. 5.

Auth.

b17.1.4.5. Oxidation of manganeze nitrate solutions by ozone – air mixture. /B. Purtseladze, M. Avaliani, R. Chagelishvili, L. Bagaturia, Z. Samkharadze, E. Shoshiashvili, M. Svanidze, N. Barnovi, M. Gvelesiani/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 301-303. – eng.; abs.: eng., geo., rus.
The developed chemical method of obtaining manganese dioxide, which consists in the oxidation of manganese-containing solutions by mixture of ozone – air with a formation of g-MnO_2. Simplicity, reliability, efficiency and the absence of ballast are those main features, which allows to create the waste-free production by means of ozone method. Tab. 2, Ref. 3.

Auth.

b17.1.4.6. Adsorption of tetrabutylammonium iodide at the mercury electrode/ethylene glycol solution interface. /Sh. Japaridze, I. Gurgenidze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 304-307. – eng.; abs.: eng., geo., rus.
The ionic liquids – melts of organic salts, being in the liquid state in a wide temperature range find extensive practical application at the present time. Ionic liquids are composed of bulky organic cations and inorganic anions [1]. The most important characteristics determining the prospects of the use of ionic liquids in electrochemistry shouldbethe ionic conductivity, the hydrophobicity and the width of the electrochemical "window". The width of electrochemical "window",the electrochemical stability of the ionic liquids (border "window" match the beginning and the end of the electrochemical decomposition of these ions) determine the potential range available for carrying out of electrochemical transitions thatdo not affect the solvent [2]. Ionic liquids have not only the catalytic activity but in some cases are able to maintain and enhance the biological activity of biosensor [3]. They are widely used in the field of electrochemical analysis in medicine, food industry, etc. [1,4]. All this make ionic liquids attractive to many areas of science and technology. Quaternary ammonium salts, in particular tetrabutylammonium iodide (TBA-I) also refer to ionic liquids. The data on adsorbability of TBA-I on mercury from ethylene glycol (EG) solutions is given in this paper. Tetrabutylammonium iodide - quaternary ammonium salt - $(C_4H_9)_4NI$ contains a volumetric organic cation of TBA-I and an inorganic iodide anion. TBA-I is slightly soluble in water (hydrophobic).TBA-I refers to ionic liquids by its structure and properties, right this causes the interest of studying of its adsorbability from the EG solutions. Fig. 3, Ref. 11.

Auth.

b17.1.4.7. Investigation of poly-component systems in aims for synthesis of a new groupe of inorganic polymers – condensed phosphates/. /M. Avaliani, M. Gvelesiani, N. Barnovi, B. Purtseladze, D. Dzanashvili, E. Shoshiashvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 308-311. – eng.; abs.: eng., geo., rus.

The chemistry of inorganic compounds of phosphorous has developed intensively in the last few years. Very significant development of condensed crystal chemistry was due to the rapid progress of innovative methods of analysis, as well as to the achievements in this domain. Double condensed phosphates – in fact inorganic polymers of poly- and monovalent metals have a various interesting properties and numerous areas of application [1-7]. The offered data are the records of our studies – synthesis, analysis, examination of the experiments and their evaluation in correlation with achievements in inorganic polymer's chemistry. Condensed phosphates of polyvalent metals, containing monovalent metals are obtained by us during systematic investigation of $M^{I}_{2}O$-$M^{III}_{2}O_3$-P_2O_5-H_20 systems at temperature range 100^0C -550C. **(**M^{III} are Ga, In, Sc, M^{I} –alkali metals and partially Ag). Compounds were wholly examined by chemical analysis and the structures are determined by X-ray structural techniques. During our fundamental researches numerous unknown condensed phosphates have been obtained. Dependency of composition VS temperature and molar ratio, reliance of structure from duration of synthesis are revealed. Tab. 1, Ref. b17.

Auth.

b17.1.4.8. Solvent effect on complex formation of dimethyl sulfoxide. /N. Gegeshidze, L. Skhirtladze, A. Mamulashvili, T. Edilashvili, N. Maisuradze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 312-313. – eng.; abs.: eng., geo., rus.

Energetic, geometric and structural characteristics of Dimethyl sulfoxide are determined by quantum chemical method AM1. According to electronic structure, solvent effect on its complex formation ability with metals is established. Tab. 3, Fig. 1, Ref. 2.

Auth.

b17.1.4.9. Mixed-ligand coordination compounds of 3d-metals with orto-amino-4,5-methilpyridine and isonycotinoilhidrzone of paradimethilaminobenzaldehide. /N. Kilasonia, M. Kereselidze, N. Tabuashvili, M. Mamiseishvili, N. Endeladze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 314-315. – eng.; abs.: eng., geo., rus.

The goal of our research was the study of properties of complex formation of para-dimethylaminobenzaldehyde isonicotinoil-hydrazone, as well as methyl derivatives of aminopyridine, namely ortho-amino-4 and orthoamino-5 methylpyridine molecules in different solutions, manifestaion of their donor properties and synthesis of new, different-ligand coordination compounds on the basis of obtained results, and also study of physicalchemical properties of synthesized compounds. Ref. 2.

Auth.

b17.1.4.10. Chromium chelates with biologically active ligands. /S. Urotadze, I. Beshkenadze, N. Zhorzholiani, M. Gogaladze, N. Klarjeishvili, V. Tsitsishvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 316-319. – eng.; abs.: eng., geo., rus.

Synthesis of trivalent chromium amorphous chelates $Cr(Mt)_3 \cdot 2H_2O$ (Mt – methionine anion) and $Cr \cdot Lig \cdot nH_2O$ (Lig – citrate ion (n=4), nitrilotriacetic acid anion (n=3)), as well as crystalline chelates of general formula $Cr_2 \cdot Lig_3 \cdot nH_2O$ (Lig – anions of succinic acid (n=0), tartaric acid (n=2), glutaminic acid (n=4), and cystine (n=5)) has been carried out for their further testing to define possibilities of their agricultural application as fertilizers, premixes, biologically active fodder additives. Experimentally defined elemental composition of synthesized compounds is in good accordance with corresponding calculated values; solubility of compounds in water and organic solvents is determined, and it is postulated, that chelates containing bivalent ligands are practically insoluble; said crystalline chelates are characterized by X-ray diffraction pattern parameters. Tab. 3, Ref. 10.

Auth.

b17.1.4.11. Solvent effect on complex formation of dimethylacetamide and N,N-dimethylformamide. /G. Tsintsadze, D. Lochoshvili, T. Giorgadze, E. Topuria, T. Tusiashvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 320-324. – eng.; abs.: eng., geo., rus.

Various characteristics: formation heat, dipole moment, interatomic distances, bond orders, valence angle and electron population at atomic orbitals were calculated for dimethylacetamide and N,N-dimethylformamide by means of quantum-chemical semiempirical AM1 method in gaseous phase and in seven various solvents.The coordination ability of these molecules with organic ligands as well as with complex former metal was established. Tab. 6, Fig. 1, Ref. 7.

Auth.

b17.1.4.12. Solvent effect on complex formation of urea. /M. Tsintsadze, S. Chichinadze, N. Bolkvadze, N. Imnadze, G. Manvelidze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 325-326. – eng.; abs.: eng., geo., rus.

Energetic, geometric and structural characteristics of Urea are determined by quantum chemical method AM1. According to electronic structure, solvent effect on its complex formation ability with metals is established. Tab. 1, Fig. 1, Ref. 3.

Auth.

b17.1.4.13. Li_2MnO_3 development as a component of high-voltage lithium-rich composite $xLi_2MnO_3\cdot$ (1-x) $LiMnO_2$ cathode materials for Li-ION batteries. /E. Kachibaia, R. Imnadze, T. Paikidze, D. Dzanashvili, T. Machaladze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 327-331. – eng.; abs.: eng., geo., rus.

Physical and chemical basis production of Li_2MnO_3 as a part of high-voltage lithium-rich composite $xLi_2MnO_3\cdot$(1-x) $LiMnO_2$ cathode materials for Li-ion batteries has been developed. In this case, various methods of Li_2MnO_3 preparation have been tested. Among them, a method based on thermal decomposition of the eutectic mixtures of starting materials has been used. Phase-pure, nano-sized compounds with monoclinic structure have been obtained. Tab. 5, Ref. 3.

Auth.

b17.1.4.14. Electroplating and surface alloying of metals in molten systems. /N. Gasviani, G. Kipiani, M. Khutsishvili, L. Abazadze, S. Gasviani, G. Imnadze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 332-334. – eng.; abs.: eng., geo., rus.

The properties of metals are mainly determined by composition of surface layer. Therefore the variation of their surface composition is profitable in place of the variation of whole volume. This process is possible only in molten systems at (873-1173) K at preparation of metals electroplating. In parallel, the surface-diffusion alloying of the metals-bases takes place. In the paper the results of electroplating and surface alloying of metallic titanium and steels (CT-3, CT-40, X18H10T) by metallic molybdenum and intermetallides in oxy-halide melt at (873-1173) K are presented. Ref. 2.

Auth.

b17.1.4.15. Electrocatalytic properties and photoelectrochemical characteristics of nanosized titanium dioxide films modified by La and Nd. /V. Vorobets, G. Kolbasov/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 335-339. – eng.; abs.: eng., geo., rus.

Nanostructured TiO_2 films modified by La and Nd have been produced by sol-gel method and characterized by x-ray diffraction and ultraviolet-visible photocurrent spectra. The average size of nanoparticles was no more than 10 nm, the average thickness of the deposited layers was 800 – 1000 nm. The XRD results indicated that TiO_2, TiO_2/La and TiO_2/Nd electrodes calcined at 430°C consisted of anatase as the single phase. The photocurrent spectra of the TiO_2/La and TiO_2/Nd electrodes showed a stronger current in the UV range and a shift in the flat-band potential (E_{fb}) towards more negative values than that of TiO_2 electrodes. Electrocatalytic properties of TiO_2, TiO_2/La and TiO_2/Nd electrodes in the process of oxygen electroreduction have been investigated. Modifying of TiO_2 films by neodymium and lanthanum improves catalytic activity of TiO_2/Nd and

TiO_2/La electrodes in the reaction of oxygen electroreduction. Improvement of electrocatalytic activity in comparison with unmodified TiO_2 has been observed for films with dopant concentrations up to 3%. The correlation between electrocatalytic activity of electrodes and energy position of conduction band E_{fb}, is determined. Synthesized films can be used in electrochemical sensors for the determination of O_2 in biological liquids. Tab. 2, Fig. 2, Ref. 9.

Auth.

b17.1.4.16. Voltammetric studies of Ca doped Y-114 layered cobalt perovskite electrodes with catalytic effect for ethanol electrooxidation in alkaline solutions. /Dan Mircea Laurentiu, Delia-Andrada Duca, Vaszilcsin Nicolae, Craia-Joldes Victor-Daniel/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 340-344. – eng.; abs.: eng., geo., rus.

In this paper, ethanol anodic oxidation reaction on $Y_{0.5}Ca_{0.5}BaCo_4O_7$ electrode in aqueous alkaline solution was investigated using voltammetric studies. The catalytic activity on ethanol anodic oxidation becomes a serious issue, mainly in order to use layered cobalt perovskite as anode in fuel cells. The research is necessary to understand the ethanol oxidation reaction (EOR) mechanism on the surface of these type of compound electrodes. Electrochemical behavior has been studied by cyclic voltammetry and linear polarization. Obtained results have shown that layered cobalt perovskites are appropriate as anodes in high temperature fuel cells. Fig. 4, Ref. b17.

Auth.

b17.1.4.17. Voltammetric studies on anodic oxidation of sulphite in alkaline solutions on smooth nickel based 3 layers platinum nanoparticles electrode. /Enache Andreea Floriana, Dan Mircea Laurentiu, Vaszilcsin Nicolae/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 345-349. – eng.; abs.: eng., geo., rus.

In this paper, anodic oxidation of sulphite ions on smooth nickel electrode based 3 layers platinum nanoparticles (Ni–Pt) in aqueous alkaline solutions has been investigated by electrochemical techniques in order to find optimum parameters of the process. Electrochemical behavior of sulphite ions has been studied by cyclic voltammetry and linear polarization on Ni-Pt electrode as a function of sulphite concentration at different polarization rate. The research is necessary to establish the oxidation mechanism on the surface of this kind of electrodes, taking into account both chemical and electrochemical reactions. Tab. 1, Fig. 3, Ref. 21.

Auth.

b17.1.4.18. Voltammetric studies of methanol electrooxidation in alkaline solutions on skeletal nickel based 6 layers platinum nanoparticles electrode. /Delia-Andrada Duca, Dan Mircea Laurențiu, Vaszilcsin Nicolae/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 350-354. – eng.; abs.: eng., geo., rus.

In this paper, new aspects of methanol electrocatalytic oxidation on skeletal nickel based 6 layers platinum nanoparticles electrode in aqueous alkaline solution were investigated. Pt and its alloys are the most commonly used catalytic materials as anode of direct alcohol fuel cells, taking into account their excellent adsorptive properties and easy methanol dissociation. New electrodes have been prepared by spray pyrolysis technique and are propose for methanol oxidation reaction (MOR). The electrochemical activity for MOR was investigated by cyclic voltammetry and linear polarization techniques. The present study concerns the preparation of several Ni based platinum electrode materials and evaluation of their electrocatalytic properties toward MOR. Tab. 1, Fig. 4, Ref. 12.

Auth.

b17.1.4.19. Inhibitory effect of resveratrol on aluminum corrosion in alcoholic solutions. /Cristian George Vaszilcsin, Mircea Laurentiu Dan, Delia-Andrada Duca, M.Labosel/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 355-359. – eng.; abs.: eng., geo., rus.

This paper presents results obtained using resveratrol as corrosion inhibitor for aluminum in ethanol solutions. Inhibitory properties of resveratrol were studied in 12% ethanol + 0.25M Na_2SO_4

solutions in the presence of different concentrations of inhibitor, between 10^{-6} and 10^{-3} M. Electrochemical tests have been performed on two materials types: polished and brushed aluminum. Resveratrol electrochemical behavior in ethanol solutions was examined by cyclic voltammetry on platinum electrode. The inhibitory effect was studied by linear polarization (Tafel method) in order to determine the kinetic parameters, providing thus information about the inhibitory effect mechanism. Tab. 3, Fig. 4, Ref. 10.

Auth.

b17.1.4.20. The sequence of the preparing process of optimal composition of antisublimation coatings for semiconducting branches of thermoelements. /F. Basaria, G. Bokuchava, I. Tabatadze, M. Rekhviashvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 360-361. – eng.; abs.: eng., geo., rus.

The sequence of the technological process for preparing optimal chemical composition of electroinsulatingantisublimation coatings based on inorganic vitreous enamels have been developed for protecting all types semiconducting branches of thermoelements against sublimation. Proposed method gives possibilities to create antisublimationcoatings in a short time with using the minimum amount of materials, which perfectly satisfy requirements. Tab. 1, Ref. 4.

Auth.

b17.1.4.21. Electric conductivity of laser doped polymer surfaces. /J. Aneli, N. Bakradze, T. Dumbadze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 368-372. – eng.; abs.: eng., geo., rus.

Physical-chemical processes in the polymer surfaces initiated by laser irradiation with use of modern physical experimental methods are studied. It is established the regularities of the dependences between laser beam parameters and polymer structures and physical-chemical transformations in laser irradiated polymer materials. It is established that the transition of type dielectric - conductor is due to formation of the conjugated double bonds in the polymer macromolecules having semiconducting character of p-type (at moderate laser beam energy) and n-type (at more high energies). Temperature dependence of electric conductivity of laser irradiated polymers is described by the Mott formulas. Fig. 4, Ref. 10.

Auth.

b17.1.4.22. Composites based on polyester lacquer and mineral fillers. /L. Shamanauri, J. Aneli/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 373-375. – eng.; abs.: eng., geo., rus.

The work is devoted to the obtaining and investigation of some properties of composites based on polyester with such fillers, as quartz sand, andesite, trachite and clay. The average size of these powders particles was lower than 50 microns. The physical-mechanical and hydrophobic properties of the composites have been investigated. It is experimentally shown that the dependence of mechanical strengthening of the composites on the fillers concentration has an extreme character- it is characterized with maximums at definite concentrations of fillers. For its part location of these peaks depends on the type of filler. So for example, for composites containing andesite and quartz sand, strength maxima occur at concentrations of fillers near 50 weight % and the largest substantially exceed those for composites containing clay and trachyte. The effect of the type and concentration of the filler is also reflected in the degree of hydrophobicity of composites. Composites water absorption decreases until the keeping of the wettability of all filler particles, which is achieved at relatively low polymer filling. With the deterioration of wetting that occurs at high filler content increases the probability of their associates and creation of microvoids in the polymer matrix. The experimental results are explained by the peculiarities of the microstructure of materials. Mainly it is due to the nature of interfacial interaction, what significantly affects on the distribution of the filler particles in the polymer matrix. Tab. 1, Ref. 7.

Auth.

b17.1.4.23. Creation of cellulose acetate membrane on the basis of different compositions. /G. Bibileishvili, N. Gogesashvili/. Proceedings of Georgian National Academy of Sciences.

Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 382-383. – eng.; abs.: eng., geo., rus.

Today polymer membranes are widely used to filter solutions. Theyconstitute 80 % of the world production of membranes. The usage of polymers is due to their physical structure and their chemical properties. The Goal of polymermodification is to obtain the membrane with a structure desired for the particular process of filtering. Properties of polymer membrane in exploitation depends on polymer, its concentration, composition of the polymer solution, solvent type and the concentration of nonsolvent. Cellulose Acetate areoften used for preparation of membranes [1]. Their properties are moderate hydrophilic, inertto filtering components of the solution and relatively cheap raw materials. The research was conducted on solutions with different concentration of cellulose Diacetate (5-7%) in DMAc/LiCl for creation of Cellulose Acetate membranes in the Engineering Institute of Membrane Technology [2].The study of the process of phase inversion ofobtained solutions in different correlation conditions ofsolvent and nonsolvent revealed that the range of this correlation for Coagulation bath is 0-20%. The research was conducted on the automated laboratory instrument created in the Institute. The instrument allowed to control the membrane precipitation process by regulating bath temperature and the speed and angle of immersing of the polymer solution in the bath. The morphology of the obtained samples is studied by the microscope which is equiped with a digital camera (x5000). The structures of obtained membranes differ. The pore size of some microfiltration membrane is 0,3-0,45 mkm. Tab. 2, Fig. 2, Ref. 2.

Auth.

b17.1.4.24. Influence structure matrix to activity of nanocatalysts on activated carbon fibers. /T.Rakhimov, M. Mukhamediev/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 384-389. – eng.; abs.: eng., geo., rus.

The aim of investigation is to reveal there is or not influence thin differences of structure matrix-bearer on border dimension of active nanoparticles bearing on fiber polymeric materials. In experiments activated carbon fibers with similar physico-chemical characteristics and differences determined by nature of precursors have been used as matrixes. Nanoparticles have presented themself an active component by composition of palladium-containing nanocatalysts which have been tested in reaction of low-temperature of CO oxidation. By bordering dimensions were supposed minimal and maximal dimensions of particles in limits of which they retained special properties of nanoparticles-in this case responding for unusually high catalytic activity. Boundary dimensions were calculated by methods of mathematical statistics on the base of model “coloring bolls”. Investigations have shown that activity is inherent only to particles of determined diameter which is limits not only from above but also from bellow. Interval of boundary dimensions in dependence on of nature of carbon fiber and degree of reduction treatment can be both sufficiently wide and also maximum by narrow. In case of using more homogeneous by composition precursors the calculated diapason of dimensions of active particles was in considerable degree narrow. Thus the determined role of polymeric matrix on properties nanostructures has been proved what has opened way to purposeful obtain functional nanomaterials with high effectiveness. Tab. 1, Fig. 2, Ref. 7.

Auth.

b17.1.4.25. Chemical composition of mineral water ashari of village Babili, Lentekhi District. /M. Chikovani, M. Kurasbediani/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 416-418. – eng.; abs.: eng., geo., rus.

Concentration of ions in the mineral water of village Babili, Lentekhi District, was determined by use of various methods, namely complexonometric titration for Ca^{2+} and Mg^{2+}, mercurometric titration and acidometric method for Cl^- and HCO_3^-, Reznikov’s method for I^-. Concentrations of biogenic substances were determined by means of photometric analysis: Nessler’s reagent was used for determination of NH_4^+, Griess reagent for NO_2^-, diphenylamine for NO_3^-, ammonium phosphomolybdate for PO_4^{3-}. No biogenic substances were discovered in the selected water samples. Concentration of dissolved oxygen was determined by iodometric titration. Total concentration of organic substances was determined by the method of permanganometry

(oxidation-reduction titrations). The concentration of abovementioned ions is within a normal range and the water can safely be used for human consumption. Tab. 1, Ref. 5.

Auth.

b17.1.4.26. Hydrogenation of carbon dioxide over Fe-Zr/Al and Fe-Ni/Al oxide catalysts. /Sh. Tagiyeva, N. Aliyeva, L. Gassimova, R. Akhverdiyev, E. Ismailov/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 455-458. – eng.; abs.: eng., geo., rus.

The results of a study of Fe-Zr/Al and Fe-Ni/Al oxide systems as catalysts for the methanation of carbon dioxide and the first results of the studies of the distribution of the elements of active components by scanning the surface of Fe-Zr/Al and Fe-Ni/Al oxide catalysts using an X-ray fluorescence microscope as a function of the catalysts preparation, reaction conditions and the nature of the catalytically active composition are given. Electron magnetic resonance of catalyst in combination with on line chromatographic analysis of gas-phase products and XRD studies used to identify the magnetic centers of the catalyst and determination of the dependence of composition of the gas-phase products on the nature and concentration of the magnetic centers. Tab. 3, Fig. 1, Ref. 14.

Auth.

b17.1.4.27. The formation of intermolecular C-C bonds as a function of temperature with participation of C_3-C_4 alkane. /S. Abasov, A. Aliyeva, S. Agayeva, R. Zarbaliyev/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 459-462. – eng.; abs.: eng., geo., rus.

The temperature dependence of associated petroleum gas components was studied by using compositional catalysts ZSM-5/WO_4^{2-}(SO_4^{2-})ZrO_2 in aromatization reaction (400-600º), alkylation of benzene (300-450º) and involving these to the process with natural gasoline(140-220º). The possibility of forming alternative process for obtaining high-quality gasolines from associated petroleum gas was determined on the base of these reactions. Tab. 3, Ref. 6.

Auth.

b17.1.4.28. Nanostructural catalysts for synthesis of N-vinylmorfoline. /D. Mirkhamitova, S. Nurmanov, O. Ruzimuradov/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 463-466. – eng.; abs.: eng., geo., rus.

Vinylation of nitrogen-containing heterocyclical compounds in the presence of different by nature catalysts, organic solvents and their mixtures is important problem of modern organic chemistry. Investigation of properties of modified nanostrutural heterogeneous catalysts for vinylation of organic compounds having in their composition active atoms of hydrogen is also very important. The reaction of vinylation of morpholine in presence of KOH with using super-base systems DMSO-KOH and DMPhA and also for comparison without solvent has been investigated. Heterogeneous-catalytic reaction of acetylene with morpholine in the presence of catalysts: activated coal AU-L/KOH and nanostructural activated coal/KOH has been investigated. It was shown that in both cases N-vinylmorpholine was formed. Activity of catalytical system nanostructural activated coal/KOH was higher in comparision with catalyst AU-L/KOH. Yield of N-vinylmorpholine in their presence was equal to 38.2 and 31.7% correspondingly. Tab. 2, Fig. 2, Ref. 3.

Auth.

b17.1.4.29. The mathematical description for rhenium electrodeposition over complex-forming conducting polymer. /V. Tkach, S. Oliveira, W. Freitas, R. Ojani, V. Neves, M. Espínola, P. Yagodynets/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 480-485. – eng.; abs.: eng., geo., rus.

The system with rhenium electrodeposition from perrhenates over complex-forming conducting polymer has been evaluated from the theoretical point of view. The correspondent mathematical model was developed and analyzed my means of linear stability theory and bifurcation analysis. It was possible to conclude that the electrosynthesis of complexes may be realized in steady-state

mode, easy to maintain. The reaction is diffusion-controlled. The oscillatory and monotonic behavior possibility was also evaluated. Fig. 1, Ref. 28.

Auth.

b17.1.4.30. Structural changes of polyphenyleneoxides in the process of friction. /G. Papava, M. Gurgenishvili, I. Chitrekashvili, E. Gavashelidze, Sh. Papava, Z. Chubinishvili, N. Khotenashvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 504-508. – eng.; abs.: eng., geo., rus.

Structural changes of polyphenylene oxide in the process of thermal treatment and friction were studied by mass-spectrometric method. It was shown that under the terms of treatment at 300^{o}C, destructive-structuring processes take place in a polymer. Besides, Friss regrouping takes place that leads to branching of macromolecules and forming gel-fraction. Investigation of tribochemical processes during friction, showed that character of tribochemical processes in a polymer is conditioned by the formation of complex structure of pressed specimens containing branching, cross-linked polymer and low molecular fraction as a result of friction at the border of friction surface. Fig. 3, Ref. 9.

Auth.

b17.1.4.31. Preparation of polymerized nitrogenous fertilizers. /G. Papava, M. Gurgenishvili, I. Chitrekashvili, N. Dokhturishvili, N. Gelashvili, K. Papava, R. Liparteliani/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 509-511. – eng.; abs.: eng., geo., rus.

Ammonium nitre, most widely spread nitrogenous fertilizers, is well soluble in water and is easily washed-off to soil. This is why we pursued to synthesize polymer nitre, in the pores of natural sorbents, which is apt to gradually release nitrogen to soil thanks to degrading effect of soil microorganisms. With this in view we have used polymer acceptor – polyamine type nitrogen-containing oligomer that possesses reaction centers, which is implanted in natural sorbent pores where it undergoes structuring, as a results of which we obtain polymer adduct (polymer nitre). New generation polymer fertilizer – biodegradable polymer nitre, synthesized by us, is not washed-off to soil, and at the impact of biodegradation microorganisms present in soil it is gradually transformed into the form easily assimilated by plants. Plants are guaranteed with dosed nutrition along the whole vegetation period, thus providing obtaining of ecologically safe product. Ref. 11.

Auth.

b17.1.4.32. Indium phosphide quantum DOTs on gallium phosphide. /T. Lapherashvili, A. Chanishvili, Sh. Lomitashvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 512-515. – eng.; abs.: eng., geo., rus.

Indium phosphide (InP) quantum dots (QD) are an excellent material for optical communication and solar cells [1, 2]. Different formation methods of InP quantum dots are described in this work.Thin films of the metals indium (In), gallium (Ga) and of alloys Inx Ga1-x (0<x <1), by the electrochemical method have been deposited on the III-V semiconductor (GaP, GaAs) surface from aqueous of chloride InCl3 and GaCl3. A platinum wire has been used as the anode, and the sample as the cathode. After deposition of metal, semiconductor wafers were annealed in hydrogen atmosphere during 3-5 min at the various temperature 100-500^{0}C. Photo spectral characteristics of annealed structures were investigated. A new formationmethod of InP quantum dots on GaPis presented. Ref. 9.

Auth.

b17.1.4.33. The qualitative and quantitative assay of organic acids in active pharmaceutical ingredient of ,,Camelyn M". /T. Murtazashvili, M. Jokhadze, K. Sivsivadze, N. Nizharadze, M. Murtazashvili, P. Tushurashvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 553-555. – eng.; abs.: eng., geo., rus.

GC-MS and potentiometric titration method were developed for quality and quantitative determination of total organic acids in Camelyn API. Have been selected the optimal conditions for analysis: mobile phase - helium, flow rate - 1ml/m, injector temperature - 250°C, transfer line temperature - 295°C, oven temperature - 40°C, retention was during 3mn. Temperature gradient -

15°C/mn → 150°C, retention – 1 mn, 20°C/mn → 250°C, retention 1 mn, 35°C/m →310°C retention – 2 mn. Sample injection volume 1µl, ion registration regime - TIC. Ion detection ranged between 45.00 - 470.00 amu. Conducted studies gives us opportunity to add in the normative document of Camelin's active pharmaceutical ingredient the specification of qualitative and quantitative determination of organic acids. Tab. 1, Fig. 2, Ref. 6.

Auth.

b17.1.4.34. Development of HPLC method for determination of caffeine in energy drinks. /T. Murtazashvili, M. Jokhadze, K. Sivsivadze, B. Nozadze, N. Imnadze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 556-560. – eng.; abs.: eng., geo., rus.

Products, containing caffeine, a natural origin alkaloid of purine group, is widely represented on the retail market. In recent years it has become popular to add caffeine into energy drinks. Thus it is very important optimization of methods for qualitative and quantitative determination of caffeine. In the current work, it is represented the developed rapid and sensitive HPLC method for caffeine determination. Chromatographically optimal condition was achieved by using mobile phase of acetonitrile-water (40%:60%) under following conditions: UV detection was conducted at 254 nm; flow rate of mobile phase -0.7mL/min; column size with solid phase is following: Phenomenex® Luna® 5 µm C18(2) 100 A/ LC Column 250 x 4.6 mm; column temperature - 25ºC; sample injection volume - 20µl. In given conditions was studied the possibilities of quantitative determination of Caffeine; the procedure revealed linear and correlation coefficient R^2 is 0.998. Based on the received data we can conclude that the developed method can be used for qualitative and quantitative determination of caffeine in different type Energy Drinks. Tab. 1, Fig. 4, Ref. 7.

Auth.

b17.1.4.35. Ion exchange properties of Georgian scolecite. /S. Urotadze, N. Osipova, T. Kvernadze, V. Tsitsishvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 570-574. – eng.; abs.: eng., geo., rus.

Somel physical and chemical properties of Georgian scolecite from Kursebi, especially the ion exchange in dynamic conditions have been studied. Dynamic exchange capacity depends on conditions of the process, it is is highest for 1N solutions, it increases with the rise of temperature and decreases with flow rate. Selectivity series are as follows: $Rb^{+} > Cs^{+} > K^{+} > NH_4^{+} > Na^{+} > Li^{+}$; $Sr^{+2} > Ba^{+2} > Ca^{+2} > Mg^{+2}$; $Cd^{+2} > Cu^{+2} > Mn^{+2} > Zn^{+2} > Co^{+2} > Ni^{+2}$. Tab. 5, Fig. 6, Ref. 4.

Auth.

b17.1.4.36. Thermal effects of phase transitions of cerium and neodymium. /M. Khundadze, V. Varazashvili, N. Lezhava, R. Jorbenadze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 28-31. – eng.; abs: eng., geo.

Phase transitions of high-purity cerium and neodymium are investigated by using high temperature scanning calorimeter (HT-1500 Seteram) in the temperature range 1500K. The calorimeter was calibrated by standard compounds (benzoic acid, Sn, Pb, Zn, Al, Ag, Cu). The accuracy of enthalpy of transitions (ΔH_{tr}) was about ±2 %. For cerium two types of transformation are detected: at 350-372K - hexagonal close packing (hcp) - face-centered cubic lattice (fcc) transition, and in 880-960K the facecentered cubic lattice (fcc) transformation into body-centered cubic lattice (bcc). For neodymium the changing of hexagonal close packing (hcp) into body-centered cubic lattice (bcc) is detected at 1093-1113K. This anomalies are in good agreement with the literature data of electrical resistance, thermal conductivity and temperature conductivity. The thermal characteristics of transitions – enthalpy, entropy, temperature domains – are reported, which are as follows: for cerium hcp-fcc transition ΔH_{tr} =2436.3 J/mole; ΔS_{tr}=6.69 J/K.mole; fcc-bcc transition ΔH_{tr} = 4742.7 J/mole; ΔS_{tr}=5.0 J/K.mole; For neodium hcp-bcc transition ΔH_{tr} =3234.2 J/mole; ΔS_{tr}=2.9 J/K.mole. Fig. 4, Ref. 8.

Auth.

b17.1.4.37. Voigt profile analysis and band-shape parameter dependence on temperature and solvent dynamics in absorption spectra of beta-carotene. /M. Zakaraia, A. Benashvili, D.

Gogoli/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 38-44. – eng.; abs: eng., geo.
We investigated joint influence of lifetime and solvent broadening, represented by Voigt profile, for absorption spectra of beta-carotene in acetone, ethanol and isopentane over a wide temperature range. The temperature and solvent dependence of the Gaussian contribution to the total width suggest that homogeneous solute-solvent interactions dominate, but inhomogeneous broadening and solvent structural effects are also important. The analysis provides good broadening parameters and displacement for strong active mode Ω_1, whereas Ω_2 and Ω_3 displacements are poorly determined. Further specification of dimensionless shifts requires involving experimental data on the resonance Raman and coherent anti-Stokes Raman excitation profiles. Such analyses are in progress. Tab. 3, Ref. 8.

Auth.

b17.1.4.38. Mathematical-chemical investigation of some straightchained monohydric alcohols. /M.Gverdtsiteli, M. Rusia, I.Gverdtsiteli/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 88-90. – eng.; abs: eng., geo.
Mathematical-chemical investigation of some straight-chained monohydric alcohols was carried out within the scope of ANB-and quasi-ANB-matrices methods. Four correlation equations of „structure-properties" type were constructed. Two correlations are good, two – satisfactory. Tab. 1, Ref. 4.

Auth.

b17.1.4.39. Mathematical-chemical investigation of some carboxylic acids. /K. Giorgadze, M. Gverdtsiteli/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 88-90. – eng.; abs: eng., geo.
Some carboxylic acids Mathematical-chemical investigation was carried out within the scope of quasi-ANB-matrices method. Three correlation equations were constructed and investigated. Correlations are satisfactory. Shannon's information entropies were calculated for these acids. Tab. 1, Ref. 7.

Auth.

b17.1.4.40. Hexamethyldimethylenindolino[4,5-e]indoline reaction with nitrous acid. /Sh. Samsoniya, M. Trapaidze, T. Shonia, U. Kazmaier/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 91-97. – eng.; abs: eng., geo.
In order to obtain dinitrozo compound we carried out the reaction of Fisher base analogue – hexamethyldimethylenindolino[4,5-e]indoline with nitrous acid (solution of sodium nitrite in acetic acid). The reaction runs in two steps. At the first step respective dioxime was separated as salt of perchloric acid- diperchlorate. The alcoholic solution of obtained salt was processed with the solution of sodium hydroxide, afterwards instead of expected dinitroso compounds symmetric 1,1,3,8,10,10-hexamethyl-2,9-dioxoindolino[4,5-e]indoline was formed. Thus, unlike ofindole, in case of indoloindole, with adding strong base, from perchlorate of dioxime with perchloric acid molecule of HCN is eliminated leading to theformation of symmetric 2,9-dioxo-indoloindole. Structure of synthesized compounds is confirmed by the data of IR,UV, 1H-NMR, 13C-NMR and mass spectra. Fig. 3, Ref. 8.

Auth.

b17.1.4.41. Chemical bonds in the processes of plasticity, fluidity and mechanical destruction of materials. /A. Gerasimov, G. Kvesitadze, M. Vepkhvadze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 98-104. – eng.; abs: eng., geo.
The strength change of materials is still a disputable and unsolved problem. Theoretically calculated material strength on break down is bigger than the one measured during the test for real bodies. There is no explanation for experimental facts connected with the decrease of the strength at thermal impact on the tested material. It is connected with the absence of the identified microorganism of the strength change. In the present paper we suggest new mechanism of the elementary act of the processes of plasticity, fluidity, mechanical destruction. The mechanism is based on anew suppositionof the motion of the atom in solid bodies due to decrease of chemical bond energy with neighboring atoms that can be done by thermal or non-thermal ways. In the

present paper it is shown that for elementary act of changing material strength it is necessary to decrease chemical bond energy as a result of occurrence of antibonding electrons around the atom. Specific conditions of the start of the processes of plasticity, fluidity, mechanical destruction and their transition from one process into another at mechanical loading are considered. Fig. 4, Ref. 38.

Auth.

b1.5. Earth and related environmental sciences

b17.1.5.1. New data on the fault behaviour on the right bank of the Enguri dam during water regulation in the reservoir and atmospheric precipitations. /V. Abashidze, T. Chelidze, T. Tsaguria, N. Dovgal, L. Davitashvili/. Roceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 9-14. – rus.; abs.: geo., eng.
Since 1974 continuous observations by means of quartz extensometer (strainmeter) with photo-optical registration have been carried out in order to study the behavior of the fault on the right bank of the Enguri River in the area of the Enguri dam. In 2014, a laser registration was installed on the extensometer, which proved ascending and descending of the blocks during regulation of the water level in the reservoir. Besides, it also enabled us to record dynamics of the blocks during strong rains, which was not possible to fulfill by photo-optical registration due to technical limitations. The precise quantitative estimation of this effect will become feasible during following years when will have more observed material. Fig. 4, Ref. 3.

Auth.

b17.1.5.2. Short-range forecast of dynamical processes and spreading of admixtures in the eastern part of the Black Sea. /A. Kordzadze, D. Demetrashvili, V. Kukhalashvili/. Proceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 15-29. – rus.; abs.: geo., eng.
In the present paper the regional forecasting system of the south-eastern part of the Black Sea (the regional area is limited from the west with liquid boundary passing along meridian 39.08^0E), which is one of the parts of the basin-scale now casting/forecasting system, is expended and consists of hydrodynamic and ecological blocks. The hydrodynamic block includes a high-resolution 3-D regional model of the Black Sea dynamics and a 2-D shallow water model. A core of the ecological block are 2-D and 3-D models of spreading of nonconservative admixtures. The data required for calculation of forecasts of the sea state are transferred from Marine Hydrophysical Institute (Sevastopol) everyday in the near-real time mode via Internet. The new version of the Black Sea regional forecasting system provides to calculate 3 days' forecast of the main hydrophysical fields – the current, temperature, salinity and sea level and spreading of pollution by oil products and other toxic substances with 1 km spacing in the south-eastern part of the Black Sea. The results of modeling and forecast of dynamical fields and admixtures' spreading are given. Fig. 6, Ref. 25.

Auth.

b17.1.5.3. Application of the seismic tomography method according to the materials of correlation method of refracted waves and deep seismic sounding together with gravimetric and magnetometric data for hydrocarbon prospecting. /S. Ghonghadze, P. Mindeli, J. Kiria, A. Esakia/. Proceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 30-45. – rus.; abs.: geo., eng.
The article surveys the possibilities of using the seismic tomography method in prospecting the structures containing oil and gas by means of seismic, gravimetric and magnetometric data. A complex analysis of geophysical data has been carried out and an image of probable distribution of the structures containing oil and gas on some territories in Eastern Georgia has been determined. Fig. 12, Ref. 10.

Auth.

b17.1.5.4. Shielding effect in the method of refraction waves. /D. Kitovani/. Proceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 52-57. – rus.; abs.: geo., eng.

The article shows that if above the refractive border, which contains a tectonic step, there is a thin layer, where the speed of resilient waves is increased, the screening of the lower layer takes place, causing en essential error during determination of the depth of the refractive border. Fig. 4, Ref. 2.

Auth.

b17.1.5.5. Some characteristics of hail processes in Kakheti. /A.Amiranashvili, U. Dzodzuashvili, J. Lomtadze, I.Sauri, V. Chikhladze/. Proceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 77-100. – rus.; abs.: geo., eng.

For the operating cycle of anti-hail service the generalized data about such characteristics of hail processes in Kakhetii, as: the general statistics of the number of days with the hail; intensity of hail damages; size of hail stones; duration of hail damages; the monthly, decade and daily repetition of hail processes; synoptic processes in the days with the active actions on the hail processes; height of zero isotherm; direction and the speed of the movement of hail cells and clouds; the average monthly values of a quantity of days with convective processes; the radar models of hail-dangerous and hail clouds; damage from the hail in the territories of land of municipalities and separate populated areas; the expenditure of anti-hail rockets under the active influences are represented. Tab. 8, Fig. 13, Ref. 62.

Auth.

b17.1.5.6. Meteorological radars and radar ensuring active impacts on atmospheic processes in Kakheti. /A. Amiranashvili, U. Dzodzuashvili, J. Lomtadze, I. Sauri, V. Chikhladze/. Proceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 101-112. – rus.; abs.: geo., eng.

The prehistory of active actions on the atmospheric processes on the territory of Georgia is briefly described. The description of the operating principle and methods of operation of the surveillance and specialized anti-hail meteorological radars is given. The comparison of the parameters of the contemporary meteorological radars of C-range is carried out. The selection of contemporary meteorological radar for the radar guarantee of active actions on the atmospheric processes and creating the automated system for dealing with the hail is substantiated. Tab. 1, Fig. 6, Ref. 38.

Auth.

b17.1.5.7. Means of impact on atmospheric processes in Kakheti. /A. Amiranashvili, U. Dzodzuashvili, J. Lomtadze, I.Sauri, V.Chikhladze/. Proceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 101-112. – rus.; abs.: geo., eng.

The data concerning the anti-hail rocket SK-6 to be applied in the Kakhet region in 2015 are given. A brief description of the pilot specimen of the rocket's launcher developed in Scientific and Technological Center "Delta" is given. A map of location of the points influencing the hail processes in Kakheti is presented. Fig. 6, Ref. 16.

Auth.

b17.1.5.8. Petromagnetism and magnetic field of intrusives on the territory of Georgia. /G. Tabaghua, R. Gogua/. Proceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 121-125. – rus.; abs.: geo., eng.

We have studied the magnetic field and petromagnetism of Cenozoic intrusives on the territory of Georgia. We have determined similarities and differences among the intrusives according magnetic parameters (*æ, I_n, Q*) and magnetic minerals. It is proved that the magnetic prospecting method is effective for prospecting and mapping of similar intrusives. Fig. 4, Ref. 2.

Auth.

b17.1.5.9. Inhomogeneous effect of relief on the gravity field in the underground water regime. /G. Kobzev, G. Melikadze, T. Jimshela, Al. Tshankvetadze/. Proceedings of Mikheil Nodia Institute of Geophysics. – 2015. – v. 65. – pp. 126-32. – rus.; abs.: geo., eng.

A spatial and temporal analysis of underground water operation conditions was made, the geodynamic component was singled out from the multyparameter signal, the cause-and-effect relationsh between the geodynamic and hydrodynamic processes and the relief's influences on their variation were identified. Fig. 11, Ref. 7.

Auth.

b17.1.5.10. POPs management issues in Georgia. /A. Berejiani/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 395-397. – eng.; abs.: eng., geo., rus.
Georgia has signed and ratified the Association Agreement with the EU. According to this Agreement, the parties shall develop and strengthen their cooperation on environmental issues, thereby contributing to the long-term objective of sustainable development. Policy objectives concerning management of chemicals, are included in the 2014 Association Agreement with the EU. Also, Georgia is a party to the Multilateral Environmental Agreements (MEAs) in the field of chemicals management. Ref. 9.

Auth.

b17.1.5.11. Quantitative determination of total manganese in Zestafoni soil and drinking water and abnormalities caused by its abundance. /I. Lomsianidze, L. Khvichia, B. Chkheidze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 398-399. – eng.; abs.: eng., geo., rus.
According to the statistical indicators of the non-commercial legal entity "Municipal Public Health Center" Zestafoni residents are plagued by nervous system diseases including the so called “manganese-induced parkinsonism” and musculoskeletal disorders.The total amount of manganese in the soil ranges between 2100 mg/kg and 3045 mg/kg, and in the drinking water it is between 1.25 mg/l and 3.05 mg/l. Such amount of manganese endangers human health. Tab. 3, Ref. 6.

Auth.

b17.1.5.12. Oxide-manganese catalysts for solving of ecological problems. /V. Bakhtadze, V. Mosidze, R. Janjgava, N. Kharabadze, M. Pajishvili, N. Chochishvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 400-402. – eng.; abs.: eng., geo., rus.
The brief review of the works on elaboration and study of manganese catalysts for solving of ecological problems is given. The data are presented on improvement of the technology of coating of manganese oxides and palladium on the fragments of alumosilicate blocks on the stainless steel: ”20X23H18”. It wass hown that CO oxidation degree on Mn-Pd catalyst, coated on the steel, attains 90-98% at W= 30 . 10^3 hour $^{-1}$ and at (130-160)^{o}C. Dispersity of manganese oxides on the plates of alumosilicate blocks comprises nearly 100 nm. Tab. 1, Fig. 1, Ref. 7.

Auth.

b17.1.5.13. Clearing-treatment of quarry waters of copper-pyrite deposits. /R. Dundua, N. Butliashvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 403-405. – eng.; abs.: eng., geo., rus.
Ore sulfide deposits are significant sources of toxic pollution. Loss of nonferrous and heavy metals from quarry water compounds tens thousands of tons. Ore operations respectively cause serious economic problem and environmental damage of area. Copper sulfide deposit Madneuli is a typical example of deposits existing worldwide. Quarry waters of Madneuli deposit belong to low-concentrated ones and are considered as nonprofitable for extraction of heavy metals. By researches, cleaning-treatment of quarry waters using sulfide methods seems perspective. The method thereby will produce barite-polymetallic sulfide sediment for further processing and quarry water containing metal sulfates being below allowable concentration for reservoirs. Tab. 2, Ref. 4.

Auth.

b17.1.5.14. New approaches and tools for rehabilitation of chemically contaminated soils. /M. Kurashvili, T. Varazi, M. Pruidze, G. Adamia, N. Gagelidze, T. Ananiashvili, M. Gordeziani, G. Khatisashvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 406-409. – eng.; abs.: eng., geo., rus.
The main idea and novelty of presented work is development a novel approach for rehabilitation of chemically contaminated soils. The approach based on using natural minerals composites which are comprised of natural mineral rocks, natural biosurfactants, microorganism strains having high detoxification ability and plants-phytoremediators. It has been established that soybean and alfalfa

together with selected bacterial consortium and natural biosurfactant are the best tools for phytoremediation of soils polluted with oil hydrocarbons. Fig. 2, Ref. 7.

Auth.

b17.1.5.15. Numerical simulation of distribution of arsenic discharges into the Tskhenistskali and Lukhuni Rivers from industrial wastes. /A. Surmava, L. Gverdtsiteli, N. Bagrationi/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 410-413. – eng.; abs.: eng., geo., rus.

Numerical simulation of distribution of arsenic discharged into the Tskhenistskali and Lukhuni Rivers will be executed by using non-stationary linear three-dimensional equation of transition-diffusion of substances in continuous medium. Model is intended for the study of distribution of polluting agents in mountain rivers in the first approximation. Distribution of arsenic thrown into those rivers near the Uravi and Koruldashi villages is modeled using numerical experiments in case of stationary sources. Fig. 3, Ref. 8.

Auth.

b17.1.5.16. Studying the contamination with heavy metals and the toxicity level of arable lands in the industrial region of Georgia Bolnisi-Kazreti using modern test methods. /R. Gigauri, Sh. Japaridze, N. Gigauri, T. Gogiberidze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 414-415. – eng.; abs.: eng., geo., rus.

The arable lands of Georgia's Kvemo Kartli industrial region Bolnisi-Kazreti (Madneuli Copper and Gold Mine), which are generally irrigated by the River Mashavera, have been studied. The waste water of the above-mentioned mine is discharged into the lands. In spite of the fact that the enterprise is engaged in the water treatment, an average level of contamination with heavy metals is still being observed. Copper tenfold exceeding the MCL is dominant. The constantly accumulating and soluble forms of heavy metals are fixed in soil by the TCLP and WET standard methods. The soil non-irrigation (spring) and intensive irrigation (summer) periods have been studied and compared. The spectral and atomic absorption analysis methods have been used in the study. The currently established ecological monitoring system will, hopefully, further improve the existing situation. Tab. 2, Fig. 1, Ref. 4.

Auth.

b17.1.5.17. Polycyclic aromatic hydrocarbons from Norio oil. /V. Tsitsishvili, E. Topuria, N. Khetsuriani, K. Goderdzishvili, K. Ebralidze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 495-500. – eng.; abs.: eng., geo., rus.

As a result of multistage separation of vacuum gas oil fraction of Norio oil (Georgia) with boiling point 340–590°C over one thousand samples were collected: 876 petroleum eluents, 78 benzene extracts, and 90 crystal samples. Polycyclic aromatic hydrocarbons and their hetero-analogs from said samples had been studied by GC-MS method using the automated system of mass deconvolution and identification (AMDIS). Tab. 1, Fig. 5, Ref. 4.

Auth.

b17.1.5.18. Investigation of new wells of Satskhenisi crude oil. /N. Khetsuriani, E. Usharauli, K. Goderdzishvili, E.Topuria, M.Chkhaidze, V.Tsitsishvili/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 501-503. – eng.; abs.: eng., geo., rus.

Physical and chemical characteristics, distribution of microelements, and IR spectra of crude oil from new wells of Satskhenisi oil deposit have been studied. It is established, that inspected oils are of tertiary types, their physical and chemical properties, chemical nature and high output of light fractions outlines good prospects for using oils from Satskhenisi oilfield as a raw material to obtain commercial oil products – high-quality organic solvents, aviation and diesel fuel and a variety of petroleum lubricants. Tab. 2, Fig. 2, Ref. 4.

Auth.

b17.1.5.19. Modeling of smelting of ferrosilicoaluminum by using Tkibuli coal tailings for raw material. /J. Mosia, G. Nikolaishvili, A. Julukhidze, M. Chumbadze, L. Sigua/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 520-522. – eng.; abs.: eng., geo., rus.
This work aims to study the possibility of melting of ferrosilicoaluminum by using Tkibuli coal tailings for raw materials. The missing amount of carbon in the raw materials was offset by the use of ordinary Tkibuli coal. The test crucible melting was conducted in the ore-smelting laboratory furnace. Prepared alloy contains silicon 45 - 52, aluminum 20 - 25 %, and rest is iron. Fig. 2, Ref. 1.

Auth.

b17.1.5.20. Extraction of gold, silver and copper from enrichment tails of rebellious sulfide ores by bacterial-chemical method. /N. Lomidze, Z. Arabidze, L. Kartvelishvili, T. Guruli, E. Ukleba, I. Kvatashidze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 526-529. – eng.; abs.: eng., geo., rus.
In article enrichments of gold-bearing sulfide ores and waste problems are considered. The finely dispersed gold in sulfide minerals (pyrite, chalcopyrite) complicates processing of this kind of raw materials. Before cyanidation necessary is destruction of the mineral. Instead oxidative roasting or pressure leaching bacterial leaching is offered as a cheap and environmentally friendly way. Leaching was carried out as well as heap and in the tanks by mixing method. Acidophilus bacteria Th. Ferrooxidans and Th. Tiooxidans were used. Tab. 3, Fig. 1, Ref. 4.

Auth.

b17.1.5.21. Development of technology of gold extraction from Madneuli's gold-bearing quartzite deposits. /L. Chochia, L. Kartvelishvili, E. Ukleba/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 530-534. – eng.; abs.: eng., geo., rus.
Was studied of gold extraction from the gold-bearing quartzite by a classical method – cyanation. From quartzite gold extraction is very high. Non-waste technology gives us the possibility to protect nature from adverse impacts and at the same time makes the technology economically profitable. Tab. 3, Fig. 3, Ref. 6.

Auth.

b17.1.5.22. The cleaning sewage of Madneuli by sorption method. /L. Chochia, L. Kartvelishvili, J. Kakulia, S. Jalaghania/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 535-538. – eng.; abs.: eng., geo., rus.
The study the possibility of cleaning the sewage of Madneuli mining and processing enterprise on sorbents with nonferrous metals' ions (Cu^{2+},Zn^{2+},Fe_{common},Pb^{2+}) - natural diatomite, clinoptilolite, Askan-clay, coals (Georgia) and their modified forms was carried out. The chemical composition of wastewater was studied too. The sorption properties of natural and modified sorbents with a different mineral composition, and the factors, influencing on the sorption of Cu^{2+} (S:F, pH, mixing time, concentration of Cu^{2+}) were researched. It was estimated that the modification of natural diatomite's and zeolites with calcium oxide significantly extend their cleaning degree of solutions from these ions. A higher adsorption capacity with respect to the ions Cu^{2+},Zn^{2+},Fe_{common},Pb^{2+}) are characterized for the modified forms of zeolite and diatomite. The purification degree of above-mentioned ions reaches 95-99%. The optimal condition of wastewater treatment of Madneuli mining and processing plant is to use adsorbents - modified diatomite and clinoptilolite. The sorbent is in contact with the sewage due to intensive blending. The study allowed establishing the optimal conditions for sorption and offers more effective sorbent for the extraction of copper ions from waste water Madneuli mining and processing plant. Tab. 2, Fig. 2, Ref. 4.

Auth.

b17.1.5.23. Perspectives of agroclimatic resources use in Georgia and possible effects of climate change on it. /G. Khomasuridze/. Agrarian-economic Science and Technologies. – 2016. – #2(31). – pp. 30-37. – geo.; abs.: geo., eng.

Future air temperatures are expected to increase by 2-3^{0}C, which adversely effects on the economy of the country. It is possible to change the strategy of agricultural production: soil tilling, fertilizers, reclamation activities, postponement of sowing dates and more. Assessing the impact of and vulnerability to climate change, there is an opportunity to develop adaptation measures that prevent and neutralize negative developments in agriculture. Ref. 7.

Auth.

b17.1.5.24. Researching the time of reaction of the dam to the water level change in Enguri HPS reservoir. /M. Meskhi, S. Piralishvili, R. Inadze/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 88-97. – geo.; abs.: geo., eng., rus.

This article discusses the research of dam reaction time to changes in the water level in Enguri HPP reservoir. Presented is the analysis of multiplier models established via discretization of actually existing empirical time series - level of water in reservoir and readings of the inclination measuring devices installed in various places within the dam body and aggregation of the new series with different intervals. The transfer function of time series with identification of input and output processes is obtained. It is noted that output process could be affected by exogenous, i.e. no-feedback factors, as well as other factors, which determine the behavior of output process, its reaction. It is emphasized that as criteria for determining the dam reaction time, applied is not a value of standard error, but rather the minimum value of the sum of squares of residual errors of models - the difference between actual time series terms and the same terms obtained through the model. This article also discusses the value of parameter to be entered into the model during the research of dam reaction delay time to the changes of water level in the reservoir for both – continuous dynamic system and discrete system cases. The probable value of reaction time in various parts of the dam is also established for Enguri HPP. It is recommended to increase representativeness of the time series for the purpose to develop more convincing conclusions. Tab. 3, Fig. 7, Ref. 6.

Auth.

b17.1.5.25. Aspects of measuring elements and methodo-total errors in metrological researches. /I. Garsevanishvili, V. Padiurashvili, Z. Padiurashvili/. Automated Control Systems. – 2015. – #1(13). – pp. 105-109. – geo.; abs.: geo., eng., rus.

Analyzed are aspects of measuring elements and those of method-summarized errors in metrological researches. In case of measurements and control, a test is considered as experimental measurements of the quantitative and qualitative factors of properties of an object that are conducted by means of specific instruments.It has to be mentioned, that real test conditions are always different from the nominal ones, thus acquisition of absolutely accurate data is often involving great difficulties. Reviewed are types of errors and their factors, as well as methods of calculating errors and conditions required for data summarizing. Ref. 4.

Auth.

b17.1.5.26. Laumontite – natural zeolite mineral of Georgia. /S. Urotadze, V. Tsitsishvili, N. Osipova, T. Kvernadze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 32-37. – eng.; abs: eng., geo.

Integrated research of Georgian laumontite-containing tuffs and their modified (treated with water solutions of HCl and NH_4Cl) forms was carried out to create the scientific basis for their use. Zeolite phase content in rocks (50-90% in untreated samples) as well as the laumontite resistance to the treatment with ammonium chloride tuffs (up to 3N) and hydrochloric acid (up to 1N) were determined on the basis of X-ray diffraction pattern analysis. Thermogravimetric methods show the complete stability of crystalline microporous structure of laumontite up to ~450^{o}C. Chemical composition of laumontitecontaining rocks, water sorption capacity, ion exchange capacity relative to alkali and alkali earth metal cations ammonium cation and selectivity of the laumontite relative to single- and double-charged cations of metals were discovered. Quite high content of zeolite phase in rocks determines the prospect of their mining, and physical-chemical properties of laumontite-containing rocks give the basis of their applicability as adsorbents and ion exchangers in catalytic systems and as a raw material for the production of nano-materials. Tab. 7, Fig. 1, Ref. 8.

Auth.

b17.1.5.27. Influence of global warming on agroclimatic indices of agriculture and intensity of droughts in Kakheti region, East Georgia. /G. Meladze, M. Meladze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 97-104. – eng.; abs: eng., geo.

Against the background of current global warming the temperature in Eastern Georgia is increased by 0.4-0.5°C, on average, which might increase by 2°C and more in 2050. Such an increase of temperature shows the tendency of change (increase or decrease) in agroclimatic factors (active temperature, precipitations, hydrothermal coefficient) determining growth and development of agricultural plants, their productivity etc. According to the data of the long standing (1949-2008) meteorological observations in Kakheti region, the sums of active temperatures and the period of vegetation are increased, while the atmospheric precipitation (April-October) is decreased in some municipalities. Based on the mentioned observation data the dynamics of agroclimatic factors (sums of active temperatures and atmospheric precipitations) were mapped in trends showing the tendency of increase of the active temperature sums in the region which might improve the growth and development of agriculture in vertical zones. As a result of decreased atmospheric precipitations and the increase of the abovementioned sums of active temperatures (according to trends) in the active vegetation period the decrease of the hydrothermal coefficient (HTC) is also marked. On the ground of the meteorological observations of sixty years (1949-2008) the hydrothermal coefficients were defined and the arid and humid conditions of the vegetation period were estimated. In particular, different kinds of frequent droughts are marked on most territories of Kakheti that require some measures to be carried out. The above-said studies show that global warming has both positive and negative action in vegetation period. In conditions of certain soil humidity the sum of increased active temperatures will be favorable on the territories, where agricultures suffer heat deficit. The area of plant distribution might extend higher above sea level. The tendency of the hydrothermal coefficient decrease will have a negative influence on the productivity of agricultural plants causing serious problems to agrarian sector because the weak and moderate droughts might intensify. Therefore, given global warming some preliminary activities for climate moderation are necessary. Tab. 3, Fig. 3, Ref. 7.

Auth.

b17.1.5.28. Investigation of stability of long one-dimensional waves in debris and water flows. /O. Natishvili/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 67-71. – eng.; abs: eng., geo.

Instability in uniform motion flows occurs when continues waves take over dynamic waves. In those cases primary uniform motion of the flow looses its stability and waves appear on free surface of the flow. The issue of prediction of waves occurrence on free surface are discussed in the paper. The calculations are made for both, cohesive debris flows (non Newtonian liquid) and water flows (Newtonian liquid) in order to control and secure stability of ecological situation in the bed and surrounding medium of water flow. Tab. 1, Fig. 1, Ref. 10.

Auth.

b17.1.5.29. Intra-annual and seasonal variations of sub-micron aerosols concentration and their connection with radon content in surface boundary layer of Tbilisi city. /A. Amiranashvili, Kh. Chargazia/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 72-78. – eng.; abs: eng., geo.

Results of the analysis of variations in sub-micron aerosols concentration with the diameter of ≥0.1 micron (LgN) and their connections with the radon content (Rn) in surface boundary of layer of Tbilisi city (Georgia) are given. The data of daily mean values of the investigated parameters from 12.2009 to 11.2010 without taking into account the weather conditions (365 days, from 9 to 17-18 h) are analyzed. The special features of variations of radon and sub-micron aerosols according to annual and also winter, spring, summer and autumn data are studied. The effect of radon on the formation of submicron aerosols for indicated seasons are revealed. The changeability of sub-micron aerosols concentration and radon content at different seasons has the complex nature (intra-annual variations - tenth order polynomial for Rn and LgN, winter - linear regression for Rn and LgN, spring - fifth order polynomial for Rn and LgN, summer - linear regression for Rn and fifth order polynomial for LgN, autumn - sixth order polynomial for Rn and tenth order polynomial for LgN). The data of autocorrelation functions for the indicated time-series of observations are cited. The correlation and regression analysis of the connections between real values and residual

components of time-series of LgN and Rn for the indicated seasons of year is carried out. Thus, direct correlation between radon content and sub-micron aerosol concentration for all seasons of year is observed. For real data the closest correlation is found in autumn, least close - in summer, for residual components – in winter and summer accordingly. Tab. 2, Fig. 5, Ref. 15.

Auth.

b17.1.5.30. Some data on the rate of sedimentation. /F. Maisadze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 79-87. – eng.; abs: eng., geo.

The paper presents new data on the sedimentation rates obtained from the study of the Upper Eocene sediments of the western part of Abkhazia, where deposition of subplatform sediments in the form of marls, on the one hand, and of terrigene formations of piedmont trough, on the other, took place in heterogeneous facies and paleogeographic conditions. In the second half of the Late Eocene, as a result of the Pyrenean folding, paleogeographic and facial changes took place that naturally had affected the rate of sedimentation. First for the southern slope of the Greater Caucasus, on the example of the Upper Eocene formations with due regard to their diagenetic and subsequent transformations tentative primary thicknesses of sediments and their sedimentation rates were established. Determination of the latter was carried out with the method, which involves the division of the total thickness of the rocks on the number of years during which they were formed. Exactly set lithologic and stratigraphic boundaries of the studied formations, make more or less accurate the figures on the rate of sedimentation. Besides, the data obtained both for subplatform sediments and rocks of the piedmont trough, fully correspond to the data that are available for different sedimentary basins of the adjacent regions. At the same time, the time of accumulation of separate suites that compose Upper Eocene sections is established. Fig. 4, Ref. 28.

Auth.

b17.1.5.31. Results of investigations on Migaria limestone massif, at Shurubumu cave areas. /G. Jashi, N. Bolashvili, D. Odilavadze, A. Tarkhnishvili, N. Ghlonti, J. Kiria, K. Tzikarishvili/. Science and Technologies. – 2016. – #2(722). – pp. 15-22. – geo.; abs.: geo., eng., rus.

The investigations by electrometric and radiolocation methods made it possible to reveal the geophysical parameters of the sediments distributed in the limestone massif of Migaria. Here the limestones are extremely fragmented, jointed and certain foci of water absorption are found in them. We determined fast stream areas of the underground filtration flows by the natural electric field method; by radiolocation method and by means of different frequency antennas constructed a georadiolocation section, where the first ten meters correspond to the upper part of the epikarst layer eroded by wind, the interval from 10 m to 25 m – to the aquifer part of the epikarst, and the deeper layers – to the karst itself. We defined, identified, mapped and made cadastre of the karst areas of the Shurubumu Cave. Fig. 6, Ref. 6.

Auth.

b17.1.5.32. A new type of denudation-tectonic morphostructure - "karst calderas". /Z. Lezhava, K. Tzikarishvili, G. Dvalashvili, A. Naskhidashvili/. Science and Technologies. – 2016. – #2(722). – pp. 36-42. – geo.; abs.: geo., eng., rus.

The saucer-shaped depressions, called karstic calderas (of 2 and more km diameter) are identified on the left bank of the Kvirila river middle course in the region of carbonate – terrigenous platform mantle of Georgian block. Such forms of the relief were unknown until now.Their endogenous and exogenous ways of origin are suggested. As a result of stamped influence upon the mantle deposits of pre-cretaceous foundation hearth structures in the process of overall uplifting of the territory the mantle integrity disturbance is observed on its local peaces. The favourable conditions for intensive elective denudation are created favouring the formation of inversive depressions. Fig. 6, Ref. 4.

Auth.

b17.1.5.33. Cave Murada – the unique speleological object on the Nakerala range. /Z. Lezhava, L. Azanidze, K. Tzikarishvili, G. Lominadze, G. Chartolani, I. Julakidze, A. Naskidashvili/. Science and Technologies. – 2016. – #2(722). – pp. 43-52. – geo.; abs.: geo., eng., rus.

The complex karst-speleological investigations were conducted in the cave Murada for the first time. All proven major research methods were used to study the classic karst areas and underground cavities. The situation plan and a section of the cave were done on the basis of a large-scale survey. The structural-fissure directions of the cave were determined by using a compass-chronometer. Almost all types and subtypes of the waterchemogenic and water-mechanical sediments are gathered in the cave, which are recorded in the caves of the Caucasus. The detected mineral aggregates (limestone dough, moon milk) are rare for the caves of Georgia, while oolites and pisolites exceed the similar speleothemes in sizes and diversity. The cave is unique due to the eccentric ball-shaped formations, which have no analogue in the Caucasus and are rare in the world. The cave is unique also due to the large section of the powerful natural outcrop (about 3 meters) of the terrigenous sediments, where the sedimentation complete cycle (the ancient sediments) is preserved untouched, which has not been observed in the caves of the Caucasus so far. The calcite layered sediments (fossilized bark) of a large area (15-20 m^2) and thickness (30-40 mm) are found in the cave with the well-marked rhythmical bedding. In our opinion the calcite bark and terrigenous sediments carry an interesting information, and hence their complete laboratory study is important in order to restore the picture of the cave and in general, the paleogeographic picture of the region. Identification of the age of the oldest sediments (pre-pleistocene) was possible based on the study of the region's geological and geomorphological features. Fig. 7, Ref. 6.

Auth.

b17.1.5.34. Considering the complex parameter of temperature and humidity in agriculture and structural design /L. Kartvelishvili, L. Megrelidze, K. Rokvai/. Science and Technologies. – 2016. – #2(722). – pp. 53-58. – geo.; abs.: geo., eng., rus.
The complex temperature and humidity parameter is identified for points located in different climatic zones of Georgia. Considering of these data is necessary upon assessing the humidity regime and division into agroclimatic zones in Georgian agriculture. Consideration of the temperature and humidity parameters is also required during thermotechnical calculation of binding building structures. These data are particularly urgent under present-day conditions, against the background of global warming. Ref. 3.

Auth.

b17.1.5.35. Peculiarities of the definiton of velocity field of riverbed. /D. Gubeladze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 124-131. – geo.; abs.: geo., eng., rus.
On the basis of the analysis of the results studied and theoretical and experimental researches of riverbed processes it can be conlucded that in spite of numerous and many-sided natural and laboratory findings, studying the quality of firmness of the river-bed, consisting of non-homogenous loose material takes place by integral characteristics of reserach and such approach excludes differential estimation of all the factors reflecting the actual picture of river-bed flow, for which the sphere of use of the semi-empirical equations received by similar research is limited. Fig. 3, Ref. 2.

Auth.

b17.1.5.36. Experimental study of acoustic characteristics of hydro-power generating unit for diagnostics of technical states. /N. Kopaliani, D. Dzadzamia, I. Purtseladze/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 76-86. – geo.; abs.: geo., eng.
The paper describes the acoustic characteristics of hydro-power generating units. On the erecting site, at a distance of 1 m from the rotor shaft, near turbine, the level of sound (db A), and the levels of sound pressure (db C) in the octave and tierce-octave range of frequencies are determined. Also, the paper dwells on the main noise sources in hydro-power plants and the acoustic signal format and narrowband spectral distribution. Fig. 7, Ref. 3.

Auth.

b17.1.5.37. The application of GPS technology in geodesy. /T. Pkhakadze/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 126-133. – geo.; abs.: geo., eng.
The application of global positioning system (GPS) technologies in various fields of economy are considered; problems that can be solved using the mentioned system are identified. Fig. 3, Ref. 5.

Auth.

b17.1.5.38. Search of attractors in seismic time series of the Caucasus. /T. Chelidze, N. Zhukova, T. Matcharashvili, E. Mepharidze/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 3-18. – eng.; abs.: eng., geo.
Controversial publications both on revealing attractors in seismic time series (which means that they can be represented by deterministic chaos model) as well as on theabsence of such ordered structures have appeared lately. So, it seems interesting to know what methodology should be applied to earthquake time series (ETS) in order to reveal possible attractor structures. There are two main approaches to the problem: i. events in ETS are considered individually; ii. the number of events in ETS in some time window (a seismic rate) is calculated, which is widely used as a proxy of the strain rate in the Earth crust. The study considers how the spatio-temporal parameters of seismic rate calculations affects the nonlinear structures (phase space plots) in low seismicity areas (Batumi region) as well as before, during main event after shocks and after strongest Caucasian earthquakes Spitak (1988) and Racha (1991). The seismic phase portraits and recurrence plots are constructed for several time windows, different epicentral distances and different magnitude thresholds. The nonlinear structure of laboratory natural and synchronized stick-slip sequences are also considered. The phase space plots' analysis can reveal some fine details of seismic process dynamics. Tab. 2, Fig. 13, Ref. 15.

Auth.

b17.1.5.39. Mass-movement and seismic processes study using Burridge-Knopoff laboratory and mathematical models. /N. Varamashvili, T. Chelidze, M. Devidze, Z. Chelidze, V. Chikhladze, A. Surmava, Kh. Chargazia, D. Tefnadze/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 19-26. – eng.; abs.: eng., geo.
Simple models of mass movement and seismic processes are important for understanding the mechanisms of their observed behavior. The paper analyzes the dynamics of a single-block and Burridge-Knopoff model on horizontal and inclined slope with Dieterich–Ruina and Carlson friction laws. In experiments, the slip events are distinguished by acoustic emission bursts, which are generated by slider displacement. Also acceleration was recorded on each sliding plate using attached accelerometer. In the case of the inclined slope experimental model a seismic vibrator, which produces low periodic impact (forcing) was attached to the sliding plate. This was a numerical simulation of dynamic processes occurring at one- and four-plate Burridge-Knopoff system. Fig. 9, Ref. 13.

Auth.

b17.1.5.40. Geo-radar physical modeling for disk-shaped voids. /D. Odilavadze, T. Chelidze, G. Tskhvediashvili/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 27-40. – eng.; abs.: eng., geo.
According to the principle of comparison of geo-radar frequencies introduced on the basis of physical modeling of the electrodynamic processes, geo-radar physical modeling for a disk-shaped void object was carried out on a physical modeling device in solid environment. The radar portrait of the target object (void disk) was fixed and studied for different location depths and orientations of the object. The electrodynamic effects, which influence changes of the radar portrait of th disk-shaped object, were identifierd. For identification of a radar portrait of the fixed object in field conditions, the principle of comparison of geo-rada frequencies is proposed, according to which the physical modeling given the quotient of similarity is being used as an additional means of interpreting the radar results. Fig. 19, Ref. 11.

Auth.

b17.1.5.41. 3D non-stationary thermo-geodynamics of the Caucasus and the Black and the Caspian Seas water areas. /G. Gugunava, J. Kiria, T. Kiria, Z. Zerakidze/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 41-49. – eng.; abs.: eng., geo.
Tree-dimensional non-stationary geothermal and thermoelastic models of the Caucasus and the Black and the Caspian seas are developed and their geological-geophysical interpretation is given.. Tab. 1, Fig. 5, Ref. 9.

Auth.

b17.1.5.42. Re-interpretation of geophysical data for the study of deep structure of the Greater Caucasus. /S. Ghonghadze, P. Mindeli, J. Kiria, N. Ghlonti, A. Esakia/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 50-59. – eng.; abs.: eng., geo.
The issue of orogenesis mechanism is one of the most difficult tasks to study in geodynamics and it attracts attention of many specialists of different spheres of the Earth sciences. The region of the Greater Caucasus, considered in this paper, is a part of the greatest of the Earth the Alpine-Himalayan collision belt, alongside which the highest mountain complexes are observed. In most cases the initial mechanism of orogenesis is collision - convergence of continental plates that leads to mutilation and thickening of the crust. Fig. 10, Ref. 15.

Auth.

b17.1.5.43. Numerical modelling of groundwater system in the East Georgia's lowland. /G. Melikadze, N. Zhukova, M.Todadze, S.Vepkhvadze, T.Chikadze/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 60-68. – eng.; abs.: eng., geo.
In order to assess the water pathway and origin, a numerical model of groundwater was elaborated for East Georgia's lowland - Alazani and Shiraki catchments. The model was calibrated in transient transport mode to tritium concentration measured in boreholes and springs located in East Georgia areas. Tritium was assigned as a single mobile species, not reacting with chemical elements and concentrated in water, what allowed determining the residence time of groundwater flow. The model estimated groundwater flow directions and velocities between recharge and discharge areas, as well as groundwater age for Alazani and Shiraki catchments. Tab. 3, Fig. 7, Ref. 6.

Auth.

b17.1.5.44. Preliminary result of monitoring the hydrological cycle in the Gudjareti catchment. /G. Melikadze, N. Zhukova, M. Todadze, S. Vephkvadze/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 69-76. – eng.; abs.: eng., geo.
The article summarizes the existing meteorological, hydrological and snow data. Expeditions were conducted for collecting water and snow cover samples. In the framework of a new project, in the River Mitarbi catchment, an additional monitoring network was organized, thanks to which a lot of new data on snow hydrology in the studied area was gathered, which was not available before. Measurements at different altitudes were found to be useful. Although snowfall represents just about 30% of annual precipitation, snowmelt water is an important source of water for the rivers (maximum contribution about 50%). As a result of snowmelt, the river's water level remains stabl for at least 2-3 months. Howevere, stable water isotopes in the snowmelt water significantly differ at different heights, differing also by the isotopic composition of the snow cover. Fig. 10, Ref. 5.

Auth.

b17.1.5.45. Methodology of detection of distribution in geodynamic field of the Earth during preparation the earthquakes. /T. Jimsheladze, G. Melikadze, G. Kobzev, A. Tshankvetadze, M. Devidze, N. Kapanadze/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 77-85. – eng.; abs.: eng., geo.
This article discusses the processing techniques of hydrodynamic observations for the purpose to study the geodynamic processes during preparation of seismic events that includes in itself both the complex field observation and cameral data processing using specialized software package. Fig. 11, Ref. 8.

Auth.

b17.1.5.46. Radiogenic component thermal field of the Caucasian region. /E. Sakvarelidze, I. Amanatashvili, G. Kutelia, V. Meskhia/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 86-93. – eng.; abs.: eng., geo.
Results of research of the thermal field of the Caucasus are given in this work. The radiogenic component of the heat flow was calculated for all the studied territories. The values of mantle components of heat flows for folded systems, for intermountain depression (the Georgian block)

and for the Black and Caspian seas are estimated. Deep temperatures at the bottom of a sedimentary complex, Conrad and Moho borders. Maps of distribution of a heat flows and deep temperatures are created. Fig. 5, Ref. 7.

Auth.

b17.1.5.47. Short-period AGWs of the Measopause Region observed by all-sky imager over Abastumani. /G. Javakhishvili/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 94-98. – eng.; abs.: eng., geo.
The short-period (about 5-10 min) atmospheric gravity waves (AGWs) were observed in the mesopause region over Abastumani in by the hydroxyl infrared all-sky imager. The specifics of their propagation are given. The importance of these small-scale AGWs for monitoring the wave-like processes in the mesopause and study the lower-upper atmosphere coupling in the Caucasus region caused by orographic effects are also noted. Fig. 1, Ref. 15.

Auth.

b17.1.5.48. Preliminary testing results of an equipment for Georadiolocation model studies. /C. Tskhvediashvili/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 99-101. – eng.; abs.: eng., geo.
Georadiolocation is a non-invasive geophysical approach, which is underground, near subsurface (<50 m) is the electric heterogeneity study ([1], [3]). This is achieved at high and superhigh frequency (38MHz-2GHz) electromagnetic field generating discrete impulses (Zond 12e), radiation and reflected impulse registration (Prizm 2.5, [2], [4]). Georadiolocation found wide application in archeology, in geotechnics, road construction, glaciologyand in many other areas. [2] As a rule, the dimensions and characteristics are unknown while working in field conditions and they are investigated according to their radio-type. The paper discusses radio-types of different, pre-selected set of objects and the straightforward task. Known objects are carefully studied and radio-type analysis allows us to discuss the size and characteristics of the object. Fig. 6, Ref. 4.

Auth.

b17.1.5.49. Spatial and temporal distribution of the earthquakes in seismically active regions of the world in 2000-2015. /T. Kiria/. Journal of the Georgian Geophysical Society. Issue A. Physics of Solid Earth. – 2015. – v. 18A. – pp. 102-106. – eng.; abs.: eng., geo.
The research enables proving the hypothesis that there are some regions, where events are better distributed in time and space regarding normality and there are also regions, in which the earthquakes are not distributed normally in time (only 10%-15% according to the statistics). Finally, we may assume that there are seismic regions with strongly similar, more or less similar and very different statistical structures. The theme for the following research is making cluster analysis of other regions and constructing a mathematical model in order to reveal triggered earthquakes. Fig. 4, Ref. 3.

Auth.

b17.1.5.50. Some results of Svetitskhoveli Cathedral yard searching. /N. Goguadze, M. Jakhutashvili, M. Kachakhidze, N. Kachakhidze/. GESJ Physics. – 2015. – #1(13). – pp. 90-95. – eng.; abs.: geo., eng., rus.
In order to study reasons of soaking of south wall and fence some parts of Svetitskhoveli Cathedral it was carried out searching by geophysical methods. Mainly, electric and seismic methods were used. Two shale arciform structures are revealed in depth, in the north part of the Cathedral yard, from fence to up the Cathedral wall, in 4 meters from the earth surface, which spreads approximately up to 11 meters. Fig. 4, Ref. 4.

Auth.

b1.6. Biological Sciences

b17.1.6.1. Fuel cells for environmental purposes. Part i. Sulfide and nitrate driven fuel cell. /E. Razkazova-Velkova, M. Martinov, S. Stefanov, V. Beshkov/. Proceedings of Georgian National

Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 258-262. – eng.; abs.: eng., geo., rus.
Hydrogen sulfide and nitrates are persistent pollutants from various origins – domestic, industrial and natural. There are different methods for their elimination, but most of them are expensive and energy inefficient. The present study is an attempt for their removal with energy generation at the same time. By recombination of the waste fluxes of sulfides and nitrates the treatment of both of them can be achieved. The sulfides are oxidized to sulfates and the nitrates are reduced to nitrogen. The milestones in the processes for creating such a fuel cell are the choices of optimal design of the fuel cell and effective electrodes for minimizing the internal losses. In this investigation a configuration that consists of two concentrically arranged compartments separated by a membrane situated at the bottom of the inner unit was studied. The experiments were carried out with different electrodes and improved electroconductivity of the solutions by adding NaCl. A commercially available Celgard 3510 membrane was used. The electrical resistance of the fuel cell was decreased from 850 to 76 Ω after using pyrolysed activated paddling and activated carbon instead of graphite rods for electrodes. The results for the depletion of the waste substances as well as the electrical indicators are given. Tab. 1, Fig. 3, Ref. 18.

Auth.

b17.1.6.2. Comparative study of some physico-chemical properties of fruit bromelain and stem bromelain from ananas comosus for development of the methods of standardization. /N. Gorgaslidze, L. Nadirashvili, G. Erkomaishvili, N. Nizharadze/. Proceedings of Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 546-549. – eng.; abs.: eng., geo., rus.
Comparative study of some physical-chemical properties of the samples of the bromelain of the fruit and stem of pineapple (Ananas comosus) has been performed. Especically, effect of cysteine and casein concentration on the hydrolysis rate, dependence of the rate of casein lysis on bromelain concentration, time effect on lysis rate were studied. The effect of pH and temperature on the activity of the bromelain of fruit and stem was investigated. Optimal values of pH and temperature were determined. Fig. 3, Ref. 13.

Auth.

b17.1.6.3. Inheritance of quality of grains in the main ear of hybrids of the first and second generation received as a result of crossing the wheat Georgicum with Dika wheat. /N. Merabishvili, L. Baidauri, M. Merabishvili/. Agrarian-economic Science and Technologies. – 2016. – #3 (32). – pp. 21-24. – geo.; abs.: geo., eng.
In the first generation of interspecific simple hybrids a depression of the quantity of grains in the main ear takes place, while in complex hybrids this indicator tends to the parental forms having low graining. The quantity of grains is rather high when Dika wheat pistil is pollinated by grains of pollen of wheat Georgicum. In the simple interspecific hybrids of the second generation a depression in the number of grains in the main ear is observed. Together with the growth of crossing number this depression gradually disappears. In the second generation the morphogenesis process is high. Transgression on increase (positive transgression) and reduction (negative transgression) of quantities of grains in a the main ear takes place. Sterile, semi-sterile and fertile plants are ecluded.

Auth.

b17.1.6.4. Inheritance of weight of grain in the main ear in hybrids of F_1 –F_2 generations at crossing of wheat Georgicum with Dika wheat. /N. Merabishvili, L. Baidauri, M. Merabishvili/. Agrarian-economic Science and Technologies. – 2016. – #3 (32). – pp. 25-29. – geo.; abs.: geo., eng.
Experiments were conducted in the territory of Mukhrani educational base and Asureti variety testing station. The restricted-free method of pollination was applied. Hybrids of Fı generations received as a result of interspecific crossing on the mass of grains in the main ear lag behind the initial forms. This indicator is low enough when wheat Georgicum is used as a mother form. According to this indicator, depression of the grain mass takes place. In the ears of plants of the first generation develop incomplete grains. In the second generation segregation in the direction of increasing in the mass of grains of the main ear (positive transgression) or its decrease (negative

transgression) takes place. Among the forms with the positive transgression by the highest combinational ability differ the combinations, in which been used as father forms - varieties of wheat Georgicum, and mother forms with Dika wheat were used as the father form .

Auth.

b17.1.6.5. Study of kiwifruit for producing natural syrup. /G. Kaishauri/. Agrarian-economic Science and Technologies. – 2016. – #3 (32). – pp. 50-54. – geo.; abs.: geo., eng.
The work presents the results of the researche of the technological indices of kiwifruit “Monty”, grown in the region of the West Georgia. The aim of study was to create products with new nutrition features, maintaining the primary taste. The raw material was picked up from the subtropical fruit kiwi (*Actinidia)* that has available medicinal properties which are characterized by a great demand of the population to consider kiwi as a dietical additive of the balanced food of man.. Tab. 1, Ref. 7.

Auth.

b17.1.6.6. Wild-growing juniper research in Georgia. /N. Baghaturia, L. Kajaia, N. Gilauri/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 11–16. – geo.; abs.: geo., eng., rus.
The Institute of Food Industry conducted the first ever research of wild-growing juniper species, their spread area, their the ethereal oil content in its raw material and the seasonal dynamics of juniper cones’ oil content. The spread area of wild-growing juniper was identified on the basis of targeted expeditions. Based on the research results and taking into account the spread area and ethereal oil content in Indian juniper cones, polycarpic species of juniper cones should be used to produce the ethereal oil. The cones should be processed in the minced form. Full ripeness of juniper cones comes late in the autumn and the fruits stay on trees till early spring. The ethereal oil content in cones during this period is almost unchangeable, amking 1.1 % on average. Tab.2, Ref. 5.

Auth.

b17.1.6.7. Chemical-technological parameters of wild-growing juniper raw material. /N. Baghaturia, L. Kajaia, N. Iluridze/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 17-22. – geo.; abs.: geo., eng., rus.
The Institute of Food Industry developed the technology of harvesting natural food additives – biologically active compounds from wild-growing juniper cones’ raw material. The technological parameters established thereon are the following: the speed of the distillation of residual matter should be 12-13 cm^3/min, and the period of ethereal oil distillation – 1 hour. Chemical content, organoleptic, physical and chemical parameters of the juniper ethereal oil have been studied and marginal parameters determined. Juniper oil use in food industry, especially in alcohol drinks have been researched. The projects of technological instructions for harvesting essential oils from juniper cones and its raw material and internal production standards for juniper cones ethereal oils have been developed. The scope of use of juniper essential oils has been studied to establish that these essences can be applied in food industry, as food additive, as well as in perfumery, cosmetics and pharmaceutical industry. Tab. 2, Ref. 2.

Auth.

b17.1.6.8. Seed germination and seedling establishment in *Coluteocarpus vesicaria* (L.) Holmboe. /N. Shakarishvili, D. Chelidze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 45-50. – eng.; abs: eng., geo.
The objective of this study was to develop seed germination protocol and to investigate factors affecting seedling establishment for Coluteocarpus vesicaria (L.) Holmboe (Brassicaceae) - a rare perennial herb, which inhabits screes and stony sloops on 600-3200 m.a.s.l. The data obtained indicate that freshly harvested seeds are in the primary dormant condition. The effect of dry-warm afterripening and cold stratification on seed germination was examined on seeds subjected 3 months of dry storage at 18°C and subsequent 1, 2 and 3 month of cold stratification resulted in 1.1%, 27.8% and 67.8% germination, respectively. Seedling survival after 3 years planting was 2% overall. Established seedlings form cushion-like clusters, are wintergreen and physocarpous in semiarid climate of Tbilisi. Tab. 1, Fig. 7, Ref. 16.

Auth.

b17.1.6.9. Anticancerogenic activity of the mannose-specific lectin isolated from rhizomes of the Georgian endemic mountain plant Polygonatum obtusifolium (C. koch) Miscz. ex Grossh. /N. Dumbadze, D. Pirtskhalaishvili, N. Aleksidze, G. Aleksidze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 56-60. – eng.; abs: eng., geo.

In the present work, we report the effect of a novel mannose-specific lectin (SABA-1) on in vitro cultures of normal and cancer cells. The cytotoxic effect was estimated by means of MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) test. The extinction index was determined with Biotek EL 312 counter at the wavelength of 570nm. The anticancerogenic and control experiments were conducted in triplicate for each concentration of SABA-1. The studies were performed on five types of cells, derived directly from the parent tissue human skin, lung, ovarian and breast cancer and on normal mouse fibroblasts. Exposure to SABA-1 resulted in remarkable concentration-dependent inhibition growth of all tested cancer cells. According to the obtained results, the 10, 50, 100 µg/ml concentration of SABA-1, which are lethal for malignant tumor cells, it does not affect normal fibroblast cells. Maximum cytotoxic effect of SABA-1 against cancer cells of skin, lung, ovarian and breast cancer is revealed at 100 µg/ml and it attains 72, 60, 63 and 68%. Incubation of SABA-1 with α-methylmannopyranoside which caused screening of its sugar-binding centres, fully inhibits cytotoxic activity of the mentioned lectin against the cells of the primary in vitro cultures of all tested tumour cells. The obtained results show that cytotoxic effect of SABA-1 on cancer cells should be conditioned by its specific interaction with α-methyl-mannopyranoside containing membrane receptors, located on surfaces of cancer cells and the transmission of signal, inducing apoptosis-self destruction of cells. Tab. 1, Fig. 1, Ref. 8.

Auth.

b17.1.6.10. Chronic memantine treatment prevents short-term memory impairment caused by conjoint immunolesions of GABAergic and cholinergic medial septal neurons in rats. /T. Naneishvili, Kh. Rusadze, M. Dashniani, M. Burjanadze, N. Chkhikvishvili, G. Beselia, L. Kruashvili, N. Pochkhidze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 61-67. – eng.; abs: eng., geo.

In the present study the effect of conjoint immunolesions of GABAergic and cholinergic medial septal (MS) neurons on spatial short-term memory is investigated and the effects of chronic memantine treatment in control and MS lesioned rats are evaluated. A total of 32 male outbred white rats were used in the present study. Rats were divided into Control and MS immunolesioned (conjoint lesion by GAT1-SAP and 192 IgG-saporin) groups and then into 2 subgroups injected i.p. with saline or memantine (5mg/kg daily for 13 days starting from the day of immunotoxins injection). Immunohistochemical studies showed that intraseptal injection of GAT1-SAP and 192 IgG-saporin significantly reduced GABAergic and cholinergic neurons in the MS as compared to contol rats. Behavioral study showed that memantine treated control rats, relative to saline treated rats, had a significantly lower level in the number of arms entered during the testing session. However, the groups did not differ in the level of alternation behavior. The results of behavioral study indicate that spatial short-term memory is affected by conjoint immunolesions of GABAergic and cholinergic MS neurons and the memantine treatment prevents short-term memory impairment caused by MS immunolesions. Fig. 2, Ref. 29.

Auth.

b17.1.6.11. Effectiveness of systemic delivery of hypothalamic neuropeptides, OrexinA and OrexinB, on sleep-wakefulness cycle ultradian structure and food motivation in rats. /N. Nachkebia, N. Maglakelidze, E. Chijavadze, M. Babilodze, E. Chkhartishvili, O. Mchedlidze, Sh. Dzadzamia, V. Tsomaia, N. Rogava/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 68-74. – eng.; abs: eng., geo.

Present study investigated possible differences between the effects of intravenous injection of OrexinA and OrexinB on the ultradian structure of sleep-wakefulness cycle and food motivation in rats. Two doses of these neuropeptides (5µg/ml and/or 10µg/ml) were injected in the tail vein. Continuous EEG registration of baseline sleep-wakefulness cycle during 5 h period daily (11.00 a.m. – 16.00 a.m.) was started after post-surgery recovery period. Three baseline ultradian structures were registered on each animal so each animal served as a control for itself. After

establishment of the stable baseline SWC ultradian structure OrexinA and/or OrexinB (from PHOENIX PHARMACEUTICALS) were injected in the tail vein at 10.55 a.m., than EEG registration of sleep-wakefulness cycle ultradian structure was started at 11.00 a.m., as in baseline recordings. Significant data were obtained about the whole effectiveness of i.v. OrexinA and ineffectiveness of i.v. OrexinB on sleep-wakefulness cycle ultradian structure. In contrast to i.v. OrexinB i.v. OrexinA produced significant increase of active wakefulness incidence, total time and percentage, whole suppression of REM sleep, and substantial changes in non-REM sleep stages - reduction of their incidence, total time and percentage. Because OrexinA has similar affinity to both Orexin receptor-1 and Orexin receptor-2 while OrexinB reveals a 10-fold higher affinity to Orexin receptor-2 it is possible to speak about the significance of Orexin receptor-1 for the sleep-wakefulness cycle disorders described in the present study. Therefore we can suggest thatsystemic administration of antagonists for Orexin receptor-1 can be effective for the aim of clinical therapy of insomnia. Fig. 3, Ref. 14.

Auth.

b17.1.6.12. Human visual color discrimination with aging. /Kh. Parkosadze, M. Khomeriki, Archil Kezeli/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 75-80. – eng.; abs: eng., geo.

Color vision is an important component of human vision and plays a critical role in both perception and communication. The abilities of categorical perception (CP) and color discrimination are some of the necessary attributes of color vision. It is known that healthy aging and age-related optical and neural changes affect many aspects of visual perception. However, color appearance remains remarkably stable in the aging visual system. The aim of our study was to investigate age-related changes of discrimination of colors belonging to the same or different categories. We investigated the impact of developmental aspects and aging on color discrimination ability. 30 observers of three different age-groups participate in the study: Group 1 – elderly (n=10, 60 and over), Group 2 young controls (n=10, 20-32 years old) and Group 3 – children (n=10, 6-15 years old). Our results showed that reaction time for each color pair and each age-group did not differ significantly from each other and post-hoc analysis did not reveal any significant differences in discrimination of different colors. Hence, our results showed that healthy aging has no significant impact on color discrimination. This refers not only to colors discrimination of the same category, but also to those of different categories. We can conclude that age-related changes or ongoing developmental changes have no significant influence on color discrimination process. Tab. 4, Ref. 16.

Auth.

b17.1.6.13. Menthol does not affect NSAIDs effects in behavioral tests on rats. /I. Nozadze, N. Tsiklauri, G. Gurtskaia, E. Abzianidze , M. Tsagareli/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 81-87. – eng.; abs: eng., geo.

Temperature poignancy is a finely tuned part of mammalian somatosensory system, allowing animals and humans avoid thermal conditions in nature that may be potentially harmful, as well as attract organisms to the thermal clime that is the most amenable to survival. of different somatosensory modalities, cold is one of the more ambiguous percepts, evoking the pleasant sensation of cooling, the stinging bite of cold pain, and welcome relief from chronic pain. It is widely accepted that for temperature, cation channels of the transient receptor potential (TRP) family function as molecular thermometers, providing the receptor potential that initiates signaling to the central nervous system. For the last decades menthol is widely used in food and oral hygiene products for its fresh cooling sensation. Moreover, it is well established that menthol enhances cooling by interacting with the cold-sensitive thermo TRP channel TRPM8, but its effect on pain is less well understood. We have recently found that menthol dose-dependently increases the latency for noxious heat-evoked withdrawal of the treated hindpaw of rats indicating antinociception. Moreover, menthol has a biphasic effect on thermal avoidance. We are currently engaged in the study of non-steroidal anti-inflammatory drugs (NSAIDs) influence on the actions of agonists of TRP channels. Here we report that menthol does not affect thermo TRPM8 channel after treatment with widely used NSAIDs as diclofenac, ketorolac and xefocam. Fig. 3, Ref. 34.

Auth.

b17.1.6.14. The action of bacteriophages and β-lactam antibiotic on *P. Aeruginosa* biofilm formation. /I. Papukashvili, E. Lomadze, T. Mdzinarashvili/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 91-96. – eng.; abs: eng., geo.
We observed the effects of the combined action of bacteriophages and beta-lactam antibiotic on P. aeruginosa bacteria. The P. aeruginosa PAO1 wild-type strain, β-lactam antibiotic (Imipenem) and the commercial bacteriophage preparation (Pyobacteriophage) were used in this study. The results have shown that the phage preparation which contains few different types of P. aeruginosa phages effectively decreased P. aeruginosa biofilm formation whereas the action of single P. aeruginosa phages alone, which were isolated from phage preparation, did not have an important action on biofilm dispersal. Moreover, the combined use of phage preparation and antibiotic (Imipenem) has shown sinergistic action on biofilms. Our results prove that bacteriophages have the ability to penetrate and cause significant dispersal of biofilms formed by P. aeruginosa microorganisms, which in turn could increase the accessibility of the antibiotic to enable elimination of the infection. This phenomenon lends considerable importance to phage therapy used both independently and in combination with antibiotic therapy for treatment of infections caused by mucoid bacterial strains. Tab. 1, Fig. 2, Ref. 12.

Auth.

b17.1.6.15. Study of freshwater pond taxa *Marsilea quadrifolia* & *Salvinia natans* in Kolkheti lowland Black Sea coastline. /B. Bolkvadze, I. Matchutadze, N. Davitashvili/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 111-115. – eng.; abs: eng., geo.
In recent years, degradation of freshwater ponds, an important habitat of biodivesity, caused by the anthropogenic factors has prompted scientists from the Mediterranean countries to evaluate freshwater ponds by the IUCN Red List as threatened ecosystems. In 2015, IUCN Red List officially gave the freshwater ponds of the Mediterranean Sea coastal area global status. The subject of the present study was freshwater ponds of Natura 2000 and Emerald Network coastal zone with predominance of Salvinia natans and protected by the EUNIS system and Bern Convention from Sarfi to Anaklia. During the study a transect method was used. Special attention was paid to the habitat type, its ecological state, plant covering density (in %), composition of species and their quantity. Freshwater ponds of the Kolkheti costal area are valuable for being an important habitat for IUCN Red List species: Salvinia natans (LC) and Marsilea quadrifolia (LC). But these habitats and, respectively, plant species are affected by the greatest anthropogenic factors such as implementation of infrastructural projects (seaports, terminals) causing their degradation and vanishing. Distribution and threats of the habitats of Salvinia natans and Marsilea quadrifolia in the Kolkheti coastal are established. Recommendations for *in-situ & ex-situ* conservation of habitats and plant species are given. Tab. 1, Fig. 4, Ref. 12.

Auth.

b17.1.6.16. Allocation of mannose- and N-acetyl-D-glucosamine specific lectins in different parts of aloe Plants (Aloe aristata Haw.) and their biochemical characteristics. /M. Vakhania, N. Aleksidze, G. Aleksidze/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 116-123. – eng.; abs: eng., geo.
Allocation of mannose- and N-acetyl-D-glucosamine specific lectins in different organs of the flower (pistil, filament, anther, petals and peduncle) and root of aloe (Aloe aristata Haw) plant was studied. To establish lectin specificity to carbohydrates 0.6 M solutions of simple sugars D-glucose, Dmannose, D-galactose, N-acetyl-D-glucosamine were used. All the sugars were prepared on the basis of PBS buffer. Molecular mass of the protein was determined by gel-filtration on Toyopearl HW 55 column (2.0x38 cm), equilibrated by PBS. It was shown, that aloe flower stalk is distinguished by high content of proteins, but lectin activity practically does not differ from the other parts of the flower stalk. It is noteworthy that when the flower stalk extract was allowed to stay for a certain time with tripsinazed erythrocytes it caused lysis of erythrocytes, which was blocking after adding 0.6 mM mannose to the incubation medium, lysis was developed later, nearly after 20 hours. Chromatography of the total extract of aloe flower yielded four peaks, only the second and third peaks display high lectin activity. In parallel N-acetyl-D-glucosamine specific lectins were separated from the root of aloe. It is important to underline, that after 20 min incubation at 80°C and 100°C the aloe root lectin maintains its hemagglutination ability. The native country for A. aritsata is the South Africa with dry and hot climatic conditions. Aloe reflects genetic adaptive

possibilities to its traditional ecological environment and it is natural that all its properties are determined by genetic memory. Tab. 10, Ref. 11.

Auth.

b17.1.6.17. Induction of Intracellular glucose oxidase outside the cell. /K. Museliani, E. Kvesitadze, T. Khobelia, Kh. Sichinava/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 124-126. – eng.; abs: eng., geo.

The range of Intracellular enzymes is rather high, and often organisms synthesize enzymes inside of a cell without developing them outside it, into the liquid culture. In this work, it is shown by us that by adding various salts with Mulberry root extract into the liquid culture, it is possible to achieve the Intracellular Enzyme appearing outside of a cell in the liquid culture. of course, various organisms will react to various salts in different ways, but in general, such an approach gives positive results. Asperilius Niger – an organism producing Intracellular glucose oxidase - was taken as an example. Tab. 2, Ref. 6.

Auth.

b17.1.6.18. Identification of bacillus in population colorado potato beetle leptinotarsa decemlineata say and mottled umber erannis defoliaria clerrck in Georgia. /M. Burjanadze, D. Gaganidze, M. Arjevanidze, E. Nakaidze, G. Tsereteli/. Bulletin of Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 133-137. – eng.; abs: eng., geo.

For the identification of endemic species of Bacillus in agricultural and forest ecosystems of Georgia, infected and healthy individuals of Colorado Potato Beetle – Leptinotarsa decemlineata Say and caterpillars of the Mottled Umber - Erannis defoliaria Clerrck were collected at different larval stages. Ten of the 20 isolates (BZ1, BZ2, BZ3, KM1, KM2, KM3 , KM4, KM5, KM5 (1), M5 (2)) were Gram positive. For the evaluation of spore formation isolates were cultivated in nutrient broth and on Selective media and were analyzed under the microscope. For the purpose of establishing the formation of crystal proteins the proteinaceous range of gram positive isolates was studied by SDS-PAGE. Isolates - BZ1, BZ2, KM1, KM2, KM3, KM4, KM5, were found to have high protein content which ranged in size between 130 kDa and 66 kDa. Microscopic analysis revealed the existence of spores in KM2, KM3 and KM5 isolates. For the purpose of identifying crystal inclusions these isolates were transferred into selective media. A 24- hour microscopic analysis of culture did not show the existence of any crystal inclusions. Tab. 1, Fig. 2, Ref. 9.

Auth.

b17.1.6.19. The research and manage issues of modern origin technogenic arrays existing on the territory of Georgia. /Z. Varazashvili, U. Zviadadze, M. Mardashova, G. Chakhaia/. Science and Technologies. – 2016. – #2(722). – pp. 23-30. – geo.; abs.: geo., eng., rus.

The article considers the issue about spreading of newly developed technogenic arrays on the Georgian territory and its negative effect on the surrounding environment. The heavy ecologic conditions in the development areas of mining enterprises are stated in the paper as well. In conclusion the article provides solution to the upper mentioned problem, as it describes the activities, which are important to create the plan to study and manage the cause of pollution of Georgian environment. Tab. 4, Fig. 4, Ref. 5.

Auth.

b17.1.6.20. Toxins - natural source for biochemical pollution of food products. /M. Garuchava, G. Parulava/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 103-106. – geo.; abs.: geo., eng., rus.

The source of technogenic pollution is reviewed in this article. The main characteristics of chlorinated herbicides used in Georgia is given. Their superiority is explained. Natural poisons - micotoxins and their penetration into food products are examined. It is announced that the method of modern physical chemical investigation of air, water and soil is the main thing in the struggle with the chemical biological pollution of the environment. Fig. 3, Ref. 5.

Auth.

b17.1.6.21. Chromatospectrophotometric method of quantitative analysis of lappaconitine in the underground parts of aconitum orientale mill, growing in Georgia. /L. Kintsurashvili/. Georgian Medical News (GMN). – 2016. – #5(254). – pp. 103-106. - rus.; abs.: eng., rus., geo.
Aconitum orientale Mill (family Helleboraceae) is a perennial herb. It is spread in forests of the west and the east Georgia and in the subalpine zone. The research objects were underground parts of Aconitum orientale Mill, which were picked in the phase of fruiting in Borjomi in 2014. We had received alkaloids sum from the air-dry underground parts (1.5 kg) with chloroform extract which was alkalined by 5% sodium carbonate. We received the alkaloids sum of 16.5 g and determined that predominant is pharmacologically active diterpenic alkaloid – Lappaconitine, which is an acting initial part of the antiarrhythmic drug "Allapinin". The chromatospectrophotometrical method of quantitative analysis of Lappaconitine is elaborated for the detection of productivity of the underground parts of Aconitum orientale Mill. It was determined that maximal absorption wave length in ultra-violet spectrum (λ_{max}) is 308 nm; It is established that relative error is norm (4%) from statical processing of quantitative analysis results. We determined that the content of Lappaconitine in the underground parts of Aconitum orientale Mill is 0.11-0.13% in the phase of fruiting. In consequence of experimental data Aconitum orientale Mill is approved as the raw material to receive pharmacologically active Lappaconitine. Tab. 2, Ref. b17.

Auth.

b17.1.6.22. The level of benz(a)piren in tobacco smoke. /D. Zurabashvili, G. Parulava, L. Shanidze, B. Kikalishvili, M. Nikolaishvili/. Georgian Medical News (GMN). – 2016. – #5(254). – pp. 107-111. - rus.; abs.: eng., rus., geo.
The medical problems of the environmental pollution with products of tobacco smoke are relatively known. The question of separate components of tobacco smoke, factors such a puff-volume, rate, distance, frequency, length of butt in the environment air is not well understand and should further be investigated. It is shown the dependence of the process on the following factors: physic-chemical parameters of atmospheric environment, brand of tobacco product, activity of smoking process. We aimed to determine the dependence of benz(a)pirene in the air samples of tobacco smoke in the distance of 2,0; 4,0 and 6,0m. from lighting cigarette after puff-by puff. Cigarettes were machine-smoked and the total particulate matter was collected (1,0m^3) in room, having no air filtration and substances were analysed and identified by gashromatography. The condacted quantitative and qualitative analyses show, that distance of exposition from burning cigarette can change the volume of benz(a)pirene. In the result of pyrolitic and photochemical reactions in tobacco smoke at certain air space temperature new structures can be formed with high toxity and cancerogenity. The dominant transformation process is reaction with photochemically-produced radicals, which produced benz(a)piren as a minor product. Additional factors effecting indoor concentrations include location and ventilation condition time. Ultrafine particle and benz(a)piren deposition and smoking behavior were observed. The mainstream smoke was also monitored continuously in real time (3, 5 and 10 minute) on a puff-by-puff. Our data show that smoking pastime can change the structure and volume of component of tobacco smoke. The level of benz(a)piren in air samples was evaluated as the main background index of cigarette smoke toxity in relatively small room, having no air filtration system. This question still needs to be explained. It would be interesting to investigate of tobacco smoke components in lung tissue after the smoking process. The studies are necessary in different derection. Tab. 1, Ref. 18.

Auth.

b17.1.6.23. Age and sex characteristics of melatonin-positive-labeled cells of the gastric mucosa in desynchronosis in rats. /V. Hnatiuk, N. Kononenko, T. Kozub, V. Chikitkina, L. Galiy/. Georgian Medical News (GMN). – 2016. – #6(255). – pp. 99-104. – eng.; abs.: eng., rus., geo.
The aim of the research was to study the state of melatonin-positive-labeled cells (MPLC) of GM in desynchronosis in rats of different age and gender. 780 sections of the pyloric part of the gastric mucosa were studied in rats of both genders at the age of 9, 15 and 20 months. Animals were divided into intact control groups and the groups of the animals kept under the conditions of continuous light for 14 days – desynchronosis. The study was performed by the method of immunohistochemical staining with the primary antibodies to melatonin (Biorbyt, UK) and the secondary Alexa Fluor 488-conjugated antibody (Abcam, UK). In the course of the research it was found that MPLC in all experimental groups were mainly located in the basal and middle segments

of the tubular glands of gastric mucosa and were represented by three types of cells. In desynchronosis the number of melatonin-positive-labeled cells significantly reduced in almost every age group, with the exception of females at the age of 20 months. Thus in elderly males and females the number of melatonin-positive-labeled cells of type III increases, whereas in young and mature males it decreases, and cells of type I predominate. Tab. 2, Fig. 3, Ref. 27.

Auth.

b17.1.6.24. Lipids of some alkaloid-containing plants growing in Georgia. /B. Kikalishvili, Ts. Sulakvelidze, N. Vachnadze, M. Malania, D. Turabelidze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 71-73. – geo.; abs.: geo., eng.

Crude neutral lipids were obtained from the aerial parts of alkaloid-containing plants *Chelidoniummayus L, Vincaherbacea Waldts. et. kit, Vinca minor L., Physalis alkekengi L var. franchetii,* growing in Georgia and their qualitative composition was established. As well free fatty acids were identified quantitatively and qualitatively using HPLC. Fig. 1, Ref. 8.

Auth.

b17.1.6.25. Diagnostic value of multinuclear macrophages detection in bronchial lavage fluid of the patient with AFB negative tuberculosis. /T. Mamaladze, L.Vashakidze, N. Mchedlishvili, U. Nanava, N. Lomtadze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 83-84. – geo.; abs.: geo., eng.

Cytological features of 273 patients' bronchial lavage fluid was studied. These data was compared to the bacteriological test results. Predictor of Tuberculosis (TB) – multinuclear macrophages – was found in 55 cases (20.1%). Active TB was bacteriologically confirmed in 24 out of these 55 cases. Among the rest 218 macrophage negative cases active TB bacteriologically was confirmed only in 12 cases. The specificity and sensitivity of the test was 87% and 67% retrospectively. The results were clinically significant (84.2%). Kappa was 0.61. The detection of multinuclear macrophages reflects cellular alteration and precedes the allocation of *Mycobacterium Tuberculosis.* This process along with the clinical characteristics can be considered as the confirmation of active tuberculosis. Ref. 4.

Auth.

b17.1.6.26. Standardization sum of triterpene saponins from the roots of *Cyclamen* L. /B. Tabidze, N. Tabatadze, M. Getia, M. Mshvildadze, G. Dekanosidze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 109-110. – geo.; abs.: geo., eng.

A simple and reliable spectrophotometric method of quantitative standardization for the sum of triterpene saponins – "Cyclasite" from the roots of *Cyclamen* L. was developed For the development of the methods of quantitative standardization individual triterpene glycoside - Cyclamen K, was used, which were presented as a chemical and biological marker for the „Cyclasite". This method was validated according to the ICH guidelines on the validation of analytical methods. Tab. 1, Fig. 2, Ref. 5.

Auth.

b17.1.6.27. Analysis of metabolites of synthetic cannabinoids JWH-018 and JWH-073 by chromatographymass-spectrometric (LC-MS/MS) method in biological fluids. /M. Jokhadze, P. Tushurashvili, T. Murtazashvili, N. Imnadze, K. Sivsivadze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 155-157. – geo.; abs.: geo., eng.

A liquid chromatographic method was developed to resolve a comprehensive set of metabolites of JWH-018 and JWH-073. In addition to the chromatographic analysis method, an extraction method was developed to recover a broad range of synthetic cannabinoid metabolites, including carboxylic acid metabolites that are not traditionally recovered using a high pH liquid/liquid extraction. The extraction and analysis methods were used to identify and quantify the significant metabolites in urine samples. The chromatographic method detailed in this application note employed a RP-HPLC column and MS/MS detection. The quantitative range validated for all metabolites was 1 ng/mL to 500 ng/mL in urine. Based on the data, this method is suitable for quantification of metabolites of JWH-018 and JWH-073 to support broader research studies that positively identify clinically significant metabolites and their concentrations in urine. Fig. 5, Ref. 6.

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b17.1.6.28. Development of gas chromatography-massspectrometric (GC-MS) method of determination of tetrahydrocanabinol and 11-norterahydrocanabinol carboxyacide in biological fluids. /M. Jokhadze, P. Tushurashvili, T. Murtazashvili, N. Imnadze, K. Sivsivadze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 157-159. – geo.; abs.: geo., eng.
The method of gas chromatography-mass spectrometry was used In the chemichal-toxicological analysis. The method is considered as one of the most exact methods of analysis of chemichal substances. Respectively, utilization of this method in determination of widely spread narcotic in biological fluids is important task. As a result of experimental work, was determined optimal conditions of analysis: temperature of injector, fuel and transferline, the thermal gradient, volume of injection, length of the column, thickness of the layer, gass-wearing speed of mobile phase. Detection of Desomorphine was carried by TIC and SIM regime, under the NIST data base. For derivatisation was selected acitilation (acetate anhydride), metilation and sylitation were performed. The optimal sylitation of tetrahydrocanabinol and 11-nor-terahydrocanabinol carboxyacide was performed by BSTFA. In the current work is presented the chromatograme and mass-specter of tetrahydrocanabinol and 11-nor-terahydrocanabinol carboxyacide detected in urine. The quantitative range validated for all metabolites was 1 ng/mL to 500 ng/mL in urine. Based on the data, this method is suitable for quantification of metabolites of JWH-018 and JWH-073 to support broader research studies that positively identify clinically significant metabolites and their concentrations in urine. Fig. 4, Ref. 5.

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B2. ENGINEERING AND TECHNOLOGY

b2.2. Electrical engineering, electronic engineering, information engineering

b17.2.2.1. Management information systems and software engineering - innovations in university education. /G. Chogovadze, A. Prangishvilil, G. Gogichaishvili, V. Didmanidze, G. Surguladze/. Automated Control Systems. – 2015. – #1(13). – pp. 9-24. – geo.; abs.: geo., eng., rus.
The article discusses topics of Informatics - of an interdisciplinary, complex science, analysis of its structural components, as well as its current state and development trends. The present article also discusses the mission of MIS department at GTU, its historical role and latest achievements in the areas of organizational systems, management information systems, object-oriented modeling, design and software development. The article vastly covers teaching and research programs and directions in regard of modern software engineering and data management topics. The article also deals with new, hybrid software platforms, languages and frameworks, that are widely used in the Universities of leading countries like the US, UK, Germany and others. Basic innovations are discussed in educational and scientific directions, which are present at the department of MIS (Software Engineering) of GTU, after 45 years since it was founded, against the background of reforms that have taken place in education area during the past 10 years. Fig. 12, Ref. 51.

Auth.

b17.2.2.2. Development of an analytical model for the research of the telecommunication network parameters. /K. Kamkamidze, M. Dvalishvili, E. Kamkamidze/. Automated Control Systems. – 2015. – #1(13). – pp. 25-30. - rus.; abs.: rus., eng., geo.
The article discusses development of a model for analyzing threat of the dissemination of restricted informational through the telecommunication network. In order to obtain the trial results to synthesize analytical model – simulation modeling of the existing telecommunication network topology is required. The simulation model of restricted informational threats in telecommunication network was developed taking into account network topological features. Experiments showed some dependence of the threat realization on the network topology. The examples of effective implementation of the threat prognosticating mechanism in the telecommunication network gives the reason to ascertain the adequacy and functionality of the main theoretical concepts and developed from the latter algorithmic and instrumental tools. Fig. 5, Ref. 5.

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b17.2.2.3. Algorithm to construct the complete graph topology of the telecommunication network. /E. Kamkamidze, I. Khomeriki, M. Dvalishvili/. Automated Control Systems. – 2015. – #1(13). – pp. 31-37. - rus.; abs.: rus., eng., geo.

A method of forming the topology of the telecommunication network is developed, which implicates basic topological characteristics of the network parts, that are available and works in the conditions of insufficient representativeness of the sample input data. The proposed method is consisted of a sequence of the developed algorithms. The algorithm of forming the initial data on the network topology is developed - the set of vertices and the connections between them are available for the network, which considers the limitations on data collection. The next stage involves the development of an algorithm of forming a complete graph network with the addition of an inaccessible part based on the calculated predicted topological characteristics. Developed techniques regarding the formation of the topology of telecommunications network can be implemented as software in the future. Tab. 1, Fig. 4, Ref. 3.

Auth.

b17.2.2.4. Enhancement of productivity for the power network parameter meter multifunctional device. /L. Imnaishvili, M. Jabua, K. Chkhikvadze/. Automated Control Systems. – 2015. – #1(13). – pp. 38-43. – eng.; abs.: eng., geo., rus.

The article covers the aspects of interaction between the Modbus communication protocol and the multifunctional metering device used in the supervisory control and data acquisition (SCADA) system for monitoring and control reasons of power network parameters. Algorithm of productivity enhancement is drawn out and implemented in real experimental conditions. Power network parameter meter multifunctional #14 device (produced by Lumel S.A.) has been chosen as research object. Fig. 5, Ref. 5.

Auth.

b17.2.2.5. Software defined data center network – VXLAN technology. /G. Chubko, G. Maisuradze, T. Kaishauri/. Automated Control Systems. – 2015. – #1(13). – pp. 44-49. – geo.; abs.: geo., eng., rus.

The article discusses VXLAN technology, its components, their functional load, encapsulation scheme for packages. VXLAN technology is compared with the existing, traditional network segmentation VLAN technology. VLAN limitations and shortcomings are discussed as well as its advantages and its application area. Based on VXLAN technology an example of communication between two remote endpoints is given, as well as processes of ongoing encapsulation and component roles. Fig. 3, Ref. 8.

Auth.

b17.2.2.6. Interactive three-dimensional reconstruction based on RGB-IN image. /M. Kiknadze, I. Makasarashvili, M. Dardjania/. Automated Control Systems. – 2015. – #1(13). – pp. 50-57. – geo.; abs.: geo., eng., rus.

The paper focuses on the reconstruction of buildings and therefore exploit common characteristics of architectural scenes. Many buildings can be approximated with piecewiseplanar models and the planes are orthogonally aligned. In contrast, extensive 3D information is available in the form of an unstructured point cloud. Therefore, it is possible to automatically detect scene planes and create 3D models without any user input. We introduce a novel method for automatically reconstructing low-polygonal meshes from point clouds. The point cloud is analyzed for extracting globally consistent surface normals, which are then used to robustly detect planes. If oriented images of the scene are available, it is possible to extract strong image edges which can be used as boundaries for the planes. Fig. 5, Ref. 6.

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b17.2.2.7. Developmentand application of some aspects of systems engineering implementation on the global networks dedicated channels. /O. Natroshvili, A. Robitashvili/. Automated Control Systems. – 2015. – #1(13). – pp. 58-61. – geo.; abs.: geo., eng., rus.

The article discusses problems of organizing global computer networks on dedicated channels provided by telecommunications companies. The article focuses on the methods used to multiplex signals that are used for time or sequential segregation of signals running through the channels. Emphasis is made on the importance of creating switching centers within the infrastructure of the networks that support diagnostic procedures on remote stations. Ref. 2.

Auth.

b17.2.2.8. Development of security infrastructure of information systems. /K. Jamurashvili, R. Samkharadze/. Automated Control Systems. – 2015. – #1(13). – pp. 62-65. – geo.; abs.: geo., eng., rus.

The article discusses information system security infrastructure planning problems and respective solution issues. In particular, modern software solutions are discussed. As a result, it becomes possible to transmit information electronically. The latter implies that the transmission speed is increased several times; It becomes possible to share printers and other hardware devices in the network, thus reducing the number of unwanted equipment. In addition, it is possible to set up an electronic mailing system that makes it much easier and accelerates the processes occurring in the company. Information infrastructure simplifies communication among employees, the decision-making process is much more efficient and quicker, much easier to communicate by electronic documents and their subsequent retrieval. Fig. 1, Ref. 3.

Auth.

b17.2.2.9. Modern cryptographic methods. /K. Jamurashvili, R. Samkharadze/. Automated Control Systems. – 2015. – #1(13). – pp. 66-69. – geo.; abs.: geo., eng., rus.

Modern cryptographic methods are discussed in the present article. In particular, methods of public and asymmetric key encryption are discussed as well as their advantages and disadvantages. As a result, modern, practical encrypting solutions are given. Public key cryptosystems are mainly used as hybrid systems, in which fast symmetric algorithms are used for encrypting/decrypting of information, while for the reason of managing and transmitting its key – relatively slow, asymmetric algorithms are used. As we can see, the one-way functions mainly represent such problems of number theory of which solution algorithm is non-polynomial. Therefore, it is impossible for the opponent to recover secret key using the public one wich is the basis for reliability of such cryptosystems. Ref. 5.

Auth.

b17.2.2.10. Forming algorithm of secret key for symmetrical cryptographic systems of information encoding. /V.Kutsiava, A.Kutsiava, K.Gogua, G.Gogoladze/. Automated Control Systems. – 2015. – #1(13). – pp. 70-77. – geo.; abs.: geo., eng., rus.

The paper describes original algorithm for the formation of secret key of information encoding for symmetrical cryptographic systems. This algorithm helps to generate secret key with random value and random length. The key is composed from large amount of sequential decimal digits and it is formed programmatically as a result of performing certain procedures entailed in the algorithm. None of the true values of the parameters participating in encoding procedures are transmitted through the connection line of corporate network. The value of the key is unknown for the personnel serving legal users of the corporate network. Presented algorithm is characterized by high speed and crypto durability. Tab. 5, Ref. 2.

Auth.

b17.2.2.11. Non-standard symmetrical cryptographic algorithm of information encoding. /V. Kutsiava, A. Kutsiava, G. Gogoladze/. Automated Control Systems. – 2015. – #1(13). – pp. 78-82. – geo.; abs.: geo., eng., rus.

The paper describes encoding the block consisting from any number of symbols of ASCII or EBCDIC code represented by decimal system, using non-standard symmetrical cryptographic algorithm. Encoding process uses secret key with random value and random length, which is generated by the program with key forming algorithm. The encoding is performed using Visionery method (using the same key multiple times or auto key mode, where beginning open text or ciphered text is used as a secret key, after the main key is over). Tab. 3, Ref. 3.

Auth.

b17.2.2.12. On the realization of a universal model of symmetric cryptography systems. /V. Kekelia/. Automated Control Systems. – 2015. – #1(13). – pp. 83-88. – geo.; abs.: geo., eng., rus.
On the basis of symmetric cryptographic techniques Caesar system, Vigenere and Vernam a universal model of the encryption/decryption of text information was developed, as well as algorithms and software modules using object oriented programming language C# in Microsoft Visual Studio.NET environment. The aforementioned will provide users the possibility to exchange short text messages i.e. speak in the "language of cryptography". Fig. 5, Ref. 4.

Auth.

b17.2.2.13. Teaching theoretical mechanics using information & communication technologies. /L. Beridze, D. Gorgidze, R. Gogiberidze/. Automated Control Systems. – 2015. – #1(13). – pp.89-97. – geo.; abs.: geo., eng., rus.
The article discusses topics of improving the methods of teaching theoretical mechanics discipline based on intensified use of information and communications technologies in daily life. Modern higher educational institutions widely use information and communications technologies in teaching processes. Theoretical mechanics is considered as an essential theoretical background of general engineering disciplines including material durability, car parts, hydraulics, wave theory and so on. The work is about the issue of teaching theoretical mechanics, one of the fundamental, general scientific disciplines of physics-mathematics using the technologies mentioned above. Fig. 13, Ref. 4.

Auth.

b17.2.2.14. One approach to supply chain optimization for decision making. /M. Tsertsvadze, B. Meparishvili, G. Janelidze/. Automated Control Systems. – 2015. – #1(13). – pp. 110-115. – eng.; abs.: eng., geo., rus.
This paper presented a study of evolutionary programming for the optimization of a supply chain network management. Decision making in distribution management and logistics is often based on collective behavior modeling of multi-agent systems. The supply chain was modeled as agentbased system for optimization of costs related to stocking, manufacturing, transportation and shortage. This is dynamic task, especially in a supply chain network that is becoming increasingly demanding, with customers expecting their products to be delivered as quickly as possible and according to their exact specifications. The main goal of this paper is to describe some views of multi-agent systems behavior modeling. The key technologies, which are based on the paradigm usually called Collective Intelligence of agent swarm, in which the system properties emerge from local interactions between elementary actions of single agents. Fig. 2, Ref. 6.

Auth.

b17.2.2.15. Development of the logical scheme of the database for computer management of business processes. /T. Sukhiashvili, I. Shurgaia/. Automated Control Systems. – 2015. – #1(13). – pp. 116-121. – geo.; abs.: geo., eng., rus.
The main building construction unit of object-oriented systems represents object - a class. Therefore developing computer systems of management of business processes in order that provide effective implementation of all functional requirements and at the same time full satisfaction nonfunctional (usability, reliability, a productivity, safety) the requirement, definition of classes, rational distribution of duty and establishment of the real relations between them is of great importance. In article the way of establishment of the logical scheme of the database for business process (registration of students in higher educational institutions on courses and the accounting of progress) within the rational unified process (RUP) with use of the unified language of a modeling (UML) is offered. Fig. 5, Ref. 2.

Auth.

b17.2.2.16. Evolutionary algorithms of information protection problems. /G. Janelidze, B. Meparishvili/. Automated Control Systems. – 2015. – #1(13). – pp. 122-126. – geo.; abs.: geo., eng., rus.
Constantly changing nature of network attacks requires a flexible protection system, which will have the ability to analyse large volumes of network traffic. Neuronal networks are the basis for

organizingsystems of protection of intellectual information. Such systems must ensureautomatic and operative reaction in case of changes of vulnerability of protective system or space of threats, which leads tothe use of evolutionary methods in protection of information systems. The thesis presentssolution of neuronal network connections weights optimization problem by using genetic algorithm, in the case of a constant network topology and in the case of changeable topology of compatibility functions. Fig. 2, Ref. 3.

Auth.

b17.2.2.17. Angular.js platform to work with node.js web server through. /G. Kentchoshvili/. Automated Control Systems. – 2015. – #1(13). – pp. 127-132. – geo.; abs.: geo., eng., rus.
Considered AngularJs - production history and its benefits. Displaying AngularJs library, Bootstrap CSS style sheets, and download a working environment on. Proposed web - server system installation and testing of samples. An illustrative example is embodied in its SPA - Application to load the browser. Tab 1, Fig. 5, Ref. 3.

Auth.

b17.2.2.18. Normalization of input and output information in machine learning algorithms. /Z. Bosikashvili, D. Chokhonelidze/. Automated Control Systems. – 2015. – #1(13). – pp. 133-137. – geo.; abs.: geo., eng., rus.
One of the main purpose of machine learning is observating the system. There exists many kinds of system: Mathmetical, Biological, Informational system and etc. One kind of such system is intelligence system. These systems are used in many industries. Machine learning is one of the main part of intelligence system which includes such questions: Input and output information, main processes of system. Such systems' machine learning defines many kind of algorithms. Such systems' machine learning defines many kind of algorithms. For them, as well as the entire system it’s necessary to adequately supply the information. System must also adequately generate output information. Therefore information normalization is required. The following article discusses one of the algorithms of normalization. Tab. 1, Fig. 1, Ref. 4.

Auth.

b17.2.2.19. On the united agents in groups and collective decision-making in a video game. /G. Abelashvili/. Automated Control Systems. – 2015. – #1(13). – pp. 138-144. – geo.; abs.: geo., eng., rus.
Multiagent Technology is widely used in videogames. It combines game theory, complex systems, artificial intelligence and computational sociology. Many videogames are based on the individual artificial agent, but there are problems which are often solved as collective agents, in this case, agents will be unite in community. To unite agents in Community, there are some principes and approaches. In agent's community decisions are made as one A.I. agent. These decisions called Community Decisions and it's based on the each individual community member's decision. In this article we are going to talk about these decisions and the example will be The Ant's Task. Tab. 2, Fig. 2, Ref. 4.

Auth.

b17.2.2.20. Research of modern methods of web-sites design and their implementation. /N. Gochitashvili/. Automated Control Systems. – 2015. – #1(13). – pp. 145-150. – geo.; abs.: geo., eng., rus.
The article discusses methods of designing layouts for web-pages. Differences among various methods as well as their advantages and disadvantages are described. Recommendations resulting a research that has been made are provided as well as software implementation methods used in web design that may be used by designers and developers in the process of creating web pages.

Auth.

b17.2.2.21. Development of classroom assessment process using executive information systems. /E. Turkia, D. Jibuti, S. Stomadova/. Automated Control Systems. – 2015. – #1(13). – pp. 151-155. – geo.; abs.: geo., eng., rus.

Learning quality improvement attracts wide interest. All related discussions, research, and implementation of any form or direction of the learning process quality enhancement is of global importance, since the introduction of the right and effective techniques are directly reflected on the state's progress. The main opinion about learning quality improvement process is based on the school administration and faculty. In reality, learning process is constantly being adjusted to market demands and the learning process assessment by students, analysis, and practical implementation plays less important role in it. The article discusses development and realization of classroom assessment techniques based on executive information systems' scoring model. Domain of scoring model comprises syllabus topics. User expandable several criteria are offered as dimensions. Assessment is based on three-point system (low, medium, high). The results are presented on the user interface with help of graphical-analytical tools via two- and three-dimensional data models. The designed system assumes the active involvement of students in the learning process strategy. As an illustration, the article presents user-form samples, organized by user's type - teacher and student. Fig. 3, Ref. 4.

Auth.

b17.2.2.22. Construction of unified models for business processes of multimodal freight transportation management. /G. Surguladze, L. Petriashvili, M. Okhanashvili, M. Bitarashvili/. Automated Control Systems. – 2015. – #1(13). – pp. 156-164. – geo.; abs.: geo., eng., rus.
The present article discusses problems of managing business processes of multimodal freight transportation. Article presents analysis of types of multimodal shipments with emphasis on modeling and improving automation of business processes of a freight forwarding business based on modern information technologies. UML diagrams of freight forwarding has been developed based on objectoriented approach. Infrastructure of management information system of the problem area has been designed with database, monitoring and decision making blocks. Fig. 7, Ref. 5.

Auth.

b17.2.2.23. Automation of database construction for ecological system of Black Sea. /G. Surguladze, N. Topuria, A.Gavardashvili, M. Kashibadze/. Automated Control Systems. – 2015. – #1(13). – pp. 165-168. – geo.; abs.: geo., eng., rus.
The problem of multimedia data base computer-aided design for ecological information system in Georgia's Black Sea waters is considered. The objects describing the syntax and semantic of the sea ecosystem of the main parameters are identified; in particular: sea parameters, river, estuary, vulnerable districts, GPS coordinates, sensitive areas, water sampling factors, etc. The conceptual conceptual model of the Black Sea ecosystem aws built using the object-role simulation tool. Theoretically, it is based on the joint use of the categorial approach (language grammar rules) and mathematical logics (algebra). An experimental database of the Black Sea ecosystem is implemented on the Ms SQL Server 2012, and user interfaces to maintain the database constructed in an integrated environment, the Ms Visual Studio.NET 2013. Fig. 2, Ref. 5.

Auth.

b17.2.2.24. Information system for assessing the region's economic resources. /G. Chachanidze, A. Kviralashvili/. Automated Control Systems. – 2015. – #1(13). – pp. 177-180. – geo.; abs.: geo., eng., rus.
The resource management issues of the region are considered. The the economic method, statistical work program, the composition of the statistical indicators for regional resource management system and the data needed for decision-making are proposed. The main data for the economic resource ensurance assessment information system are obtained from the results of optimization and prediction of the flow of resources in the region. In order to optimize the flow of resources a ransport-type task is used, and for the sake of prediction a mathematical regression-type model is built. Fig. 3, Ref. 2.

Auth.

b17.2.2.25. Comparative analysis of the host higher education programs, to support an academic mobility. /O. Eray/. Automated Control Systems. – 2015. – #1(13). – pp. 181-185. – geo.; abs.: geo., eng., rus.

An algorithm of comparative analysis of the mobility-moved students' educational programs is given. The algorithm defines academic disciplines and selective courses. A comparative analysis of training programs of the basic and receiving higher education instititions is made. Fig. 1, Ref. 1.

Auth.

b17.2.2.26. Programming and administration principles of e-learning platform by the example of e-learning platform ilias. /G. Gvinepadze, Z. Tielidze/. Automated Control Systems. – 2015. – #1(13). – pp. 186-191. – geo.; abs.: geo., eng., rus.

The article is about the usage of electronic systems in learning process such as e-learning platform and their management methods. The article discusses the e-learning platform ILIAS exemplary. In the article is discussed multiple possibilities of e-learning platform (ILIAS) - computer-based training, mlearning, distance learning etc. In general article is about Sharable Content Object Reference Model (SCORM) programming and implementation. About Designation of Sharable Content Objects, about Flexibility and other advantages. Also it is briefly Explained how to use object oriented programming languages and xml to extend possibilities of e-learning platform and SCOs.

Auth.

b17.2.2.27. Analysis of drying process to create a microcontroller automated management system. /A. Bardavelidze, I. Basheleishvili, K. Bardavelidze/. Automated Control Systems. – 2015. – #1(13). – pp. 192-195. – geo.; abs.: geo., eng., rus.

The article describes technological process for drying of cereal crops and loose substances. The article demonstrates and provides justification for rationality behind the idea to design and develop an automated management system for the drying process based on modern microcontroller technique of in order to achieve new level of quality. The present work puts forward the universal digital automated management system (MAS) for cereals drying process. Development of the aforementioned will allow us to dry cereals and loose substances using efficient, energy-saving methods. Fig. 1, Ref. 4.

Auth.

b17.2.2.28. BPMN modeling and automation of the business tender process. /K. Kristesiashvili, G. Nareshelashvili, T. Sherozia/. Automated Control Systems. – 2015. – #1(13). – pp. 196-199. – geo.; abs.: geo., eng., rus.

The business process modeling of the tender process using by BPMN standard is considered. The fundamental issues of the tender process automation is proposed. The modeling and automation European system Bizagi Process Suite is used. Fig. 3, Ref. 3.

Auth.

b17.2.2.29. Credit portfolio management analysis and development of structural models of monitoring. /M. Dvalishvili/. Automated Control Systems. – 2015. – #1(13). – pp. 205-209. – geo.; abs.: geo., eng., rus.

In the field of corporate credit, for effectively managing the bank risk it is not enough to assess risk degrees only; in fact, the implementation of various methods and measures directed towards risk minimization is neede. In the field of corporate credits, legal entities represent bank clients. The size of a loan focuses on average corporate clients. Controling the risks is important in the process of credit risk management. The present article discusses topics such as risk concentration limits, large credit risks in the joint limit capacity determination and analysis of credit portfolio risk concentration limits. Tab. 3, Ref. 4.

Auth.

b17.2.2.30. Construction of corporate applications with service-oriented software technologies. /G. Surguladze, N. Kiviladze, G. Kiviladze/. Automated Control Systems. – 2015. – #1(13). – pp. 230-235. – geo.; abs.: geo., eng., rus.

The work carries out the discussion about Microsoft,s modern web development frameworks and applying them in the development of the large scale line of business applications.ASP.Net Web Forms, Silverlight and MVC programming frameworks are analyzed and provided comparisonsbetween them. The advantages and disadvantages of each framework are carried out

and some of the recommendations are provided for using these frameworks in real life scenarios. A practical implementationproject is provided. A human resourse management system (HRMS) web application is a software solution for small to mid-sized businesses to help automate and manage their HR, payroll, management, and accounting activities. The application is developed using Microsoft Visual Studio, MsSQL Server software tools. We also consider the possibility of using NoSQL databases in these systems. Fig. 3, Ref. 13.

Auth.

b17.2.2.31.To improve the effective reliability of automobiles' embedded systems using the network methods. /T. Sakhelashvili, I. Mosashvili/. Automated Control Systems. – 2015. – #1(13). – pp. 236-241. – geo.; abs.: geo., eng., rus.

The dissertation examines the efficiennsy and reliability of the embedded systems in cars and its components. It haracterizes the use of network methods that are most suitable to increase the reliability of the application "Autoline". The dissertation shows each step and definition of defects and reliability of cars. The application of the embedded error detection system of the car was created in Android Studio program in the Java programming language and it can be successfully used for practical purpouses as well as in new areas of studies. Fig. 7, Ref. 5.

Auth.

b17.2.2.32. Research results of new methods to improve the reliability of embedded systems. /G.Chachua, I. Mosashvili/. Automated Control Systems. – 2015. – #1(13). – pp. 242-247. – geo.; abs.: geo., eng., rus.

This article discusses the architecture and components of embedded systems (ES). Characterized are the methods of inspection and testing of the armed forces, which are the most suitable for their management in order to improve the reliability and the development of new technologies. For that in our study we used a new method – Test Driven Development – TDD. The paper presents each stage of the implementation of TDD. Given the results of studies on programmable FPGA Spartan board and on VHDL programming language was created new libraries, which can then be successfully used as a practical purposes, as well as in research in new directions. Fig. 3, Ref. 7.

Auth.

b17.2.2.33. Assessing information security risks of business processes for financial organization and IT-services. /G. Surguladze, K. Odisharia, T. Pkhakadze, A. Kekenadze, G. Cherkezishvili/. Automated Control Systems. – 2015. – #1(13). – pp. 248-253. – geo.; abs.: geo., eng., rus.

The article discusses bank credit risk estimating model VaR (value at Risk) scoring algorithm, Altman and Fullmers models, which are used by bank audit for forecasting the solvency of an organization (firm). For concrete managing object (for example, Georgian Technical University) the usage of Fulmer's model is calculated and corresponding results are received. This article also investigates the "role" of a financial bank risk manager with it's functions and is constructed an UML language UseCase Diagrams and Activity Diagrams. Tab. 2, Ref. 11.

Auth.

b17.2.2.34. Web application architecture. designing RIA applications. /N. Kiviladze/. Automated Control Systems. – 2015. – #1(13). – pp. 254-259. – geo.; abs.: geo., eng., rus.

This article gives information about designing the RIA implementations and its fundamental concepts. It provides the general stages of software architecture planning and recommendations for each payer. This paper makes comparison between atandart web application architecture and RIA aplication implementations. We discuss benefits of designing RIA-appliacations in combination with software design patterns, such as: Command object, Asynchronous Callback, Service Layer, Composite View, Model-View-Presenter Model. At the end of the article, we provide an UML diagram, Showing an implementation of command design pattern used in RIA-applications.Tab. 1, Fig. 4, Ref. 6.

Auth.

b17.2.2.35. Virtualization in data centers. /G. Cherkezishvili/. Automated Control Systems. – 2015. – #1(13). – pp. 260-263. – geo.; abs.: geo., eng., rus.

The paper discusses the advantages and principles of the physical servers in a virtual environment. The VMvare, Oracle and Linux distributed systems are given. in the virtual environment. Asa result of practical examples and observations, some recommendations for solving the problems are proposed. Fig. 4, Ref. 7.

Auth.

b17.2.2.36. Control and data recording device for synthesis of hightemperature superconductors in the oxygen environment. /B. Bendeliani, G. Dgebuadze, L. Gugulashvili, I. Metskhvarishvili/. Science and Technologies. – 2016. – #2(722). – pp. 9-14. – geo.; abs.: geo., eng., rus.

The control and data recording unit of system for synthesis of high-temperature superconductors in the oxygen environment, by means of which it is possible to carry out synthesis of high-temperature superconductors in the oxygen environment with the chosen temperature mode in an open through cylindrical furnace is presented. At the same time, the virtual LMS device, created in the environment of graphic programming and the multipurpose NI6009 unit of National Instruments, allows to watch visually the process and automatically register data on the personal computer. Fig. 5, Ref. 9.

Auth.

b17.2.2.37. A new microprocessor sysem to manage the gas leakage control, alarm and shutoff valve. /N. Iashvili, I. Khutashvili/. Science and Technologies. – 2016. – #2(722). – pp. 59-65. – geo.; abs.: geo., eng., rus.

A new system developed for fuixing gas leakage in homes, producing a warning sound and light signals is proposed. In case of gas leakage, the microprocessor unit ensures shutoff of the electromagnetic valve and cutoff of gas siupply The proposed system is distinguished from existing devices and systems by several features, that provides high sensitivity and accuracy. Besides, the cost of the system is being significantly reduced. Fig. 2, Ref. 7.

Auth.

b17.2.2.38. Construction and consideration of current-voltage characteristics. /A. Metreveli, A. Sulamanidze/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 84-87. – geo.; abs.: geo., eng., rus.

On the basis of study of current dependence on voltage in case of different capacities the group of current-voltage characteristics for microwelding machine, according to resistance was constructed by us. The received group of characteristics was described mathematically by us, in particular with the seventh order polynomial and with minimum error (1,5%) it coincides with experimentally obtained current-voltage characteristic. Fig. 1, Ref. 2.

Auth.

b17.2.2.39. Controlling the location of pressure contact welding point. /A. Sulamanidze, G. Kakhishvili/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 116-121. – geo.; abs.: geo., eng., rus.

The reasons of violation of symmetric location of the pressure contact welding point of different thickness materials have been analyzed and special construction of the electrode has been worked out. Artificial control of the current line in the thick-walled piece has been made and, as a result, symmetrically located weld point, guaranteeing high and stabile quality of the joint, has been received. Fig. 4, Ref. 4.

Auth.

b2.3. Mechanical engineering

b17.2.3.1. Research of technological processes of manufacturing muzzle of a combat weapon. /M. Mikautadze, A. Gordeziani, N. Kanteladze, N. Kenchiashvili/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 110-115. – geo.; abs.: geo., eng., rus.

The traditional and the latest methods of manufacturing muzzles of military and hunting small arms and obtaining threaded grooves produced in other developed countries are considered. A

comparative analysis of these methods in order of quality is given. The paper covers the use of steel for the production of muzzles of small arms and their technological advantages in the manufacture of a variety of ways. Based on the analysis of research the recommendation for developing a cheap, simple and perfect manufacturing process of muzzles and obtaining threaded grooves for small arms and related manufacturing equipment is given. Fig. 3, Ref. 3.

Auth.

b17.2.3.2. Determination of natural frequencies of connecting rods as the frame parts of a stair climber machine. /D. Tavkhelidze, M. Janikashvili, Z. Mchedlishvili/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 98-104. – eng.; abs.: eng., geo., rus.
The given article is devoted to the determination of dynamic characteristics of the frame of an invented stair climber platform for different purposes, in particular for disabled persons. Dynamic parameters of the device are calculated on the basis of dynamic rigidity method. Since the frame of the stair climber is built by side frames connected by means of bars, due to the heavy type of periodical workload, it is necessary to determine natural frequencies of the connecting rods as parts of the frame of the machine. These bars are assumed as the rods with elastic characteristics. Based on the here offered method the mathematical model is obtained, which gives the opportunity of determination not only the natural frequencies, but the modes of oscillation, as well and as the results of other dynamic parameters of the mechanical system. Fig. 7, Ref. 3.

Auth.

b17.2.3.3. Tecnological posibilities of radial-forging machines. /M. Baakashvili-Antelava, S. Mebonia/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 105-112. – geo.; abs.: geo., eng., rus.
This article discusses the scopes of application of radial-forging machines and shows that the method of radial forging is applied in mechanical engineering to the processing of axis symmetric details with complex shapes, production of which on metal-cutting machines is uneconomical and results in considerable losses of metal on shaving. It is noted that this method is applied in metallurgy as well, specifically in the shops of cold rolling of tubes to forging of tube preparations before drawing. Fig. 4, Ref. 8.

Auth.

b17.2.3.4. Determination of the sag of a closed-loop mobile ropeway of a cross portable log trailer by the experiment and parabola method. /G. Darakhvelidze, L. Mezvrishvili, Z. Balamcarashvili, R. Tkemaladze, D. Mosulishvili, N. Chelidze-Tkeshelashvili/. Wood Bulletin. – 2016. – #11. – pp. 47-50. – geo.; abs.: geo., eng.
A modernized cross portable rope-way log trailer with closed loop mobile load-bearing rope has been designed. Experimental studies for determining the sag the load-bearing ropeway for different values of concentric load and tension of the load-bearing rope have been conducted on the basis of the developed study methodology. Fig. 4, Tab.1, Ref. 3.

Auth.

b17.2.3.5. Development of the methods of calculating the cross portable rope-way log trailer's closed loop load-bearing rope according to the experimental study results. /G. Darakhvelidze, L. Mezvrishvili, Z. Balamcarashvili, R. Tyemaladze, D. Mosulishvili, N. Chelidze-Tkeshelashvili/. Wood Bulletin. – 2016. – #11. – pp. 55-60. – geo.; abs.: geo., eng.
This work deals with the methods for determining the parameters of cross portable rope-way log trailer’s closed loop mobile load-bearing rope according to the results of experimental and parabola data, where also used are the generally known results of practical experience of the operation of rope-way log traileer’sload-bearing ropes; it is established that the values of the closed loop load-bearing rope's sag should not exceed the length of span - 0.02-0.03; while knowing the allowable value of the sag, we can calculate the upper bound of the closed loop load-bearing rope's tension and determine mounting tension T0, using epy cubic equation. Tab. 2, Ref. 3.

Auth.

b17.2.3.6. Determination of loads arising by trade knives of a vegetable raw leaf cutter and roller. /T. Megrelidze, G. Pirveli, G. Gugulashvili, G. Beruashvili/. Science and Technologies. – 2016. – #2(722). – pp. 78-82. – geo.; abs.: geo., eng., rus.
The loads cuased by the trade tandem knives in a vegetable raw material cutter and roller are described. The calcuylating formulas of axial loads and of the bending and twisting moments arising in the process ofoperation of the trade knives are derived. The taking into account of all these loads is necessary in designing a vegetable raw leaf cutter and roller. Ref. 5.

Auth.

b17.2.3.7. Plastic deformation as a means of eliminating crack-type defects. /G. Bulekbayeva, P. Kipiani, O. Kikvidze, S. Mindadze/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 116-125. – rus.; abs.: rus., eng., geo.
The article deals with a method making it possible to prevent and eliminate crack-type defects that can tend to appear during welding of steel by plastic deformation up to the phase transformation temperature.
Tab. 3, Fig. 3, Ref. 6.

Auth.

b17.2.3.8. Definition of optimal parameters of automatic stabilizer of mountain self-propelled chassis. /I. Lagvilvava, R. Khazhomia, B. Basilashvili, A. Kobakhidze/. Annals of Agrarian Science. - 2015. – v. 13. – N4. – pp. 56-61. – eng.; abs.: eng., rus.
The article considers the issue of angular fluctuation related to mountain self-propelled chassis left wheel contact with the ground that may arise due to changes in the topography ordinate under the right wheel. Systems determining the chassis' balancing kinetic and potential energies have been obtained. Given the optimal ratio of the automatic stabilizer's fluctuation process and parameters of the mentioned system, the rapid damping criteria of the differential equationfluctuation have been defined. Fig. 1, Ref. 5.

Auth.

b2.4. Chemical engineering

b17.2.4.1. Modeling of photocatalytic processes. /T. Marsagishvili, M. Machavariani, G. Tatishvili, N. Ananiashvili, M. Gachechiladze, J. Metreveli, E. Tskhakaia/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 272-275. – eng.; abs.: eng., geo., rus.
Photocatalysis or action upon the chemical reaction by photons is of interest as for theoretical, so for practical use. Model system – condensed medium with dissolved reagents was studied in the present work. Methods of theoretical and mathematical physics, particularly, multiparticle temperature Green functions of polarization operators of condensed medium were used during theoretical calculations of chemical reactions. Numerical values of reorganization energy, transition dipole moment, the reorganization energy of the quantum subsystem, etc. are obtained. Ref. 7.

Auth.

b17.2.4.2. New generation zeolitic adsorbers. /V. Tsitsishvili, N. Dolaberidze, M. Alelishvili, M. Nizharadze, N. Mirdzveli/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 276-280. – eng.; abs.: eng., geo., rus.
The synthesis of new generation zeolite materials by hydrothermal transformation of natural Georgian clinoptilolite-heulandite treated by HCl water solution and suspended in NaOH solution was investigated. Products were characterized by SEM-EDS, XRD, and FTIR analyses. Investigartion demonstrated that synthesis of zeolites with high silicon content (mordenite-like materials) could be carried our directly from aged gels having suitable chemical composition, but obtaining of materials with high aluminum content (**LTA** type synthetic zeolitic material) is possible in two steps: hydrothermal crystallization of the same natural zeolite firstly to the sodalite structure with Si/Al=1, followed by re-crystallization of sodalite in the NaA zeolite; in both cases morphology of crystallites generally depends on conditions of crystallization. Tab. 3, Fig. 2, Ref. 14.

Auth.

b17.2.4.3. Combined hydrometallurgical treatment of joint chalcopyrite and oxidized manganese concentrates. /L.Bagaturia, B.Purtseladze, N. Barnovi/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 298-300. – eng.; abs.: eng., geo., rus.
The proposed joint hydrometallurgical processing of sulfide concentrate and the poor of manganese raw materials. Proven effectiveness of joint processing of copper-sulfide and manganese concentrates from the environmental point of view. It is shown that sulfide sulfur is partially transferred into the sediment in the form of free sulfur, partly in solution in the form of sulfuric acid, and therefore, it is possible the emission of sulfur dioxide in the atmosphere. Tab. 3, Ref. 3.

Auth.

b17.2.4.4. The liquid sorbent conditional systems on geothermal water base. /K. Vezirishvili-Nozadze, I. Zhordania, N. Mirianashvili, T. Nozadze, Z. Lomsadze, T. Tsotsonava-Durglishvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 362-364. – eng.; abs.: eng., geo., rus.
The World energetic crisis forces the countries to look for new alternative energy sources. Such sources can be clear, non-traditional energy resources, like: solar, wind, bio and geothermal. Our object of research in this article concerns the geothermal energy resources. Geothermal energy provides a huge, reliable, renewable resource, unaffected by changing weather conditions. It reduces reliance on fossil fuels and their inherent price unpredictability and when managed with sensitivity to the site capacity, it is sustainable. Geothermal energy is relatively environmentally friendly. The use of conventional polluting fuels such as oil and coal can be reduced if geothermal and other alternative energy forms be used (reducing pollution). Georgia is rich by geothermal resources, but today they are not used effectively. One of the ways of effective use of geothermal water resources suggested by us is their use in refrigerating equipment of fruit and vegetable store-houses. Besides, the scheme is already developed for using geothermal water for drying and cooling cereals in grain-elevators. For cooling atmospheric air the special air-cooling units are developed. Fig. 2, Ref. 4.

Auth.

b17.2.4.5. Technology for preparation of eco-friendly high-temperature heat-insulating materials on the basis of liquid glass and swollen perlite. /D. Gventsadze, B. Mazanishvili, L. Robakidze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 365-367. – eng.; abs.: eng., geo., rus.
In the paper the technology is presented for preparation of eco-friendly high-temperature heat-insulating materials on the basis of liquid glass and Georgian swollen perlite by the use of modifiers of various nature as clinoptilolite, plastic clay and carbon black. It was established that the indroduction of the modifiers in materials' composition improves their compression hardness by a factor of 1.8 – 2.3. The density of materials is in the range between 250kg/m3 to 450 kg/m2 and the coefficient of the heat conductivity comprises 0.06-0.08 W/m·°C. Tab. 1, Fig. 1, Ref. 6.

Auth.

b17.2.4.6. Ozone in chemical technology. /B. Purtseladze, G. Tatishvili, J. Burjanadze, G. Tsivtsivadze, G. Burjanadze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 584-592. – geo.; abs.: geo., eng., rus.
The methods of ozone production from oxigen-containing gas at passing of electric discharge between high-woltage and grounded electrodes through discharge interval are presented. The fields of the ozone use in chemical technology for laboratory as well as for semi-industrial purpose are considered. Fig. 7, Ref. 19.

Auth.

b17.2.4.7. Research of the possibility of receiving acid- and heat-resistant continuous fiber glass with use manganiferous waste products. /L. Gabunia, I. Kamushadze, I. Gejadze/.

Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 593-596. – geo.; abs.: geo., eng., rus.
The possibility of receiving compositions of glasses for continuous fiber in the SiO_2-Al_2O_3-MnO-RO-R_2O system characterized by an acid- and heat- stability, for the purpose of their application as the filtering materials working in acidic and hot environments is studied. Application as raw materials of manganese waste of complex structure with quartz sand, has defined existence in glasses along with the increased maintenance of MnO, a combination of different types of bivalent oxides and the modifying additives which betray to glasses high technological and physical and chemical properties. Fig. 4, Ref. 4.

Auth.

b17.2.4.8. Thermogravimetric study of the mixture chalcopyrite and manganese oxide concentrate after the joint mechanical activation. /L. Bagaturia, B. Purtseladze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 605-607. – rus.; abs.: rus., geo., eng.
The paper presents the results of thermogravimetric studies of mixtures chalcopyrite and manganese oxide concentrates - without grinding, after grinding and grinding individual. In the temperature interval corresponding to vibropomiar in these samples does not occur phase transformations. Fig. 3, Ref. 4.

Auth.

b17.2.4.9. An electrochemical method of obtaining of the active manganese dioxide powder for current sources. /G.Tsagareli, N. Maisuradze, L. Batsanadze, Sh. Makhatadze, M. Soselia/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 608-610. – rus.; abs.: rus., geo., eng.
Under conditions of high concentrations of manganese sulfate and sulfuric acid, at the low temperature of electrolyte solution and high anodic current density, the manganese dioxide (MD) is obtained in the solution in the form of fine powders. This method has significant advantages over currently existing process for preparing MD as a compact sediment at the anode. However, such MD powder has no activity required for the power sources. In order to obtain the active MD powder for current sources in the solution, we studied the influence of number of organic additives in the electrolyte solution on MD's electrochemical properties. The activity of the obtained powders was studied in the alkaline battery model. It has been shown that a number of additives significantly increase the electrical capacity of the cell. Tab. 1, Ref. 8.

Auth.

b17.2.4.10. Interpretation of conditions of opal-like margin formation in agate-chalcedony geodes and revealition of hydrothermal metasomatic zeolitization within it. /G. Magalashvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 611-616. – rus.; abs.: rus., geo., eng.
For the first time, around agate-chalcedony geodes, the opal-like margin has been found out; it has been formed by the interaction between hydrothermal silicic acid solution and alkalines of the enclosing rock. Modeling of this process has been carried out under autoclave conditions, and similar results have been obtained. Thus, when amygdaloidal cavities (or other forms) being in enclosing rocks, are filled with hydrothermal silicic acid solution, "natural autoclave" conditions come into existence. Besides opal and α-christobalite, formed in the result of the interaction between hydrothermal silicic acid and minerals of the enclosing rocks, hydrothermal-metasomatic zeolites have been also found out for the first time (clinoptilolite, mordenite). Formation of opal margin (brigade) requires more volume(capacity), in the result of which it creates centrifugal forces. Influence of these forces forms rhythmic reactions (according to the auto waved theory on breakdown of gel), which in Heir Wang, cause breakdown (failure) of gel; and zonal - concentrating structures, are characterized for "agate peculiar", various pauerns (pictures) are formed. Thus, we can conclude, that it has become quite possible to interpreted the mechanism of "agate" formation phenomenon. Tab. 3, Fig. 3, Ref. 12.

Auth.

b17.2.4.11. Innovation technology of obtaining highly effective luminophore. /G. Khitiri, R. Kokilashvili/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 26-30. – geo.; abs.: geo., eng., rus.

There is elaborated new technology for obtaining high-performance luminophor. It allows improving the quality of luminophor in compliance with the international standards and reducing cost price by 26 %. All this was reached by substitution of light petroleum with the liquefied mixture of propane and butane and by changing the technological process during the extraction by analogy with the Soxhlet apparatus principle. It is noticeable, that energy prices are rather less, because propane-butane mixture evaporates much easier, than light petroleum. Luminescent characteristics of the old luminophore are much lower in comparison with the new one, because light petroleum dissolves small amount of resinous substances and domestic gas is less active in respect of resinous substance. Therefore luminescent intensity of the new luminophore is twice greater and amounts 480% in comparison with the atandard uranyl nitrate. The new luminophore is rather inexpensive in comparison with other synthetic variations. It is characterized by high stability and easy flushing ability. The new highly effective luminophore satisfies requirements of the international standards on quality. Besides, the luminescent defectoscopy is prospective in use in many fields of science and industry, such as medicine, biology, analytical chemistry, criminalistics, production of luminescent dyes, printing production, etc. Tab. 1, Fig. 1, Ref. 5.

Auth.

b17.2.4.12. Innovative approach to recycling of shockproof tire-casing. /R.Labadze, G. Khitiri, R.Kokilashvili, A.Sulamanidze, J.Kerkadze/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 31-36. – geo.; abs.: geo., eng., rus.

Storage and burial of shockproof, tires and all kind of rubber waste are economically ineffective and ecologically hazardous. During long-term storage the secondary wastes can emit toxical agents to atmosphere, that will disturb the ecological balance. At the same time, shockproof tires experience insufficient changes in the moment of expiration of service life. That in its turn creates an opportunity of attainment of big economical effect during its secondary processing. Scientific-engineering center “Utilization” of Georgian Technical University has developed the pyrolysis method of processing of shockproof tires, wherein tires under temperature influence decompose into solid, liquid and gaseous products, that takes place at 300°C. It is shown in the work, that processing of shockproof tires is two-way profitable: first, it protects the nature from contamination and second, there are produced useful products, such as “stove” fuel, carbon, as the component of mastic for bitumen production and gas, which is used, as heating agent for returning back to production. Tab. 1, Fig. 1, Ref. 5.

Auth.

b17.2.4.13. Utilization of scrap tires by low-temperature pyrolysis and physical-chemical examination of obtained liquid products. /P. Tushurashvili, D. Chorgolashvili, T. Khuchua, N. Kobaladze, M. Alelishvili, E. Gelashvili/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 43-49. – geo.; abs.: geo., eng., rus.

As a result of research, it is estimated that a liquid product obtained by means of low-temperature pyrolysis process of worn-out tires represents a complex mix of 5159 compounds (Figure 1,2), which mainly consists of hydrocarbons with the number of carbon atoms C_4-C_{40} (alkanes, cycloalkanes, aromatics) and heteroatom organic compounds (oxy gen, sulfur, nitrogen, bromine, chlorine). Tab. 1, Fig. 2, Ref. 6.

Auth.

b17.2.4.14. Study and prospects of application of amorphous-crystalline matrix materials containing manganese and copper oxides. /N. Chijavadze, T. Cheishvili/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 50-54. – geo.; abs.: geo., eng., rus.

The amorphous-crystalline materials containing manganese and copper oxides, in which the implementation of electronic conductivity type is possible are studied. The obtained materials – composites - display specific electric properties, which are manifested in small values of activation energy and temperature coefficient of electric resistanc that preconditions receipt of specific electrotechnical materials on their basis, operating in high temperature range. Tab. 2, Fig. 1, Ref. 7.

Auth.

b17.2.4.15. On the kinetics of high-temperature oxidation for alumina forming heat-resistant alloys. /O. Mikadze, I. Nakhutsrishvili, N. Maisuradze, T. Loladze/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 88-92. – geo.; abs.: geo., eng., rus.
On the basis of Evans' conceptual theory, a new equation of changing the effective area of diffusion has been tested and the formulas have been obtained, that allow constructing the kinetic curves of oxidation for alumina forming heat-resistant alloys. The main criterion of a correctness of mathematical modeling of real processes consists in the coincidence level of experimental and kinetic curves, that in this case is quite acceptable. Tab. 1, Fig. 2, Ref. 5.

Auth.

b17.2.4.16. Innovative technology of steelmaking. /G. Kashakashvili, I. Kashakashvili, B. Kashakashvili/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 99-109. – geo.; abs.: geo., eng., rus.
Proposed innovative technology of steelmaking in the ladle-furnace comprises loading of the burden made up of metal scrap and fluxes, bottom blowing of natural gas and air or oxygen for smelting the burden from below by flame of gas-air, or gas-oxygen torch, equalizing temperature and chemical composition in the volume of melt, adding slag-forming constituents, shutting off feed of natural gas and air, or oxygen and blowing the melt by inert gas from below. Natural gas and ai,r or oxygen are blown via non-water-cooled gas-air, or gas-oxygen nozzle made up of tubes inserted one into another and arranged in ladle slide gate pouring cup hole and dusted by dry refractory sand. Natural gas is fed via outer tube and air or oxygen – via inner tube. Ladle-furnace is closed by crown with electrodes for additionally smelting of the burden by electric arcs and it is jointed to gas cleaner through crown. After meltdown of burden, primary slag is drained by tilting of ladle-furnace, which latter moves to the initial position to be feed with fluxing additives and forming of the secondary slag. Now, blowing by inert gas from below along with carburization by natural gas, or decarbonization, boiling, deoxidizing, alloying, deep sulphur removal, dephosphorization there is performed homogenization of chemical composition and temperature of finished steel. Application of this innovative technology will provide higher quality of steel, higher efficiency and lower production costs of steelmaking. Fig. 6, Ref. 9.

Auth.

b17.2.4.17. Choosing optimal composition of silicomanganese providing increasing effective use of manganese. /Z. Simongulashvili, G. Kurdadze, R. Abesadze, G. Maisuradze/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 42-48. – geo.; abs.: geo., eng., rus.
A wide analysis of technology of receiving silicomanganese is given in the work and on its background it is discussed how the composition of metal affects an effective use of manganese. Based on the results of experimental, industrial melting it is recommended to melt the metal with low content of manganese and high content of silica in order to increase collecting of manganese. Fig. 4, Ref. 10.

Auth.

b17.2.4.18. Researching the possibility of extracting gold and arsenium from arsenic and gold-bearing sulfide raw material. /I. Kakhniashvili, L. Chkhikvadze, Z. Okrostsvaridze, T. Tsilosani/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 49-53. – geo.; abs.: geo., eng., rus.
To determine the possibility of recovering arsenium and gold from arsenic and gold-bearing raw materials, a thermodynamic study was conducted for alkaline oxidative pretreatment leaching of arsenopyrite ore and residues while firing with addition of an oxidizing agent. The experiment showed that when leaching arsenic-bearing raw material with sodium hydroxide with addition of hydrogen peroxide, degree of leaching increases by 18-20%. The scheme of technological processing of arsenopyrite ore is presented thereon. Ref. 2.

Auth.

b17.2.4.19. Physical-chemical study of mineralogical composition of natural "dry" peloid "Pkhoveli". /D. Jincharadze, L. Ebanoidze, N. Bokuchava/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 54-60. – geo.; abs.: geo., eng., rus.
The mineralogical composition of the natural peloid "Pkhoveli" is considered. Based on the data obtained using diffractometry, thermography and petrochemical analysis, this particular peloid is suggested to contain two groups of minerals: primary (monmorillonite-beidellite group mineral, glauconite, kaolinite) and secondary (quartz, feldspars, calcite, pyrite). Fig. 3, Ref. 6.

Auth.

b17.2.4.20. Sulphate corrosion of concrete. /A.Chikovani, T.Esadze, Kh. Lezhava/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 119-125. – geo.; abs.: geo., eng., rus.
Sharp changes of the temperature, atmospheric humidity, acids and other corrosive waters cause cracking and eventually, full or partial demolition of materials. The effect of corrosive medium on the material (concrete) causes corrosion and deterioration of its physical and mechanical properties. For Tbilisi and its surroundings sulphate corrosion is a priority problem, as the underground sulphate water is very aggressive towards concrete. With sulphate influence on certain products of portland-cement hydration, compounds of calcium hydrosulfoaluminate occur in pores, which is the analogue of Ettringite, a natural mineral or gypsum stone $CaSO_4 \cdot H_2O$. Their volumes greatly exceed the volumes of matters in reaction, which causes considerable stress and concrete structure failure. General principles of concrete protection from corrosion are based on production of dense concrete, with minimum passing (by ratio of filtering) rate and with open porosity (water reducing) as specified in the construction standards. Tab. 3, Ref. 5.

Auth.

b17.2.4.21. Production of weldable ($C \leq 0{,}22\%$; $C_{eq} \leq 0{,}43\%$) unified rebar B500W with yield strength $\sigma_y \geq 500$ N/mm^2, hot rolled, without heat treatment. /V. Kopaleishvili, N. Mumladze, Z. Tabatadze, M. Tabagari, I. Kashakashvili, O. Barbakadze, R. Bakradze/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 159-173. – geo.; abs.: geo., eng., rus.
Austenite fragmentation, increase of secondary phase dispersion, uniform distribution of alloying elements in matrix "release", bases of the alloying elements and the introduced phases in a matrix increase crack resistance. Effect of so-called "new phenomenon" is added to this factor - chemical composition of alloy + "loop" <Ti+N+V> treatment during technological process provide so-called "new phenomenon" influence, which increases strength with plasticity preserved. For example, rolling of selected steel 3sp on bar-rolling mill + "loop" <Ti+N+V> provide weldable rebar B500W (C≤0,22%; Ceq≤0,43%) without heat treatment. Industrial approbation of this technology was successfully realized (NN25^{X}; 18^{XII}; 16^{XIV}; 12^{XVI} mm) and is ready for widespread embedding. Tab. 5, Fig. 8, Ref. 6.

Auth.

b2.5. Materials engineering

b17.2.5.1. Polymeric compositions on the basis of polymeric acid and bentonite. /M. Makhamov, M. Muhkamediev/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 467-473. – eng.; abs.: eng., geo., rus.
In these investigations, some peculiarities of obtaining of composition hydrogels (CH) on the basis of cross-linked polyacrylic acid (PAAc) and bentonite clay (BC) were investigated. Methods of optical microscopy and rentgenography have shown that, in CH's, destruction of crystallic structure of montmorillonit occurs due to the penetration of polymeric macromolecules in between bundle layers as a result of which CHs have a uniform homogeneous structure. The kinetics of swelling of the obtained CH in water was investigated and it was shown that they have a high sorbtion ability to water in wide interval of pH. Sorbtion of metilenic blue (MB) by gels from water solutions was investigated by statical method. It was determined that sorbtion ability of CHs was higher than by hydrogels on the basis of PAAc. Sorbtion of MB has increased with increasing temperature of medium and consequently the bonding of MB by CHs has carried out owing to chemosorbtion. Tab. 3, Fig. 7, Ref. 16.

Auth.

b17.2.5.2. Elaboration the technology for production fine-grained structure powder composites BN, B_4C and $B_xC_yN_z$ in B-C-N system by shs method. /Z. Aslamazashvili, G. Zakharov, G. Mikaberidze, M. Chikhradze, G. Tavadze, G. Oniashvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 575-583. – geo.; abs.: geo., eng., rus.

Modern scientific research main objective is to orientate industry onto development and realization of resource-saving, environmentally friendly technologies. For energy consumption and reduction of technological duration, Self-propagating High-temperature Synthesis (SHS) technology is one of the perspective one. The idea of SHS technology is realizing the process based on the exothermic reaction of components in combustion regime. The technology is characterized with high productivity, low power input, high quality of the obtained produce and ecological efficiency. The main idea of the work is to study the possibility to fabricate radiation resistant and radiation protective ceramic materials from ^{10}B and ^{11}B containing row material (B_2O_3). At the first stage this leads to Elaboration the technology for production fine-grained structure powder composites BN, B_4C, and $B_xC_yN_z$ in B-C-N system by using effective SHS technologies. At the second stage on the base of fine-grained BN, B_4C, da $B_xC_yN_z$ composites, will be elaborated ceramic materials in Ti-B-C-N system, that will have high values of physical and mechanical properties such as hardness, compression stress, wear-resistance, resistant to scale formation in aggressive areas. These materials will work under high intensity dynamic loading. Tab. 2, Fig. 9, Ref. 4.

Auth.

b17.2.5.3. Research of influence of the modifying BaO and SO_3 oxides on properties of cement clinker. /E. Shapakidze, V. Maisuradze, M. Nadirashvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 626-629. – rus.; abs.: rus., geo., eng.

The influence of small additives of BaO and SO_3 on agglomeration, mineral composition and mechanical strength of cement clinker is studied. BaO and SO_3 were added into raw mix by means of volcanic rock - the quartz-adularmetasomatites (QAM). It is shown that presence of BaO at clinker in amount from 0.3 to 0.7 and SO_3 from 0.4 – up to 0.6 masses. %, promote decrease the temperature of agglomeration on 50 - 70^0C, modify mineral composition of clinker and increase both the early, and branded durability of cement. Tab. 4, Fig. 2, Ref. 5.

Auth.

b17.2.5.4. Obtaining and study of porous materials with the use of local natural rocks. /Z. Javashvili, T. Cheishvili/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 37-42. – geo.; abs.: geo., eng., rus.

The results of study of Kvareli shales with the purpose of obtaining of porous materials are given. By study of expanded shales obtained via thermal processingit is established that the change of characteristic properties caused the thermal processing is determined by the conditions of thermal processing (temperature, time) and granulometry of materials. Tab. 1, Fig. 2, Ref. 7.

Auth.

b17.2.5.5. Metallic composite beam with flexible wall. /O. Khazaradze, F. Verulashvili, V. Turashvili/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 78-83. - rus.; abs.: rus., geo., eng.

The metallic composite beams with flexible ultra thin walls are considered. An analysis of beams with flexible walls is is made and considered as a thin-wall plate. In case the thin wall is used, the flexibility of the wall is increased. Once the local stability is lost, wrinkles in the areas between the stiffeners originate. In this case the beam turns into a truss girder. In practice often are applied beams with vertical stiffeners. Due to involving of reinforcing ribs it is possible to use more thin-walled beams. The use of beams with very thin walls is appropriate for stable direction of static load action. Thus using supercritical work of wall it is possible to make a thin-walled beams, resulting in a savings of metal. Composite beams with flexible thin-walled saves metal in comparison with routine flexible walls up to (15 ÷ 20%). Fig. 3, Ref. 4.

Auth.

b17.2.5.6. Improvement of effectiveness of plasma spraying. /M. Khutsishvili, L. Shengelia/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 93-98. – geo.; abs.: geo., eng., rus.
In modern plasmatrons, during turbulent delivery of plasma flow, as soon as plasma flow leaves the nozzle, the powder particles melt and accelerate not only in axial direction, but also in radial direction; they mix with surrounding cold atmosphere. As a result takes place reduction of velocity of particles of sprayed material, oxidation and respectively non-heated particles originate in the zone of coating formation and quality of coating layer is getting worsen. Use of high-enthalpy laminar flows enables us to change the quality of spraying and to improve characteristics of coatings [1-3]. Fif. 3, Ref. 7.

Auth.

b17.2.5.7. Oriented solution increase the efficiency of major infrastructure projects. /I. Berdzenishvili, M. Siradze/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 122-127. – geo.; abs.: geo., eng., rus.
A new technical solution in the creation of competitive anticorrosive direct enamel coatings, significantly improving the efficiency of infrastructure mega-projects is proposed. Thee paper describes the mathematical model to estimate the behavior of pipe-line constructions. The operating parameters of “black” (non-coated) and coated pipes are compared. Tab. 2, Fig. 2,Ref. 9.

Auth.

b17.2.5.8. Enhancement of structural strength of bainitic cast iron by obtaining spheroidal graphite, developing chemical composition of alloy and heat treatment conditions. /V. Kopaleishvili, M.Baratashvili, I.Kashakashvili, O.Barbakadze, T.Loladze, R.Bakradze, Z. Parchukashvili/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 68-78. – geo.; abs.: geo., eng., rus.
Bainitic cast iron matrix structure (80-90% bainite, 10-20% residual austenite) with spheroidal graphite can be obtained by isothermal hardening of nodular cast iron or using bainite class cast iron. Its hardness is provided by bainite while plasticity is provided by retained austenite containing spheroidal graphite. However, the problem is durability, hardly correctable cast metal structure and compatibility of the process of obtaining spheroidal graphite with the casting technological cycle. The period of heat treatment of ductile iron (when the bainitic transformation of carbon-poor areas is completed, but the new phase carbides and martensite crystals are not yet formed in carbon-rich areas of the austenite) is difficult to use. If this time is missed, the amount of residual austenite is greatly reduced. If the spherical shape of graphite in normal conditions (without heat treatment) provides some improvement of characteristics, including plasticity, it is not enough during the isothermal tempering, since the uncontrolled appearance of new phases causes embrittlement of an alloy. Ref. 16.

Auth.

b17.2.5.9. Crack-resistance of 40АГФТ steel. /I. Abdushelishvili, V. Kopaleishvili/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 126-131. – geo.; abs.: geo., eng., rus.
Fracture toughness is a property of a material to resist crack propagation. For testing crack-resistance the approximate method of determining fracture toughness, integral J_1, was applied. Limited, small dimensions of the testing material determined the choice of the method - 7x14x130 mm with sharp notch in depth of 5 mm. The fatigue crack was pre-nucleated on a Drozdowski shaker. The frequency of the variable load at the time of crack initiation was 5-10 Hz. Samples with cracks were tested by the three-point bending with the charts record to the various points of crack propagation. Fig. 1, Ref. 3.

Auth.

b17.2.5.10. Effect of graphite nanopowder on the properties of $CaO-MgO-SiO_2$ system composite for high temperature bedding of cement and metallurgical furnaces. /Z. Kovziridze, N. Nizharadze, M. Balakhashvili, Z. Mestvirishvili/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 132-145. – eng.; abs.: eng., geo., rus.

Purpose.Comparative study of three dolomite (Abano, Skuri, Mukhuru-Georgia) and two serpantinite (Tsnelisi, Sachkhere,Georgia) deposits of Georgia was carried out to determine their fitness to receive high refractory clinker. Methods. Obtained materials were studied by electronic and optical microscope, X-ray, refractory and thermal analyses. Physical and technical characteristics of the material have been investigated. Results. The main phases of the materials are: MgO in the form of periclase and $3CaO \cdot SiO_2$-alit. Belit is no longer in the product. C_4AF, C_3A and C_2F peaks have been fixed. Effect of graphite nanopowder – 20 m^2/gr, TIMREX KS 6 mark, influence of methyl cellulose used as a binder and complex action plasticizer on physical-technical characteristics of the composite have been studied. Conclusion. Innovative technology for production of materials has been developed. Optimal composition of materials is: cement clinker, binder, graphite nanopowder, silicium and plasticizer. Optimal forming pressure – 100 MPa, graphite nanopowder content – 15 mass%, relative surface 20 m^2/gr. Silicium was introduced into oxygen-containing composite as an antioxidant. Tab. 4, Fig. 13, Ref. b17.

Auth.

b17.2.5.11. Timber utilization methods. /I. Chutlashvili, A. Inasaridze/. Wood Bulletin. – 2016. – #11. – pp. 42-46. – geo.; abs.: geo., eng., rus.

The rules and methods of receiving black stock for cutting wood (sawn wood), then optimal schemes of making black stock of boards, as well as determination of norm for solid wood expenditure for leafy and coniferous species are discussed in the article.. Fig. 2, Tab.2, Ref. 3.

Auth.

b17.2.5.12. Fabric exploitation index in relation with structural characteristics. /M. Datuashvili, N. Dolidze, I. Ugrekhelidze/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 95-101. – Geo.; abs.: geo., eng.

The dependence of tangential resistance originated between fabrics made on on the basis of highly modular cotton fiber n on their structural characteristics is studied. The fabrics made on the basis of glass and carbon fiber, as well as Kevlar 49 yarn. In terms of a comparative analysis, also studied was the interdependence of cotton fiber fabrics. The results indicated that the tangential resistance factor of the textiles of twill and lap weave is high as compared with the similar values of sateen-like weave. Recommendations concerning additional bonding of layers for increasing the interlayer resistance were developed. Tab. 1, Ref. 4

Auth.

b17.2.5.13. Choosing the dampening process optimum parameters in the formation of cotton untwisted yarn. /T. Moseshvili/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 102-109. – Geo.; abs.: geo., eng.

Untwisted spinning is a non-traditional field of production of textile threads, when we are dealing with completely new technological processes. In a traditional yarn, fibers are bonded by twisting and tenacity forces.Unlike the classical methods, the formation of untwisted yarn occurs by sticking. A necessary condition in this case is the insertion of the adhesive between fibers in the form of: suspension, powders, granules, thermoplastic or water soluble adhesive fibers. The obtained results appeared to confirm an increase in water absorption capacity of cotton fibers when dampening by water soluble emulsions based on polyethylene glycol. Tab. 2, Ref. 2.

Auth.

b17.2.5.14. Research of the optimization of the parameters of the sizing machine ШБ-9/140. /O. Purtskhvanidze, N. Abesadze/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 110-115. – rus.; abs.: rus., eng., geo.

The work studies optimization parameters of technological processes of sizing on 9^{th} cylinder machine – ШБ-9/140.Using the factorial planning of the experiment, 8 output parameters of technological processes have been defined with the methodology of identifying each factor. For carrying out the experiment, the factors level and the intervals of the variation have been defined, and the matrix of the planning for the full factorial experiment is being described in the chart. The controlling process of the technological parameters of sizing and the control duration of the output parameters are being carried out simultaneously with the selection time. With the help of mathematical processing of experimental rezults the mathematical models for thread breakage

were found on looms, depending on the loom setting up parameters and sizing parameters as well. The following basic parameters have been received: warp yarn genuine starch (%), humidity of the starched up warp yarn(%), yarn resistance to wearing out process (cycle), yarn resistance and lengthening (%), yarn durability to stretching process (cycle), warp yarn discontinuity in weaving process (m) and the yarn tearing. For defining each parameter, it have been used the appropriate state standard and laboratory conditions. Process factors were the following: compressed air pressure in the pneumonic camera of yarn axis filters and the velocity of starching process (m/m) The process of sizing is the most responsible operation for preparing the core yarn for weaving. Weaver's beam is finally formed in the process of sizing. For sizing the core yarn the cylinder sizing machines are being used as well as chamber and combined sizing machines, being complex units, equipped with handware of automatic adjustment and controlling the parameters of technological processes. The main parameters of sizing are the velocity of the warp yarns and its hood, sizing temperature, pressure and temperature of the steam in the airing machine, humidity of the yarn, filament winding density and, etc. Tab. 2, Ref. 3.

Auth.

b2.6. Medical engineering

b17.2.6.1. Validation UV quantitative definition of diclofenac sodium in suppositories. /K. Baramidze, T. Chikviladze, N. Megreli, Sh. Namgaladze, M. Jorjikia/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 13-15. – geo.; abs.: geo., eng.

A reproducible, sensitive and precise spectrophotometric method for determination of diclofenac sodium in suppositories is designed. The coefficient of variation specificity is 0.18 (CV≤2%). Thus, the specificity of the developed method meets the requirements made to the analytical methods. The relative standard deviation for 50 mg diclofenac sodium suppositories is - 0.16 and for 100 mg suppositories - 0.12% (criteria for acceptability of ≤ 2.0%). The accuracy (systematic error of an analytical method) for the 50 mg diclofenac sodium suppositories is - 1.12 and for 100 mg suppositories - 0.12% (acceptability criteria ≤ 5.0%). The correlation coefficient for 50 mg diclofenac sodium suppositories is - 0.9985 and for 100 mg suppositories is - 0.9963%. The method is linear from 8.0 - 13.0 mg/ml for 50 mg diclofenac sodium suppositories and from 8.2 to - 13.4 mg/ml for 100 mg suppositories. Thus, the results received during validation of an analytical method of definition of diclofenac sodium in suppositories, have shown full conformity of the developed method to requirements Guidance for Industry Bioanalytical Method Validation U.S. Department of Health and Human Services Food and Drug Administration Center for Drug Evaluation and Research (CDER) Center for Veterinary Medicine (CVM) May 2001 on the following validation characteristics: Specificity, Accuracy. Fig. 3, Ref. 3.

Auth.

b2.7. Environmental engineering

b17.2.7.1. Overview of modern methods for measuring level and interface phases in oil tanks. /Z. Azmaiparashvili, G. Murjikneli, G. Kitiashvili/. Automated Control Systems. – 2015. – #1(13). – pp.98-104. – geo.; abs.: geo., eng., rus.

The paper discusses methods of oil level measurements in an oil tank by means of measuring instruments of different types. Described the advantages and disadvantages of each method. It is shown what method of measurement and measurement instruments must be used for different types of oil products. It is also considered the methods and means for determining (measurement) an intermediate emulsion "oil-water" zone in the oil reservoir. Fig. 13, Ref. 8.

Auth.

b17.2.7.2. The evaluation of stability of landsliding slope in the River Gldaniskhevi basin. /N. Kvashilava, G. Chakhaia, Z. Varazashvili, L. Tzulukidze, I. Khubulava, T. Supatashvili, L. Maisaia/. Science and Technologies. – 2016. – #2(722). – pp. 31-35. – geo.; abs.: geo., eng., rus.

The stability of the landsliding slope on the right embankment of the River Gldaniskhevi is considered. The critical values of thickness of of both the “dry“ and water saturated soil layer of the slope were calculated. As a result of research, it is established that saturation by water decreases critical corner of slope for about $7 \div 38^0$. Due to above, the research slope is endangered and in case of intensive rainfall the probability of its sliding and catastrophic outcomes (road blocking and river shutoff) is rather high. Fig. 4, Ref. 4.

Auth.

b17.2.7.3. On mining technologies without coal pillars. /L.Japaridze, T.Pirtskhalava, T. Gobejishvili/. Science and Technologies. – 2016. – #2(722). – pp. 83-89. – geo.; abs.: geo., eng., rus.

The problem of stability of development workings excavation sites to ensure the safety of mining operations and increase technical and economic efficiency of exploitation of coal mines of Tkibuli-Shaori mine-field (TShF) is discussed. Due to the significant increase in overburden pressure with the depth of mining operations and the increase in the length of mine workings accidents have made 80-90% of the total number of accidents occurring at work in clearing faces. To solve the problem "the theory of cutting cantilever beam” (CCBT) developed on China is proposed.. Fig. 2, Ref. 11.

Auth.

b17.2.7.4. A heat pump’s role in conservation of heat and power resources. /G. Kublashvili/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 87-94. – Geo.; abs.: geo., eng.

There is an increasing interest in generating and using the renewable and non-traditional energy sources throughout the world. Heat pump is just that type of equipment, which consumes low-grade energy of the environment and generates 3-4 times more energy, than it needs for functioning. The paper dwells on the analysis of prospects for using the renewable energy sources and the role of heat pump equipment in heat and power resource conservation. It also covers the ways of generating low-grade energy of earth by using heat pump. The paper also describes the heat pump installed capacity selective parameters by taking into account hot water consumption and heat loads. Fig. 1, Ref. 5.

Auth.

b2.8. Environmental biotechnology

b17.2.8.1. Innovative formulations of means of plants protection by use of local raw materials. /O. Lomtadze, A. Dolidze, N. Shalvashvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 567-569. – eng.; abs.: eng., geo., rus.

Were developed new compositions preparation against pests and diseases of plant: Insekto-acaricide "Antipest", Fungicide "Antifungal", a drug against of hibernating pests "Proinsekt" and nutritious preparation «Si-humat". These compositional formulations have been developed for integrated protect plants from pests. Compositions of preparations contain approved, tested and efficient components as formulations that are adapted to the local conditions. In this case, by using of local raw materials in preparation of compositions the peculiarities of various countries can be considered. Such compositions together with the maintenance and improvement of efficiency are significantly cheaper (20%) and are customized to the local market requirements. Preparations had been tested during 3 years in field conditions with the positive results for protection of vine, peach and other plant cultures. Tab. 5, Ref. 4.

Auth.

b2.9. Industrial Biotechnology

b17.2.9.1. Utilization of agro-industrial waste materials by using sequential supercritical fluid and ultrasound extraction methods. /M. Tsitsagi, M. Chkhaidze, M. Buzariashvili, M. Khachidze, V. Tsitsishvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 376-381. – eng.; abs.: eng., geo., rus.

Extraction of biologically active compounds from agro-industrial waste materials of most common fruits and vegetables in Georgia by sequential supercritical fluid and ultrasound methods is described. These method provide high quality targeted products, both options have their advantages. The method you choose depends on the class of targeted product, as well as on provided depth of extraction and release of compounds. Fig. 10, Ref. 5.

Auth.

b17.2.9.2. Antimicrobial metabolites of endophytic yeast fungi affecting the taste and spoilage of wines. /N. Barbakadze, L. Dolidze, N. Kavtaradze, T. Dgebuadze, M. Japaridze, A. Dolidze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 419-421. – eng.; abs.: eng., geo., rus.
Volatile phenols, which are related to the wine production and are responsible for the aroma of the wine, were early extracted from the yeast fungi. Lately it was proved that the yeast fungus Picchia Guilermondi that grows on the plant Paris Polyphylla var. yanasesis, is able to yield the same metabolites in the process of fermentation, which simultaneously lead to wine spoilage. Besides, antimicrobial activity of these metabolites has been confirmed, which is perspective with the view of their further application. Fig. 2, Ref. 7.

Auth.

b17.2.9.3. Development of innovative nutritional fungicide composite without copper. /K. Kochiashvili, N. Barbakadze, M. Japaridze, M. Stepanishvili, L. Dolidze, R. Tsiskarishvili, A. Dolidze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 422-424. – eng.; abs.: eng., geo., rus.
Development of modern fungicides of nutritive properties is a top priority for the progress of agriculture. Application of natural resources guarantees ecological security and reasonable price of the composite. Besides, application of phosphites and phosphates contributes to the reduction of migration of undesirable compounds in the soil and prevents their transition to human food cycle. On the basis of preliminary experiments, samples of natural phosphorite formations of Georgia have been selected and feasibility of preparation of optimal concentration composites has been proved. Ref. 9.

Auth.

b17.2.9.4. The fundamental and technological aspects of the processing of fly ash of thermal power plants to produce new valuable products from it. /T. Shakiyeva, B. Dossumova, B. Baizhomartov, V. Yemelyanova/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 476-479. – eng.; abs.: eng., geo., rus.
Based on the microspheres excreted from fly ashes from combustion of brown or mineral coal on the thermal power plant (TPP), elaborated technologies of manufacturing of the modified catalysts of: masout or heavy oil cracking, hydrocracking, hydroconversion and hydrotreatment of the hydrocarbonic raw, dehydrogenation of paraffins in a fluid bed, methane oxidative transformation. Elaborate technologies of deriving of the selective adsorbents for following processes: extraction of oil from water-oil emulsions, mercury sorption, allowing extracting up to 100-120 mg per 1 g of ashen microspheres. Tab. 1, Fig. 1.

Auth.

b17.2.9.5. Optimization of biodiesel production from mustard oil. /A. Jazie/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 486-491. – eng.; abs.: eng., geo., rus.
Mustard oil is one of the promising future raw material for biodiesel production in India. Biodiesel yields from mustard oil was comparable with other raw material e.g., canola and soybean oils that has been reported in the literature. Thus, the transesterification process to produce biodiesel from mustard oil was studied. Biodiesel yields were analyzed using the FTIR (Mid-IR) spectroscopy method. Biodiesel yields from mustard oil at different conditions were investigated in order to optimize the process. Response surface methodology (RSM) was used to optimize the process parameters of the transesterification reaction. The KOH catalyst was found to be suitable for the transesterification of mustard oil over the NaOH catalyst. Optimum conditions of the independent

variables for the KOH catalyst transesterification of mustard oil were determined as; catalyst concentration 1.5 % by weight; reaction temperature, 60˚C; and methanol-to-oil molar ratio of 6:1. The maximum yield of 96% for mustard oil was obtained at these conditions. The model showed a good agreement with the experimental results, demonstrating that this methodology was useful for optimization. The model was successful in explaining the variation of response with respect to the three process parameters studied. Fig. 4, Ref. 18.

Auth.

b17.2.9.6. Elaboration of briquette fuel compositions and technologies for their production. /E. Topuria, N. Khetsuriani, E. Usharauli, K. Goderdzishvili, I. Mchedlishvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 492-494. – eng.; abs.: eng., geo., rus.

Researches for determination of possibility for manufacturing of briquette fuel on the basis of utilization of local energy-bearing wastes were carried out in Georgia for the first time. The study of the elaborated technology and obtained compositions revealed that seven briquette compositions – three of them being obtained from biomaterial and four – mixed carbonaceous composition briquettes – are the best by their properties from the point of view of ecology and economy. The carried out investigation makes it clear that there are perspectives for production of briquette fuel in our country and its implementation will promote both resolving of the problem of energy and reduction of environmental tension. Tab. 1, Fig. 1, Ref. 7.

Auth.

b17.2.9.7. The use of modern physical-chemical methods of substance analysis in the analysis of Georgian red wine. /M. Labartkava/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 561-563. – eng.; abs.: eng., geo., rus.

Georgia is rightly considered as one of the motherlands of **grape vine** (vitis vinifera), that is confirmed by the fact that: at present time Georgia produces 465 varieties of vine. In the present work we aimed to study the full chemical composition of the grapes varieties – “Aleksandrouli” and “Mujuretuli” used for making one of the most famous wine “Khvanchkara” with application of modern methods to find out and state the composition and structure of substances with LC/MS, LC/NMR and LC/NMR/MS system.

Auth.

b17.2.9.8. Influence of ultrasound on supercritical fluid extraction of oils from botanic matrix. /K. Ebralidze, M. Khachidze, G. Kandelaki, V. Tsitsishvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 564-566. – eng.; abs.: eng., geo., rus.

In the process of extraction of oils from vegetable matrices by supercritical fluids it is very important to choose the correct process parameters – increase in temperature leads to a decrease in yield, while at high pressure the yield is growing, though in this case the density of the fluid and the solubility of the substances increases, so the extracted mixture is more complex. With a view to enhancing the applied yield the ultrasonic extractor combined with supercritical have been used, allowing lower pressure and temperature. Ultrasound provides a high yield, but with several decrease of selectivity. In general, the choice of method depends on the properties of the target product. Fig. 2, Ref. 7.

Auth.

b17.2.9.9. Hydrolysis of the plant wastes to obtain natural ligands. /L. Japaridze, Ts. Gabelia, E. Saluqvadze, N. Osipova, T. Kvernadze, S. Urotadze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 597-599. – geo.; abs.: geo., eng., rus.

Acid hydrolysis of corn wastes containing bioactive ligands have been carried out. Quantitative content of sugars in the product of hydrolysis has been established. Possibility of separation of the complex forming components and by-products has been shown. Fig. 1, Ref. 4.

Auth.

b17.2.9.10. Obtaining ligatures from fine grained particles of manganese waste by technology-SHS metallurgy. /G. Zakharov, G. Tavadze, Z. Aslamazashvili, G. Oniashvili, G. Mikaberidze, A. Chirakadze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 600-604. – rus.; abs.: rus., geo., eng.

Is established the technical and technological parametres of synthesis for reception of ligatures from fine grained particles of manganese waste by SHS-Metallurgy. The analyses of obtained results are carried out. Economically the most profitable technological direction depending on type of used wastes is proved. Optimum ways for decreasing the price of final product are determined. The application of proposed technological solution allows to obtain products which is not threat for the ecology. It allows to return, in global scale, in an industrial cycle of ten billions tons of extracted and enriched wastes, manganese ores and to free million hectares of the land for rehabilitation which have been filled up with the waste. Tab. 4, Ref. 8.

Auth.

b17.2.9.11. Technological evaluation of Azerbaijan oak wood for wine-making. /T. Panahov/. Bulletin of the Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 51-55. – eng.; abs: eng., geo.

Anatomical properties and chemical composition of oak wood determining its applicability in wine-making are considered in the paper. Technological assessment of the oak raw material is carried out and vast information is provided on the high-quality composition of Azerbaijan oak wood compared to those of other countries. The peculiarities of the components distribution in different parts of trunk are described in the paper. Fig. 4, Ref. 11.

Auth.

b2.10. Nano-technology

b17.2.10.1. Obtaining of nanodispersion silica. /Kh. Akbarov/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 474-475. – eng.; abs.: eng., geo., rus.

Influence of different factors on sol-gel process of obtain nanodispersion silica has been discussed. Data about of activation energies of investigated processes of synthesis, polycondensation, formation and strengthening of gels are presented. Synthesis of gels possessed by properties of percolyacion structures has been described. Ref. 8.

Auth.

b17.2.10.2. Heat-resistant concrete produced on nano-dispersion natrium silicate composite cohesive material. /T. Esadze, Kh. Lezhava/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 113-118. – geo.; abs.: geo., eng., rus.

One of the highly developed technologies for production of nano-refractory materials is nanotechnology which is in the starting stages of development with respect to refractory materials. Heat-resistant concrete produced with cohesive material – nano-dispersion natrium polysilicate, shows high operational properties in comparison with ordinary heat-resistant concrete, produced with silicate-natrium composition cohesive material. This is explained by the fact that instead of natrium silicate, in heat-resistant concrete produced with the nano-dispersion natrium polysilicate composition cohesive material, the low-melting alkaline component (Na_2O) is reduced which in turn increases the operational properties of the heat-resistant concrete, heat stability, temperature of application, corrosion resistance, etc. Tab. 1, Ref. 5.

Auth.

b17.2.10.3. Application of alum-thermal and nitrogen methods for obtaining nanocomposites in the systems of SiC-SiALON and Al_2O_3-SiAlON. /Z. Kovziridze, N. Nizharadze, G. Tabatadze, Z. Mestvirishvili, N. Darakhvelidze/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 146-158. – eng.; abs.: eng., geo., rus.

By the reactive baking method at 1450^0C on the base of geopolymer (kaolin), aluminum nanopowder, silicium, aluminum oxide, silicon carbide with little admixes of yttrium oxide, magnesium oxide and glass perlite (Aragac, Armenia), was obtained the SiAlON-containing

nanocomposite. The advantage of this method is that compounds, which are newly formed thanks to interaction going on at thermal treatment: Si_3N_4, Si, AlN are reactive, which contributes to SiAlON formation at relatively low temperature of 1300-1350^{0}C. It is evident that inculcation of α-Al_2O_3 and AlN in crystal skeleton of ß-Si_3N_4 is easier since at this temperature interval crystal skeleton of Si_3N_4 is still in the process of formation. It should also be stated that strength and wear resistance of SiAlONs increase in the presence in silicium carbamide and corundum containing composites. The paper offers processes of formation of SiC-SiAlON and Al_2O_3-SiAlON and ß-SiAlON composites and describes their physical and technical properties. Open porosity of the obtained materials equaled to 15-16 %. Conclusion. Materials consisted of only SiAlONs. To receive compact materials the composites were grinded in planetary mill for eight hours, then cleaned from admixtures and the obtained powder was hot-pressed at 1750^{0}C under 25 MPa. Standing time at final temperature equaled to seven min. The results of sample testing: Density, g/cm^3 =3.24; Thermal expansion coefficient, 1/grad 10^{-6} (800)=2.7-3.0; Hardness, HRA=94, HV=18 GPa; Flexural Strength, 500-550 MPa. Phase composition of the composites was studied by X-ray diffraction method, while the structure was studied by the use of optic and electron microscope. Obtained materials are used in protecting jackets of thermo couples used for melted metal temperature measuring (18–20 measuring) and for constructions used for placing objects in factory furnaces, and for cutting ceramics. Tab. 2, Fig. 10, Ref. 25.

Auth.

b17.2.10.4. Chemical bonds in changing the hardness of nanomaterials. /G. Chiradze, A. Gerasimov, G.Kvesitadze, M. Vepkhvadze/. Bulletin of the Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 105-110. – eng.; abs: eng., geo.

Nanomaterials consisting of nanoparticles, in contrast to conventional materials, during loading behave in a special way. The value and sometimes even the direction of the change initiated by the loading process depends on the size of their constituent nanoparticles. Despite many attempts the explanation of these facts does not still exist. In this paper, we propose a new mechanism of changing the magnitude and direction of change initiated by a loading process in nanomaterials, depending on the size of the constituent nanoparticles. This mechanism is based on the new ideas about changing the atom position in the material, which is determined by the change of quantum state of the chemical bonds of the atom. This change can be realized in different ways: by temperature, light, pressure, electric and magnetic fields, reduction of the particle size of the material. This mechanism qualitatively explains all the experimental facts taking place during the loading of nanomaterials. Fig. 5, Ref. 13.

Auth.

b17.2.10.5. Modification of chromium steel by nano-oxide composite. /A. Oakley, D. Macharadze, M. Ratishvili, L. Rukhadze, B. Margiev, L. Chkhartishvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 516-519. – eng.; abs.: eng., geo., rus.

Briquettes from powdery carbonyl iron and nano-Al_2O_3 (with particles sizes of 30-100 nm) have been used in studying of the process of modifying middle-carbon chromium steel. Modifying with nano-Al_2O_3 improved hardness of rolledand forged steel by 24%. Wear resistance of cast steel improved by 26%. By electron-microscopic test of sample of rolled steel revealed that the thin layer of Al_2O_3 nanoparticles located in border areas of grains, where, probably, intensive diffusive (on two, three and more degrees higher than for traditional structure) processes take place. It results in the hardening of grains borders. Tab. 1, Fig. 3, Ref. 3.

Auth.

b2.11. Other engineering and technologies

b17.2.11.1. The macroeconomic regulation of food safety under present-day conditions. /P. Koguashvili, T. Lachqepiani/. Agrarian-economic Science and Technologies. – 2016. – #2(31). – pp. 5-19. – geo.; abs.: geo., eng.

The article deals with the state agricultural policy priorities, the system of the agriculture sector support of quotes for macroeconomic regulation of production volumes. It is said that the agriculture support restrictions at the global scale adversely affect international food security, which

will significantly reduce the world farming potential, production outputl, production volumes and increase prices on agricultural products. Ref. 6.

Auth.

b17.2.11.2. A new product – prophylaxis and correction of zinc deficiency. /G. Grigorashvili, A. Khotivari/. Agrarian-economic Science and Technologies. – 2016. – #3 (32). – pp. 45-49. – geo.; abs.: geo., eng.
A new technological method for enrichment of black tea with zinc sulfate was elaborated. It is shown that organoleptic parameters of the product remain unchanged, following the enrichment. According to its chemical and physical features, the product meets all the demands specific for food products. The content of zinc in a tea brew make up 5,4mg which makes it possible to satisfy daily need for this element in children, even at a two-fold use. Tab. 2, Ref. 10.

Auth.

b17.2.11.3. Some features of thermal processing of sausage products. /D. Basiladze, A. Kharazishvili, M. kobakhidze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 109-114. – geo.; abs.: geo., eng., rus.
The article dealswith details and nuances of the thermal processing of sausage products; options of technological process, such as draughting, roasting, cooking, smoking, cooling and drying are analyzed.. Ref. 4.

Auth.

b17.2.11.4. Food supplements, fortification programs and their alternative opportunities in Georgia. /A. Kvezereli-Kopadze, L. Siradze/. Pediatric cardiology. – 2016. – #10. – pp. 58-59. – geo.; abs.: geo., eng.
Fortification means the enrichment of food with vitamins, microelements and minerals being lost by the food during processing or storage. Thereferore, this technology is called food fortification and/or restoration. Nutrinional additives had a privilege as a massive method of malnutrition prevention in poor population of world. Nowadays science and tech mean food additives in the form of vitally necessary microelements and vitamins. The authors' view concerning the food asupplements, fortification programsand their alternative opportunities in Georgia are discussed. Ref. 7.

Auth.

B3. MEDICAL AND HEALTH SCIENCES

b3.1. Basic medicine

b17.3.1.1. The study of mineral composition of sulphide silt peloids spread in Adjara region by using X-ray phase method of analysis. /T. Masiukovich, A. Bakuridze, T. Murtazashvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 541-545. – eng.; abs.: eng., geo., rus.
The use of the natural healing factors for the treatment and prevention of various diseases presents one of the current tasks for the modern medicine. The healing muds, so called peloids, have a special role in balneology and resort therapy due to their therapeutic action [1]. They belong to useful mineral resources and contain therapeutically active substances. The aim of our research was to study the mineral composition of sulphide silt peloids of Adjara region. By using the X-ray phase method of analysis in the study objects, the compositions of important minerals have been established . Fig. 6, Ref. 5.

Auth.

b17.3.1.2. The study of some properties of papain containing gels. /N. Gorgaslidze, N. Nizharadze, L. Nadirashvili, G. Erkomaishvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 550-552. – eng.; abs.: eng., geo., rus.

The presented manuscript is dedicated to the creation of prepared medicinal form of papain-containing gels and to the study of their rheological properties. For this purpose the bases were selected which provide the optimal resorption and stability of acting compounds. Based on the obtained data it was found that the proteolitic activity of the gels prepared on polyethylene glycol is nearly unchanged over 6 months, whereas the activity of the gels, prepared on methylcellulose is less by 15-20%. As a result of rheological researches, it was found that papain-containing gels prepared on the bases of polyethylene glycol are resistant and stable against technological intervention. Tab. 1, Fig. 2, Ref. 10.

Auth.

b17.3.1.3. The effect of bemiparin on the microcirculation and hemorheology during experiments. /M. Mantskava/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 617-621. – rus.; abs.: rus., geo., eng.

The coagulation and hemorheology play a significant role in the circulation of the blood. Coagulation and hemorheological systems of the body are involved in all physiological and pathphysiological processes. In this study, we investigated the effect of bemiparin to an experimental stasis. It appeared that bemiparin has a positive effect not only on the coagulation, but also on the blood rheological properties and microcirculation vessels. Tab. 1, Fig. 1, Ref. 18.

Auth.

b17.3.1.4. Hypogenesis of thew right lobe of liver accompanied by portal hypertension and esophagogastric variceal bleeding; a rare anomaly: a case report. /M. Gurgenidze, N. Lomidze, K. Chelidze, G. Nemsadze, Z. Manizhashvil/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 7-12. – eng.; abs.: eng., rus., geo.

Hypo-agenesis of the right lobe of the liver is an extremely rare finding. It is defined as the complete or partial absence of liver tissue on the right side without previous disease or surgery. It is usually an incidental finding. A 32-year-old female patient came to Emergency Department of TSMU the First University Clinic 22.10.2015 with an initial diagnosis of upper gastrointestinal bleeding. Her medical history showed no previous diseases of the liver or episodes of hemorrhage. Dizziness, nausea, vomiting with red blood, melena was presented on admission. Esophagogastroduodenoscopy revealed III degree varicose of veins from middle part of the esophagus to cardiofundal part of the stomach. Hemorrhage was observed from cardial part of the stomach. Control of bleeding was not achieved endoscopically. Sengstaken-Blakemore tube was used to stop bleeding temporarily. Computed tomography with angiography was performed. Right lobe of the liver was presented with VII and VIII segments. Medial edge of the left lobe of the liver is located near the spleen. Liver parenchyma is homogenous. No thrombosis of the portal or hepatic veins was revealed. Gallbladder was dislocated laterally and cranially without pathological changes. Extra- and intrahepatic biliary ducts were not dilated. There was colonic interposition between the liver and diaphragm. Diagnosis was established - hypogenesis of right lobe of liver, atrophy-hypertrophy complex, portal hypertension, varicose of the veins of the esophagus and cardiofundal part of the stomach, hemorrhage from variceal vein of the cardial part of the stomach, acquired coagulation factors deficiency, functional hypersplenism, posthemorrhagic anemia. In our case there was congenital hypogenesis of the right lobe of the liver. Five months follow-up showed no recurrent bleeding. Fig. 5, Ref. 7.

Auth.

b17.3.1.5. Breath test with locally produced ^{13}C-UREA (Tbilisi, Georgia) in diagnostics of helicobacter pylori infection. /A. Girdaladze, B. Mosidze, G. Elisabedashvili, D. Kordzaia/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 77-85. - rus.; abs.: eng., rus., geo.

A comparative assessment of results of detection of Helicobacter pylori (Hp) infection by breath tests with standard and locally produced ^{13}C urea was done in 213 patients with gastric and duodenal pathology, including those who had already undergone the surgery. Invasive endoscopic

biopsy test including rapid urease test (RUT), smear cytology and histology were also performed (tissue samples were obtained after endoscopy or surgery). RUT was carried out with the help of URE-HP test kit. Serological test for Hp antibodies was performed by IFA using kit ELISA. ^{13}C urea breath test (UBT) was conducted for the determination of $^{13/12}CO_2$ in breath samples by using of infrared spectroscope. In I group (125 patients) UBT was performed with standard ^{13}C urea, in II group (88 patients) with locally produced ^{13}C urea. Based on 5 different methods of Hp infection testing Hp positivity in 172 (80,8%) and Hp negativity in 41 (19,2%) patients were revealed. ^{13}C-UBT showed the highest diagnostic value (accuracy-97,5%, sensibility-97,0%, specificity-100%) in Hp infection diagnosis. The (accuracy, sensibility and specificity of breath test with locally issued ^{13}C urea (98,7%, 98,5% and 100% respectively) are the same as those for BT with standard ^{13}C urea (96,7%, 96,2% and 100% respectively). These parameters are also highly credible in control of treatment efficiency (96,7%, 90,0% and 100% respectively). The correlation of index DOB‰ of breath test with results of RUT was revealed In Hp positive patients. This can serve as a marker of Hp infection rate. Preliminarily, in pre-clinical experimental study, harmless of locally issued ^{13}C-urea from point of view of acute/sub-acute toxicity and allergy development was confirmed. The advantages (noninvasiveness, simplicity, rapidity, safety) and high diagnostic value of UBT (with both standard as well as locally produced ^{13}C-urea) provide the opportunity to offer ^{13}C-UBT as screening method of Hp infection diagnosis. It also should be recommended as a method of choice for controlling of Hp treatment efficiency. Taking into the consideration all above-mentioned we may recommend locally produced ^{13}C-urea (Tbilisi, Georgia) for certification and further application. Tab. 4, Fig. 4, Ref. b17.

Auth.

b17.3.1.6. Kinetics of photo-induced free radicals in the human hair chestnut color after short periods of red, green, blue and white light exposure. /N. Tskhvediani, E. Chikvaidze, A. Tsibadze, I. Kvachadze, T. Gogoladze, A. Katsitadze/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 94-98. - rus.; abs.: eng., rus., geo.

The aim of the study was to investigate the kinetics of photo-induced free radicals in the human hair chestnut color with short-term exposure to visible light in different frequency ranges. Studies carried out on human volunteers aged 17-21 years (n=37). Hairs of volunteers of the study were not treated with dyes and other active cosmetic preparations. Hairs bundled in a bun had a length - 1.5 cm, weight - 40 mg. At the beginning background EPR-spectrum of a sample was measured and then hairs were irradiated with visible light (blue, green, red and white) of different wavelength subsequently; exposure duration - 60 minutes; after the exposure the kinetics of photo-induced free radicals was measured within 60 minutes. The radiation source was selected LED array of the four crystals that provides a nearly monochromatic radiation spectrum having no parasitic infrared and ultraviolet radiations. The studies give a reason to assume that the impact on hairs by visible electromagnetic rays a leading factor is their frequency characteristics: on the one hand - the proximity of the blue light to ultraviolet radiation, and on the other - the red light to the infrared range. Tab. 1, Fig. 1, Ref. 15.

Auth.

b17.3.1.7. Peculiarities of the cerebellum nuclei in aged persons. /D. Shyian, D. Galata, S. Potapov, V. Gargin/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 110-115. – eng.; abs.: eng., rus., geo.

The study of the clinical anatomy and functional features of the cortex, subcortical and conductive pathways of the cerebellum is necessary for clinicians for elaboration rational surgical approaches to these formations, for determination the localization of pathological processes associated with these formations. Cerebellar nucleus neurons are crucial to the olivo-cerebellar circuit as they provide the sole output of the entire cerebellum. The relationship between mobility and cognition in aging is well established, but the relationship between mobility and the structure and function of the aging brain is relatively unknown. In connection with the above, the purpose of our study was detection of the morphological characteristics of the cerebellum nuclei in aged persons. Study was performed on 48 specimens of the cerebellum from people (24 male and 24 female), who died at the age from 75 to 99 years due to diseases, which were not related to the central nervous system damaging. Formalin-fixed human hemispheres were dissected with the Ludwig and Klingler fiber dissection technique under x6 to x40 magnifications of binocular microscope Olympus BX41

(Japan). The morphological features of the human cerebellar nuclei were established. Namely, on the series of sections of the cerebellum in the horizontal, frontal and sagittal planes, as well as on the macro-microscopic preparations of the cerebellar nuclei location, their relative position, shape, linear dimensions, weight and volume were described. The features of macro-microscopic and histological structure of the nuclei of the cerebellum were made own classification of the gyri and teeth of the dentate nucleus of the cerebellum was offered. Macro-microscopic dissection of persons died after 75 years old show no significant variability of linear dimensions of cerebellar nuclei with their specific location and options. Simultaneously, reliable reducing of cellular density was detected for Purkinje, granule and basket neurons more pronounced in male for Purkinje cells. Tab. 2, Fig. 2, Ref. b17.

Auth.

b17.3.1.8. Morphological changes of rat placenta in different periods of pregnancy under modeled preeclampsia. /A. Sharashenidze, L. Kikalishvili, T. Turmanidze, T. Sanikidze/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 115-120. – eng.; abs.: eng., rus., geo.

The purpose of the study was to determine the morphological changes of rat placenta in II, III week of pregnancy under modeled preeclampsia. Modeling of preeclampsia was performed in the rats, as follows: lumen of the abdominal aorta below the renal artery was narrowed by the silk tread on the third of its diameter (0.2 mm). The placenta tissue was studied by histological and immunohistochemical methods (AE1/AE3, CD133, Ki-67). The study has shown that in the experimental model of preeclampsia at the end of II, III week of pregnancy the number of glycogen cells in the placenta trophyspongium layer is reduced compared with the control. There was shown sharp dilatation of the blood sinuses and lacuna, sometimes along the events of stasis. The volume of nucleated erythrocytes in fetal capillaries of the labyrinth layer is reduced compared with the control, especially in IIIweek of pregnancy. In the preparations marked by the CD133 marker, unlike to the norm of III week of pregnancy, the visualization of positive endothelial cells is complicated. The study of the preparations marked by Ki-67 marker reveals that the proliferated activity in the hypoxic placenta tissue is sharply reduced. The exception is those blood tubes, to which umbilical blood vessels are finally formed. It can be concluded that due to hypoxia placenta proliferation of placental blood vessels is disturbed that contributes to the disorder of placental blood circulation, reduce its metabolism in complications of pregnancy. Fig. 7, Ref. 11.

Auth.

b17.3.1.9. Structure of the spleen at chronic intoxication of the organism by sodium tetraborate and after intoxication. /T. Umbetov, A. Berdalinova, A. Koyshybayev, K. Umbetova, G. Sultanova/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 81-87. - rus.; abs.: eng., rus., geo.

The structure of a spleen of 110 white not purebred rats – males (10 intact, 50 control, 50 experimental) at chronic intoxication by sodium tetraborate and the after intoxication period – the 7, 14, 30 and 60 days were studied. Chronic impact of sodium tetraborate on an organism resulted into increase in the relative weight of a spleen in comparison with body weight that led to increase in weight coefficient of a spleen. Increase in the relative area of all functional zones (periarterial zone, the germinal center, mantle and marginal zones) of lymphoid slug of a white pulp is established. Decrease of an index a red/white pulp, as a result of increase of the area of a white pulp in response to chronic intoxication of an organism is revealed. During the after intoxication period as a result of decrease in immune tension there occured decrease of body weight and decrease in the area of a white pulp. During this period there was a reliable decrease of the area of lymphoid slug and decrease in the area of its functional zones (a periarterial zone, the center of manifolding, mantle and marginal zones). Tab. 2, Fig. 7, Ref. 15.

Auth.

b17.3.1.10. Structure of human corpus callosum in after-death state compared to intravitam MRI images. /O. Boiagina/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 87-92. - rus.; abs.: eng., rus., geo.

Our preliminary results suggest that the corpus callosum is composed of a certain number of stringy formations visualized on macroscopic and microscopic level that we proposed to call commissural funiculi. They are treated as subcallous units of the first order. The purpose of this

research is to find out the form of the above-mentioned corpus callosum formations as being displayed on its sagittal profile as well as the extent to which they are displayed. The material used was male and female cerebrum of mature age people, who died for reasons not related to the pathology of the central nervous system. Cerebrum extracted from the skull after being washed was exposed to a two week fixation in 10% formalin solution. The sagittal plane slicer was used for brain dissection. Photo fixation of the medial surface of hemispheres was implemented with a digital camera. It was found out that the sagittal cut of the corpus callosum can be represented as a formation having segmental structure principle. Also, according to our observations, the trunk of the corpus callosum has distinct morphological features of bilateral asymmetry. Fig. 4, Ref. 30.

Auth.

b17.3.1.11. Comparison of four genotyping methods for *P.aeruginosa*: *in silico* study. /D. Babenko/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 98-103. – eng.; abs.: eng., rus., geo.

Many molecular typing methods have been employed as major tools in epidemiological investigation for identifying clonal relatedness of P.aeruginosa isolates. Having own application points and principles they have certain advantages and disadvantages. The aim of this study was the estimation of discriminatory power and concordance between four different typing methods: PFGE, MLVA, MLST and wgMLST. 58 P.aeruginosa genome were analyzed *in silico* to determine PFGE, MLVA, MLST and wgMLST types and their cluster/clonal complexes. These data were estimated in term of discriminatory power and concordance. All four typing approaches demonstrated high resolution power (Simpson's ID): wgMLST (1.0), PFGE (0.999), MLVA (0.997) and MLST (0.983). Concordance between PFGE, MLVA, MLST was weak/moderate and was no more 74.1%. WgMLST demonstrated high concordance between wgMLST clusters and clonal complex/ groups/clusters determined by MLST (AR=0.938), PFGE (AR=0.952) and MLVA (AR=0.798) typing methods after choosing appropriate cut-off value for wgMLST. wgMLST with more than 5100 target genes showed the highest index diversity and high concordance with other typing methods. Tab. 2, Fig. 1, Ref. 23.

Auth.

b17.3.1.12. Quality of life in carers of patients with multiple sclerosis taking a disease-modifying medication: a pilot study. /D. Gigineishvili, M. Kiziria, A. Tsiskaridze, R. Shakarishvili/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 51-56. - rus.; abs.: eng., rus., geo.

A chronic physical disease not only has direct consequences for the chronically ill person but can also distort the life of the healthy family member. The aim of our study was to measure the health-related quality of life (QOL) in people caring for patients with relapsing-remitting form of multiple sclerosis (MS) and currently treated with disease-modifying drugs. Eligible patients were selected via Sarajishvili Institute of Neurology database for MS. 25 carers (mean age 40.7; 56% women, 56% partners) and 25 sex and age-matched controls completed 36-item Short Form Health Survey (SF-36), version 2. Carers also completed the Beck depression Inventory (BDI-II). Compared to carers, patients were found to have a lower QOL ($P<0.05$ for five dimensions). However, no significant difference was observed in SF-36 domains scores between carers and controls except general health score which was lower in carers (63.3 vs 75.6, $p=0.016$). A strong negative correlation was found between BDI and all SF-36 dimension scores of carers. The association remains unchanged even adjusted to carers other independent variables. Last year relapse rate was the only clinical variable correlated with carers QOL dimensions. Our pilot study demonstrated that QOL in carers of patients with relapsing-remitting MS receiving disease-modifying treatment is minimally affected. Further study with large sample size is warranted. Tab. 2, Ref. 15.

Auth.

b17.3.1.13. Risk factors of thyroid pathology formation in outpatient pregnant population. /N. Morchiladze, B. Tkeshelashvili, D. Gagua, T. Gagua/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 40-45. – eng.; abs.: eng., rus., geo.

Several medical-biological and social-hygienic factors have been found to account for the definite increase in the incidence of thyroid gland disorders in reproductive age and pregnant women. Aim of our study was to identify the risk factors for development of thyroid gland pathology in outpatient pregnant women. Observational study - "case - control" study has been conducted at the base of

David Gagua Hospital Ltd. Main (study) group involved 292 pregnant patients with established thyroid pathology. Control group included 58 conditionally healthy pregnant participants without any demonstrated thyroid pathology. Study of risk factors was performed by initial interviewing and specialized questionnaire recording process (so-called two-stage model of interviewing). Characteristics of diet, sleep, physical activity, including harmful habits, socio-economic and hereditary factors were studied; quantitative indices of risk for each component were calculated: odds ratio (OR) and attributable risk (AR), taking into account 95% confidence interval (CI). The Pearson's criterion χ^2 with respective P value and the calculator developed by International Society of Evidence-based Medicine were used to obtain the final results. Statistically significant risk factors for development of thyroid pathology were identified, which included: Thyroid gland diseases and hereditary history of diabetes mellitus; low economic income, unfavorable living conditions, unhealthy dietary habits. Despite of the difficulty of assessment of causative relationship between above mentioned components, their strong correlation should be taken into account when defining the strategy of preventive measures, moreover the most part of identified risk factors are manageable. Tab. 4, Ref. 19.

Auth.

b17.3.1.14. Galectin-3 as a predictor of statin treatment efficacy in patients with multiple myeloma. /B. Samura/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 56-61. – eng.; abs.: eng., rus., geo.

The aim of the study: to investigate an interrelationship between pre-treatment galcetin-3 (Gal-3) level and one year survival rate, cardiovascular events in subjects with multiple myeloma. Eighty nine subjects with full or partial remission of multiple myeloma were enrolled in the study. Patients were divided into 2 groups based on whether or not statins were included in their treatment: a statin group (n=43) and a no statin group (n=46). Among the 43 patients in the statin group, 31 patients received 20mg/day atorvastatin and 12 patients received 40-mg/day atorvastatin. None of the patients had received any lipidmodulating medications, including statins or fibrates, before enrollment. Observation period was up to 1 year. Blood samples for biomarkers measurements were collected. ELISA method for measurements of circulating level of galectin-3, interleukin-6 and NT-probrain natriuretic peptide were used. Lipid lowering effect in statin user was associates with declined serum Gal-3 level, whereas in not statin users similar response was not appeared. No any changes in hemodynamics and other biomarkers between both cohorts were found. Univariate logistic regression had exhibited that galtctin-3 (odds ratio [OR] = 1.17; 95% CI = 1.07–1.29; P = 0.002), NT-pro-brain natriuretic peptide (OR=1.04; 95% CI=1.02–1.10; P<0.05) and statin therapy (OR=1.07; 95% CI = 1.02–1.11; P = 0.001) predicted one-year cumulative CV events. After adjustment on statin therapy, galectin-3 remained independent predictor one-year cumulative cardiovascular events (OR=1.08; 95% CI=1.06–1.11; P=0.001). When initial serum galectin-3 level has incorporated into prediction model, statin therapy was found as predictor for improving survival in multiple myeloma patients with elevated serum galectin-3 level (>14 ng/ml). Elevated pretreatment galectin-3 level was found a powerful predictor of positive effect of statins on survival in patients with regression of multiple myeloma. Tab. 3, Ref. 14.

Auth.

b17.3.1.15. Assessment of warfarin treatment efficacy by means of using coagulation test results within the therapeutic range. /P. Varim, C. Varim, H. Ergenç, M. Uyanık, S. Yaylacı, M. Vatan, H. Gündüz/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 62-66. – eng.; abs.: eng., rus., geo.

Time in Therapeutic Range (TTR) is a value used to assess the efficacy of Warfarin treatment. The aim of our study is to determine the effective INR levels and the rate of TTR in patients on Warfarin regimen due to Atrial Fibrillation (AF) or Mechanical Prosthetic Valve (MPV). A total of 94 patients (58 female, and 36 male, mean age: 64.9±11years) on Warfarin treatment due to AF or MPV with at least 10 INR levels measurements in the last 6 months were included in this retrospective study. The patients were divided into 2 groups. Group 1 consisted of the patients with Valvular AF (n=47); Group 2 included the patients with Non-Valvular AF (n=47); TTR and INR levels were compared. The average of INR values were found as 2,4 (min: 1,3, max: 4,3) in all patients; 2,3 (min: 1,3, max: 4,2) in Group 1; 2,6 (min: 1,3, max: 4,3) in Group 2. The average of TTR values was found 40.3% (min: 10%, max: 80%) in all patients; 43.8% (min: 10%, max: 80%) in Group 1; 36,8% (min:

10%, max: 80%) in Group 2. INR and TTR values are needed to assess the effectiveness of the Warfarin treatment. The patients in treatment with Warfarin should be well trained and frequently monitored. On the other hand, the underlying factors of the TTR values being determined as lower in the Turkish patient population might be due to the lower socio-economic and socio-cultural status, inadequate education levels, and the insufficient information on use of the medication provided by the doctors to the patients. Tab. 4, Ref. 12.

Auth.

b17.3.1.16. Clinical application of recombinant erythropoietin in beta-thalassaemia intermedia. /Ch. Asadov, Z. Alimirzoyeva, M. Hasanova, T. Mammadova, A. Shirinova/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 86-92. – eng.; abs.: eng., rus., geo.

Research objective is to study the efficacy of recombinant erythropoietin (epoetin alfa) as alternative method of treatment beta-thalassemia intermedia. Study involved 58 patients with beta-thalassemia intermedia (23 women and 35 men). In all observed patients was defined levels of hemoglobin (Hb), red blood cells (RBC), erythrocyte indexes (MCV, MCH, MCHC), hemoglobin fractions (HbA, HbA2, HbF), serum ferritin, serum erythropoietin before and after administrated rEPO. All patients received rEPO during 6 month at the dose - 10000 IU subcutaneously. The majority of patients - 39 (67%) had a good response to rEPO (increase in hemoglobin level more than 20 g/l); 16 patients (28%) had a mean response (increase in Hb 10 - 20 g/l); in 3 (5%) patients occurred poor response to rEPO therapy (increase in Hb <10 g/l). After rEPO treatment of beta-thalassemia intermedia patients there was a statistically significant change in the number of RBC, levels of HbF and sEPO. The evaluation of interdependence between the indices of the baseline sEPO and increased Hb values in patients after rEPO treatment revealed the presence of the reverse direct relationship (r=-0.67). Based on the results, it can be concluded that the use of rEPO in complex therapy of beta-thalassemia intermedia leads to increased levels of Hb and consequently reducing the need for blood transfusions, and accordingly expected to prevent severe complications of blood transfusion (alloimmunization, hypersplenism, iron overload, contamination transmissible infections) facilitating normal growth and development, and a better quality of life. Tab. 3, Fig. 3, Ref. 27.

Auth.

b17.3.1.17. The major histocompatibility complex and genetics of narcolepsy. /M. Chipashvili, M. Bokuchava/. Pediatric cardiology. – 2016. – #10. – pp. 56-57. – geo.; abs.: geo., eng.

The major histocompatibility complex is one of the most important component of the establishment normal immune response. The synthesis of MHC is genetically determined and the changes in this gene determines predisposition for developing different diseases. narcolepsy is a chronic neurological disorder involving the loss of the brain's ability to regulate sleep-wake cycles. it is widespread all over the world. despite its outbreak, the effective treatment yet is not found. The future will show whether the narcolepsy patients will be given a chance to recover by the development of personalized medicine. Ref. 5.

Auth.

b17.3.1.18. Influence of epileptiform activity on outcome in epileptic encephalopathies of infancy and early childhood. /N. Tatishvili, L. Kandareli, Ts. Sirbiladze, M. Shishniashvili, T. Samkharadze/. Social, ecological & clinical pediatrics. – 2016. – #18-13-12. – pp. 50-54. – geo.; abs.: geo., rus., eng.

Epileptic encephalopathy's (EE) are manifested with developmental delay and regression of acquired cerebral functions in children. Cerebral disfunction due to epileptiform activity in a high percentage is unknown and needs to be further investigated. Investigate Influence of epileptiform activity on outcome of epileptic encephalopathies in evolution of epilepsy and neurological/cognitive outcome. 69 patients with EE were included into the research groups according to following criteria: I group – 51 cases with early started seizures (before 1 year of life) and II group – 18 cases with started seizures after 1 year of life. We have evaluated influence of permanent (hypsarithmya, spi ke-wave, suppreshent-burst) and frequent (1 per 30sec) epileftiform discharges in evolution of epilepsy, neurological and cognitive outcome after 2 years of qualification EE syndromes. West syndrome was the most common EE in both groups (52. 2%). Lennox-Gastaut syndrome-20, 3%, Ohtahara-2, 9%, Early myclonic encephalopathy-2, 9%,

Dravet-1, 4%, transitive form between West and Lennox-Gastaut syndromes -1, 4%, EE associated with symptomatic generelized epilepsy-15, 9% and EE with symptomatic partial epilepsy-2, 9%. The study reveals that permanent epileptiform activity was in 85, 3%, in these cases after 2 years severe epilepsy were estables hed in 29, 8%, moderate severity in 19, 3% and control of seizures with ut epileptiform activity were achieved in 50, 9%. All cases with frequent epileftiform discharges after 2 years were seizure free without epileptiform activity (100%). Thus, permanent epileptiform activity were associated with worse prognosis in evolution of epilepsy (p<0, 05). When the EE syndrome was qualificated, assessment of cognitive functions by „Baley Scales of Infant Development" revealed severe retardation in 82. 6%, moderate in 13% and slight retardation only in 4, 3% of cases. After 2 years we have established severe retardation in 18. 8%, moderate in 63, 5%, slight retardation in 10, 1% and normal development only in 7. 2% of cases. 92. 3% of cases severe retarded patients were from the I research group. The incidence of symptomatic aetiology was high and cerebral palsy of different severity (by Russman and Gage) appared in 87,1%. Tab. 1, Fig. 1, Ref. 15.

Auth.

b17.3.1.19. Some aspects of immunodeficiency problems and the strategy of its prevention. /T. Darsania, Sh. Zarnadze, I. Zarnadze, B. Kurashvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 39-41. – geo.; abs.: geo., eng.

According to the report of the United Nations in 2002, a small portion of fruit and vegetables in the diet refers to the risk factors causing death. We have studied the major trends of fruits and vegetables consumed by the population of Tbilisi. The study was conducted in Tbilisi. During the study 306 respondents, selected randomly were interviewed by the specially compiled questionnaires. The study shows that the absolute majority of respondents consumed to mainly heat treated or canned vegetables (cabbage, beet, carrot). Only 4.2% of respondents took raw vegetables daily. Fruit intake was deplorable. Only 28.6% consumed fruits 3 times a week. Based on the above mentioned, we can conclude that the structure of the food intake and its frequency by the population of Tbilisi is inadequate with recommendations. Based on the study data, it's necessary to increase the consumption of vegetative and fortified food in the diet, to change bad eating habits and to increase physical activity with the support of the state, that will bring more benefit to the people's health and the country budget, rather than the huge expenses on the treatment of diseases. Tab. 2, Ref. 10.

Auth.

b17.3.1.20. Epidemiological characteristics and prevention possibilities of bacterial food poisonings in Georgia. /N. Vepkhvadze, O. Chokoshvili, M. Khorbaladze, N. Tskhovrebadze, T. Kochoradze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 55-57. – geo.; abs.: geo., eng.

Characteristics of bacterial food poisonings' distribution in Georgia have been studied and provide recommendations for their prevention.

Data analysis revealed that the number of bacterial food poisonings and diarrheal diseases increased dramatically in Georgia during the last 5 years. Around 95-98% of registered cases were food poisonings with possible bacterial etiology and the remaining cases were Botulism, Salmonellosis and Shigellosis. Annually more than 10 outbreaks of bacterial food poisonings and diarrheal diseases are registered in Georgia.

To prevent bacterial food poisoning and diarrheal diseases, we recommend ensuring high quality epidemiological research and laboratory diagnosis of bacterial food poisonings in Georgia as well as establishing and increasing monitoring of quality of drinking water and food products. Tab. 1, Ref. 5.

Auth.

b17.3.1.21. Clinical and morphological forms of the bone cysts. /I. Tavzarashvili, L. Bekauri, N. Gvazava, R. Chikhladze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 60-61. – geo.; abs.: geo., eng.

Based on postoperational tissues as well as macro- and micromorphologic studies we decided to distinguish one chamber, two chamber and multi chamber (three or more chambers) cysts and the ratio between them with 99% of the relativity is 1:1:2. These bone cysts are differentiated from

each other with the content. One chamber cysts can be hollow, or fluid or containing solid content. The ratio between these forms with 99% relativity is defined as 1:1:2. The studies of the two chamber cysts showed that their content could be represented as the hollow, fluid, solid or mixed type. The ration between them with the 99% of the relativity is 1:1:1:4. The multi chamber cyst studies defined their content as hollow, fluid, solid or mixed type and the ratio between them with 99% of relativity is 1:1:1:10. Defining the two chamber cyst as the separate form is caused because of the opinion that these forms should and could be operated with less invasive methods. Tab. 5, Fig. 1, Ref. 4.

Auth.

b17.3.1.22. The rare case of liver incarceration in ventral hernia. /G. Tomadze, A. Megreladze, G. Azmaiparashvili, T. Sesitashvili, G. Danelia/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 65-67. – geo.; abs.: geo., eng.

The rare case of herniated liver incarceration is described. 85 years old woman admitted in emergency department of general surgery clinic was complaining of severe abdominal pain in the right upper quadrant. Ventral hernia developed in patient 20 years ago. The pain started 4 hours before admission to the clinic. Abdominal ultrasound revealed hernia in the hernial sac. X-ray revealed signs of intestinal ileus. Patient was operated urgently under the general anesthesia. Was found incarceration of the left lobe of the liver and of a loop of small intestine. After dissection of hernia ring liver and incarcerated loop of small intestine became normal. No need for resection. Hernioplasty by Sapezhko was performed. Patient discharged without complications. The presented case is interesting because of rarity. Fig. 1, Ref. 12.

Auth.

b17.3.1.23. Antioxidant activity study of several samples of Georgian propolis. /L. Kunchulia, T. Murtazashvili, K. Gabunia, N. Imnadze, M. Jokhadze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 75-77. – geo.; abs.: geo., eng.

Propolis, bee glue - it is the multicomponent heterogenic system of various compounds. In this system are identified more than 300 individual substances, by which it is caused the wide spectrum of its pharmacological activity. From polupharmacological abilities of propolis should be mentioned its antioxidant activity. Therefore, the aim of our research was to study the antioxidant activity of different samples provided by several regions of Georgia. The samples of research were the 2014-2015 year propolis samples gathered in the following regions: 1. Martkofi; 2. Dusheti; 3. Kareli. Were prepared the water and ethanol extracts of those different propolis samples. The inhibition ability of DPPH caused by several region propolis samples were studied spectrophotometricaly on the 510 nm wavelength. Inhibitory ability compounds decrease the absorbance ability. The received data shows, that propolis water extracts have higher antioxidant activity than ethanol extracts. The propolis water extract of Martkofi region has got the highest antioxidant activity (95.7%) in comparison with other water extracts of this study. On the basis of the received data could be concluded that water extract of the different propolis samples could be utilized as an antioxidant remedies for prevention and treatment of different diseases. Tab. 1, Ref. 9.

Auth.

b17.3.1.24. Essential oils content determination in eucalyptus tablets and pastilles to establish their maintenance during the storage period. /L. Lomtadze, M. Jokhadze, D. Berashvili, L. Bakuridze, A. Bakuridze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 80-83. – geo.; abs.: geo., eng.

The pharmaceutical company “Neopharmi” Ltd manufactures Eucalyptus tablets and pastilles. They have antibacterial properties and are widely used for treatment of upper respiratory system infections. Their expiry date consists of 2 years in the regular storage conditions. In the both dosage forms the active substances are essential oils, extracted from Eucalyptus leaves. Essential oils are easily violate substances and migrate from pharmaceutical dosage forms during the storage. Based on the above mentioned, the aim of the research was to determine essential oils content maintenance in the Eucalyptus tablets and pastilles during the storage period, established by the normative documents. Tablets and pastilles, containing equal Eucalyptus essential oils, were selected for the study. In the selected samples essential oils’ content was determined by the chromatography- mass-spectrometry analysis. Also, tablets and pastilles’ surface was studied by

the scanning electron microscope. The study results revealed that tablets have a porous structure, and pastilles have small gaps and inclusive pores; essential oils migration takes place during the tablets storage, while pastilles keep them during the whole storage period. Fig. 4, Ref. 8.

Auth.

b17.3.1.25. Small bowel perforation. /A. Megreladze, G. Tomadze, G. Azmaiparashvili, E. Ardia/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 87-88. – geo.; abs.: geo., eng.

The article is dedicated to the problem of small bowel perforation, which is a rare condition and in 0,1% of cases is the reason of acute peritonitis. The reasons of perforation are discussed. Among them is pointed possibility of perforation of stress ulcers. Case from clinical practice is presented. Patient male, operated because of diffuse peritonitis due to gangrenous cholecystitis. Relaparotomy required on the 5th postoperative day because of perforation of small bowel stress ulcer. It is concluded, that after operative treatment due to peritonitis, in case of unexplained progression of the disease possibility of small bowel perforation should be considered and treatment tactics should be directed towards relaparotomy. Fig. 1, Ref. 6.

Auth.

b17.3.1.26. Acute colchicine poisoning in Georgia. /E.Kurdadze, N. Lobzhanidze, N. Chavchanidze, T. Kobidze, D. Topuria/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 125-128. – geo.; abs.: geo., eng.

Acute intoxication with colchicine is quite rare pathology and it is not described in Georgia until now. Despite rare clinical cases intoxication with colchicine deserves attention in order to avoid its severe complications. The most severe complication characteristic for colchicine intoxication is polyorganic insufficiency which frequently has fatal outcome. We represent the case from our practice. 17 years old girl on the background of nervous stress in purpose of suicide took 32 (1 mg) tablets of colchicine in total 0.7 mg/ kg of body weight (lethal dose is >0.8 mg/kg). Intoxication was expressed by acute respiratory insufficiency, hemoperitoneum, with disseminated intravascular coagulation, sepsis, swelling of brain. Parallel to symptomatic- detoxication treatment 60 doses of fresh frozen plazma (FFP) was used, 24 doses of thrombomass, as well as human granulocyte colony-stimulating factor (G-CSF) - Tevagrastim. It has to be noted that on IV day of intoxication based on corresponding study hemoperitoneum diagnosis was determined, surgical intervention was conducted. By US existence of fluid in both pleural cavities was determined. Punctate of hemorrhagic genesis was received by centesis. Assisted ventilation was conducted in post-surgical period. On XII day extubation was done. Active hair-loss started on VII-VIII day finished with alopecia on XVI day. After intensive treatment despite existed severe complications the patient was placed on outpatient treatment from XX day with stabile hemodynamics. The case is interesting as rare case, it is distinguished with multiplicity and, what is important, it shows tha in case of timely conducted adequate treatment, the process is reversible and finishes with complete recovery. Before implementation of antitoxic serum (Colchicine specific antibodies) in clinical practice fresh frozen plazma (FFP) infusion can be considered as optimal mean for poison excretion, because the poison after absorption joins exactly 50% of plasma protein. n our opinion positive outcome of patient is conditioned by adequate and timely intervention which represents precondition for effective treatment of intoxicated patients. Fig. 5, Ref. 6.

Auth.

b17.3.1.27. Approaches to the risk assessment of asbestos action in Georgia. /I. Gvineria, M. Zhuruli, N. Gabriadze, L. Bakradze, T. Oniani/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 128-131. – geo.; abs.: geo., eng.

The article presents modern assessment approaches for the risk exposure of asbestos based on the current situation in the country. The products containing asbestos are imported to Georgia and used intensively in different sectors. There are many people who are affected by asbestos, as admitted carcinogen, during their professional activities or contact it in the ecological or domestic environment. A complex mechanism has been elaborated for carrying out preventive measures, ARD detection and elimination. Fig. 4, Ref. 8.

Auth.

b17.3.1.28. Development of experimental model of acute hepatitis in mice using solution of acetaminophen for injection. /M. Ghonghadze, N. Antelava, M. Okujava, K. Pachkoria/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 131-133. – geo.; abs.: geo., eng.
The goal of the research was to define the dose of acetaminophen's solution for injection needed to develop the model of hepatitis in mice. Initialy the preliminary testing was provided and the dose, which caused the lethality in the part of experimental animals was found. Intraperitoneal injection of 500 mg/kg acetaminophen did not caused the death in mice, the lethality after injection of 750 mg/kg was 33% and use of 1000 mg/kg drug was the reason of lethal outcome in 100%. We choose intraperitoneal injection of 750 mg/kg of acetaminophen for induction of hepatitis. After identification of the toxic dose we learned its effect on the weight of the liver and biochemical indexes. Injection of the toxic dose of acetaminophen significantly increased the weight of the liver (47%) and the biochemical markers indicating hepatocyte cytolyses (ALT – 88%, AST – 91%), thus the experimental model of hepatitis was developed. Based on the obtained data we can conclude, that intraperitoneal injection of 750 mg/kg solution of acetaminophen is recommended to create the experimental model of acute hepatitis in mice, which is useful for investigation of hepatoprotective activity of different drugs. Tab. 2, Ref. 11.

Auth.

b17.3.1.29. In vitro bioequivalence study of "Mexibat" tablets by dissolution test. /M. Shurgulaia, L. Kunchulia, K. Baramidze, N. Imnadze, N. Lekishvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 133-135. – geo.; abs.: geo., eng.
"Mexibat" tablets the product of Georgian pharmaceutical company "Inovas", the generic analogue of the Russian original product "Mexidol" appeared on the Georgian pharmaceutical market. The generic "Mexibat" 125 mg tablets have the high solubility and permeability and under BCS classification, with high probability, could be considered as the first class product. The WHO and FDA consider that first class products do not required *in vivo* bioequivalence study to prove the similarity with original product. Respectively, *in vitro* dissolution test is the way to study bioequivalence of generic product versus original. Study of in vitro equivalence of test product was conducted under "Dissolution Test" in respect of manufacturer ND, WHO and FDA guidelines. The "Dissolution Test" of both products – test and original were done by four methods. Method #1 – pH1.2, Method #2– pH 4.5, Method #3 – pH-6.8, Method #4– pH-2.0. The last method was conducted under manufacturer's ND demands (0.01 M HCl (pH 2.0)). The in vitro study of bioequivalence of two test and original products: Mexibat and Mexidol 125 mg tablets in different pH ambiance showed that, there is no reliable difference between them. On the basis of received *in vitro* dissolution test data, could be considered, that product of research "Mexibat" is bioequivalent to original product – "Mexidol". Tab. 1, Fig. 1, Ref. 6.

Auth.

b17.3.1.30. Profile of coliform strains' antibiotic resistance. /D. Chikviladze, Kh. Gachechiladze, M. Mikeladze, D. Metreveli/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 135-137. – geo.; abs.: geo., eng.
The spectrum of sensitivity of 112 E. coli strains isolated from patients with acute intestinal infection to 23 antibiotics was investigated by the agar dilution method, which revealed an increase in drug resistance and the emergence of multidrug-resistant strains (33.04%). It was found that the drug resistance of the pathogen to nalidixic acid and carbopenems increased and its high sensitivity to some ftuoroquinolones, III and IV generation aminoglycosides, penicillins and cephalosporins preserved. The drug resistance in future may lead to the formation of hospital strains among E. coli and alter an epidemiological process and the clinical course of the disease. Tab. 1, Ref. 7.

Auth.

b17.3.1.31. Determination of *in vitro* outlet of lizinopril containing medical preparation "Lizinocor" and its analogue using method of highperformance liquid chromatography. /T. Chikviladze, D. Chincharadze, M. Jorjikia, T. Otarashvili, H. Ioramashvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 137-140. – geo.; abs.: geo., eng.
ACE Inhibitors represent the first class of antihypertensive agents that was designed and developed on the basis of a well-defined physiopathological axis of arterial hypertension, a

vascular disorder that is now becoming one of the major causes of morbidity/mortality, not only in developed societies but also in the highly populated developing countries. An angiotensin-converting enzyme (ACE) inhibitor, the carboxylalkyl compounds derivated lizinopril is a pharmaceutical drug, used primarily for the treatment of hypertension (elevated blood pressure) and congestive heart failure. Purpose of investigation was – comparison of in vitro outlet of 5 mg tablets of ”Lizinocor” containing Lizinopril, produced by the Georgian pharmaceutical company “GMP” and its analogue ”Zestril” using method of high-performance liquid chromatography. According to the received results average percent quantity outlet of ”lizinocor” is 97,65%, ”Zestril” – 95,88%;. Inclination in comparison with Zestril is 1,85%, (norm ±5%). ”Lizinocor” 5 mg tablets containing Lizinopril produced by the Georgian pharmaceutical company ”GMP” are characterized by good outlet quality. Tab. 1, Fig. 4, Ref. 11.

Auth.

b3.2. Clinical medicine

b17.3.2.1. Neuroendocrine tumours of the appendix. /G. Chkhobadze, N. Arabidze, B. Berdzenishvili/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 153-160. – Geo.; abs.: geo., eng.

Neuroendocrine tumours (carcinoid tumours, carcinoid, gastroenteropancreatic tumours, tumours of islet cells) – are new forms which belong to endocrine tumours and develop from the enterochromaphine cells of the APUD-system of the gastrointestinal tract, lungs, thymus, kidneys, ovaries, prostate, breast and thyroid gland, skin, etc. Ref. 3.

Auth.

b17.3.2.2. Problems of newborn neonatal adaptation from twins. /I. Nikitina, V. Boyko, T. Babar, N. Kalashnik, A. Yezhova/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 12-b17. - rus.; abs.: eng., rus., geo.

The clinical analysis of multiple pregnancies. The features of neonatal adaptation process in 96 twins, depending on the type of zygosity. It is proved that the adaptation of the newborn with multiple pregnancy depends on the type of placentation. It is found that monozygotic twins is a risk factor syndromes disadaptation. Children from monozygotic twins compared with dizygotic twins have a higher frequency of the syndrome of respiratory disorders, and more prone to jaundice, hemorrhagic syndrome, violation gemolikvorodinamics II and III degrees. The physical development of the twins also determined by the type zygosity. In the group of monozygotic twins are more common heavier versions of intrauterine growth retardation - hypoplastic and dysplastic. The high frequency of asphyxia on the background of immaturity that leads to the development disadaptation syndromes in these children, the most common of which are hypoxic-ischemic CNS disorders, thermoregulation, jaundice and gastrointestinal reactions. Detection disorders of blood coagulation and glucose metabolism certainly play a negative role in the development of adaptation of these newborns. zygosity type must be determined at the time of pregnancy to produce medical tactics and prognosis. Tab. 3, Ref. 11.

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b17.3.2.3. Some clinical and immunological aspects of preterm birth. /K. Zhumakanova, B. Abeuova, A. Kuzgibekova, K. Kenzhebayeva, G. Eremicheva/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 17-25. - rus.; abs.: eng., rus., geo.

Aim **-** to make a comparative assessment of the cytokines level in women with preterm labor with chronic infection and without it in order to determine the risk of implementation of intrauterine infection in their preterm infants. There was prospective investigation of 141 pregnant and their 141 premature infants with different gestation terms. There was identify cytokines levels in mother’s blood with immune enzyme analysis method due implementation of intrauterine infection in compare with control group. It wasinterconnection ofinfection pathology withgestation terms, it lead to preterm labor. Prematurity which cause by mothers chronic infection, lead to heavier, extended period of bacterial infection in premature infants. It was increasing of cytokines levels IL-1β, IL-6, and TNF-α of mother’s blood during implementation of intrauterine infection in premature infants. Multiparous pregnant, adverse outcomes of previous pregnancies in anamnesis, high frequency

carrier of bacterial infection were risk factors for preterm labor among explored pregnant women. To study cytokine profile among the explored pregnant women from main group showed a pattern in increasing of level IL-1β, IL-6 and TNF-α serum during pregnancy, indicating the course of pregnancy and can be used as a nonspecific marker for early diagnosis of preterm birth and implementing infection in premature . The level of IL-2 did not have a diagnostic value. Tab. 9, Fig. 1, Ref. 35.

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b17.3.2.4. The use of 18F-fluorodeoxyglucose positron emission tomography to assess clinical outcomes of patients with borderline resectable pancreatic cancer. /A. Durmus, A. Yilmaz, F. Malya, G. Ozturk, H. Bektasoglu, G. Ertugrul, S. Karyagar, O. Karatepe/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 26-29. – eng.; abs.: eng., rus., geo.

The aim of this study is to evaluate the effect of ^{18}FDG PET on preoperative staging and clinical management of pancreatic cancer. Between December 2011 and February 2015, 28 consecutive patients with borderline resectable pancreatic cancer were evaluated with both ^{18}FDG PET scans and conventional preoperative imaging studies.

Medical records of all patients were noted prospectively. ^{18}FDG PET findings were compared with conventional imaging studies and over-staging or down-staging rates with changes in clinical management were evaluated. The correlation of ^{18}FDG PET with conventional imaging studies was evaluated with a kappa agreement coefficient. A number of 22 (78.5%) patients had pancreatic head cancer and 6 (21.4%) patients had pancreatic body and tail cancers. Based on ^{18}FDG PET, additional lesions were found in 4 (14.28%) of the patients which were lung and peritoneal lesions as metastasis. No hepatic metastasis or supraclavicular lymph node involvement was confirmed in patients. Routine use of ^{18}FDG PET for preoperative staging has not an effect on cancer management in 96.8% of our patients. In conclusion, ^{18}FDG PET has additional value over conventional radiologic techniques for monitoring the treatment response in locally advanced pancreatic cancer patients. It is feasible to predict early metastasis and patient outcome early (after one course of IC) during therapy. Tab. 3, Ref. b17.

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b17.3.2.5. Evaluation of edentulism, prosthetic status and prosthodontics treatment needs among the adult population of Georgia. /G. Makhviladze, L. Tsitaishvili, M. Kalandadze, V. Margvelashvili/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 30-34. – eng.; abs.: eng., rus., geo.

The aim of the present study is to identify the level of edentulism among the adult population of Georgia, to assess the prosthodontics status and normative needs for prosthetic treatment. Cluster- stratified method was used for sampling. Overall, 2370 adults including 1289 women and 1081 men and four age groups I - 20-34, II - 35-44, III - 45-64, IV - 65-74 in nine regions of Georgia and the capital, Tbilisi, were examined. The loss of teeth due to caries or periodontitis was observed to differing extents throughout the population. One (8.3%) or more bridges (7.6%) and removable dentures (3.2-4.7%) were more frequently observed than implants (0.1%). Metal-ceramic (12.4%) and metal crowns (6.3%) were more commonly detected than zirconia ceramic crowns (0.1%). Statistical analysis of the data demonstrates a rather high normative prosthetic need of implants and bridges and less needs for removable dentures among the population due to less severity of periodontitis and not too high values of missing teeth due to caries (despite the high caries prevalence (99%) throughout the Georgian population). Edentulism is a public problem in Georgia and needs serious attention from government or healthcare centers to prevent the complications. Tab. 1, Fig. 3, Ref. 12.

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b17.3.2.6. The risk factors influencing the edentulism and prosthetic status of the adult population in different regions of Georgia. /G. Makhviladze, L. Tsitaishvili, M. Kalandadze, V. Margvelashvili/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 34-40. – eng.; abs.: eng., rus., geo.

The aim of the present study was to identify the level of edentulism and prosthetic status of the adult population in different regions of Georgia and to assess the influencing risk- factors. Cluster-stratified method was used for sampling. Overall, 2370 adults including 1289 women and 1081

men and four age groups I - (20-34), II - (35-44), III - (45-64), IV - (65-74) in nine regions of Georgia and the capital, Tbilisi, were examined. Statistically reliable data received showed the different extent of teeth loss in various regions of Georgia. ≤10 teeth loss were characteristic for Mtskheta (60.2%) and Samtskhe-Javakheti (50.7%),whilst ≥20 teeth lost were noticed more in Achara(2.9%), Samtskhe-Javakheti (2.6%), Shida Qartli (2,5%). Therefore, prosthetic status was mostly presented with one or more bridges or artificial crowns, removable dentures were seen less. Differences in prosthetic status is generally related to low medical education background in all regions, though lack of money was considered as essential obstacle for dental visit for Mtskheta, Imereti and Samtskhe-Javakheti population. Education and family income dictate attitudes towards prosthetic dental care and choice of crown types. On the other hand, material disparity represents the main obstacle to prosthetic procedures, especially implants. Tab. 4, Ref. 13.

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b17.3.2.7. Monitoring the efficacy of montelukast used in children with risk of asthma. /I. Pkhakadze, N. Alavidze, S. Gamkrelidze, E. Ekaladze/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 40-44. – eng.; abs.: eng., rus., geo.

The aim of the study is to evaluate the effect of Montelukast - leukotriene inhibitor in children population with risk of bronchial asthma. The research was conducted at LTD. Kutaisi Children primary care unit #3. The data were collected from January 2013 till January 2016. 104 patients (5-18 year, 43 girl, 61 boy), with potential risk of bronchial asthma were involved into the research, 47 (45%) patients out of 104 were considered as a real risk for asthma, based on Peak Expiratory Flow (PEF) and spirometry results. Patients with risk of asthma were grouped according to the method of treatment (monotherapy with inhaled glycocorticoid and inhaled glycocorticoid combined with leukotriene inhibitor). Descriptive statistics methods were used to characterize each variable. Our results indicate on positive influence of montelukast – selective leukotrien inhibitor in treatment of children with various forms of asthma. Tab. 3, Ref. 9.

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b17.3.2.8. Postnatal growth in preterms with bronchopulmonary dysplasia. /A. Abushahin, A. Alnaimi, A. Soliman, V. De Sanctis/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 44-51. – eng.; abs.: eng., rus., geo.

Aim of study - to measure growth data for 69 preterms (39 females) with bronchopulmonary dysplasia (PT-BPD). The growth parameters of 69 BPD-PT were recorded for 16±3 months postnatally. 40 had mild, 20 had moderate and 9 had severe BPD. Ninety-six percent of infants were appropriate for gestational age (AGA). Only 4% preterms had birth weight SDS <-2 for gestational age (GA) and 4% had length SDS (LSDS) <-2. Eighty-eight percent of PT-BPD had normal or accelerated growth velocity (GV) during the 16±3 months period. At 8±2 months of uncorrected age 45% had LSDS <-2 and at 16±3 months of age 25% had LSDS <-2. At 8±2 months 13% had body mass index SDS (BMISDS) < -2 and at 16±3 months 5.8% had BMISDS < -2. At 8±2 months 52% had head circumference SDS (HCSDS2) <-2. At 16±3 months 27.5% had HCSDS <-2. Seventy-two per cent of PT-BPD had normal HCSDS compared to full terms (FT) infants at 16±3 months. The majority of preterm infants with BPD show normal or above normal (catch-up growth) linear growth velocity postnatally compared to FT infants. At 16±3 months of their life 75% had normal LSDS, 72.5% had normal HCSDS compared to FT infants. Severity of the BPD, and the presence of sepsis, NEC, PDA and PVH ominously affects postnatal somatic growth in these infants. Our results stress also the importance of corrected vs uncorrected age for the growth evaluation. Tab. 3, Fig. 1, Ref. 28.

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b17.3.2.9. QTc tendency in pacemaker dependent patients - prognostic meaning of long QTc during 5 year follow up. /E. Tsetskhladze,I. Khintibidze/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 56-60. – eng.; abs.: eng., rus., geo.

Prolongation of ventricular repolarization, which is represented by QTc prolongation on the standard ECG can be considered as increased risk for fatal arrhythmia. However, in pacemaker dependency (with ventricular pacing from the right apex) Ventricular Pacemaker causes abnormal steps of ventricular activation and therefore widens QRS complex and alters ventricular repolarization. It is still questionable whether QTc prolongation in right ventricular-paced patients is

associated with increased risk of fatal arrhythmia or other cardiac complications. The other important question is whether the pacemaker dependent patient with long QTc interval may safely receive medications with known potential to prolong ventricular repolarization. The aim of the study was to determine whether QTc prolongation in VP (ventricular pacemaker) patients is associated with increased risk of fatal arrhythmia or other cardiac complications and whether these patients can safely receive medications with known potential to prolong ventricular repolarization. The study is based on retrospective analysis of the QTc interval prior and after pacemaker insertion; dynamic changes of QTc interval and possible influence of the medications, with known potential to prolong ventricular repolarization. Study population consisted 76 patients with narrow native QRS complexes and QTcF/QTcB <500 ms for both male and female patients. QTc prolongation in VP patients most likely does not represent true repolarization abnormalities and is not associated with risk of fatal arrhythmia. While analysis of group receiving medications with known potency of QTc increase we found no additional tendency of QTc increase. Based on our data receiving the medications with known potency of QTc prolongation in VP patients should be considered as safe approach. Long-term follow up data (5 years) assessed retrospectively shows that in patients with widened QRS after VP are at increased risk of development of HF and HF decompensation. Tab. 3, Ref. 11.

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b17.3.2.10. The first results of the prevalence of CYP2C19 genepolymorphism in patients with acute coronary syndrome in the Aktyubinsk population. /G. Smagulova, N. Kulmurzaeva, N. Seytmaganbetova, G. Kurmanalina, I. Talipova/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 61-66. - rus.; abs.: eng., rus., geo.

To study the prevalence of polymorphic variants of CYP2C19 in residents of the Aktyubinsk region, in patients with acute coronary syndrome after percutaneous coronary intervention. We studied included 100 patients with documented acute coronary syndrome, whom stent has been implanted and double antiplatelet therapy (aspirin and clopidogrel) was administered (average age was 49.2). The control group was formed of 255 volunteers without clinical and electrocardiographic manifestations of ischemia, and cardiovascular disease (CVD). In groups of patients and volunteers, most of them were ethnic Kazakhs 67% and 72% respectively. Thus, about 30% of patients CYP2C19*1/*2 acute coronary syndrome who live in Aktobe (Aktobe residents) are under the threat of a possible occurrence of new cardiovascular events due to low sensitivity to clopidogrel. Our study confirms that CYP2C19 G (681A) genotype has impact on antiplatelet effect of clopidogrel. The peculiarity of our work lies in the fact that we were the first who conducted pharmacogenetic study in patients treated with clopidogrel with ACS/PCI in the region inhabited by persons of mixed Slavic and Kazakh nationality. Tab. 2, Ref. b17.

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b17.3.2.11. The content of some essential micronutrients in infants with low birth weight with intrauterine herpes infection. /B. Tussupkaliev, A. Zhumalina, B. Zhekeyeva, T. Sergazina/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 67-72. - rus.; abs.: eng., rus., geo.

To study the comparative aspect of the content of certain essential trace elements in the blood serum of infants with low birth weight, identify the clinical signs of deficiency. The study involved 127 infants, of which 69 constituted the main group and 58 infants constituted the comparison group. All newborns were identified haematological and biochemical blood tests, some Essential micronutrients (copper, selenium, zinc). Laboratory diagnosis of microelement composition of blood was determined by mass spectrometry with inductively coupled argon plasma (ICP-MS). The analysis of some essential trace elements was diagnosed copper and selenium deficiency in all newborns. Mean while neonatal treatment group indicators selenium, copper are lower, than similar nutrients infants in the control group. The zinc content in both groups mostly within the normal parameters. Thus, the level of essential micronutrients (copper, selenium) in the blood serum of newborn infants in the study group and the control group was below the reference value, indicating that insufficient intake data trace in the fetus located in the mother's womb. Recommendations: 1. In the diagnosis of various diseases in newborns with low birth weight should take into account the level of serum essential micronutrients (copper, selenium). 2. In the appointment of the underlying disease treatment in these infants need to be borne in mind also correct micronutrient deficiencies. Tab. 2, Ref. 24.

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b17.3.2.12. Sensitization pattern and clinical pecularities of food allergy in Georgia. /N. Lomidze, T. Abramidze, T. Gotua, N. Dolidze, M. Gotua/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 72-77. – eng.; abs.: eng., rus., eng.

The aim of our study was to investigate sensitization pattern to food allergens in different age groups of atopic patients in Georgia and reveal the associations between food sensitization and clinical manifestations of allergic disease reflecting the development of atopic march. 1000 patients (children-783, adult-217) with different clinical manifestations were involved in the study. Specific IgE antibodies to food mix, cow's milk, casein, egg, wheat, fish, nuts mixture and inhalant allergens were measured by using ImmunoCap (Phadia, Uppsala, Sweden). The prevalence of positive specific IgE to food mix was - 7.08%, cow's milk-4.61%, casein - 4.68%, hen's egg - 2.72%, fish mix - 0.77%, wheat -1.57% and to nuts mixture - 2.86%. The frequency of atopic dermatitis ($p<0.0017$), urticaria ($p<0.0223$) and anaphylactic shock ($p<0.001$) were significantly increased in patients with specific IgE to food mix. Allergic skin manifestations to ingested food were age-dependent, more frequent in children groups. Cow's milk and hen's egg are the commonest food allergens in the age group of <2 years. Sensitization to food mix, cow's milk, casein, hen's egg and wheat were predominated in male patients. Egg allergy was significantly associated with atopic dermatitis, fish allergy to bronchial asthma and severe milk allergy to anaphylactic shock. Present study is a first comprehensive investigation, providing unique data of the prevalence of food allergies in Georgian population. The results of this study are contributing to a better understanding of the disease, serving as a basis for the development of strategies for preventing and treating food allergies. Tab. 3, Fig. 2, Ref. 10.

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b17.3.2.13. Determination of correlation linkages between level of reactive oxygen species, contents of neutrophiles and blood gas composition in experimental acute lung injury. /M. Marushchak, I. Krynytska, N. Petrenko, I. Klishch/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 98-103. – eng.; abs.: eng., rus., geo.

Acute lung injury (ALI) remains a major cause of acute respiratory failure and death of patients. Despite the achievements at the current stage in treatment, morbidity and mortality of ALI remain high. However, a deeper understanding of the pathogenetic links of ALI, identifying of the predictors that positively or negatively influence on the course of the syndrome, the correlation between some pathogenetic mechanisms will improve therapeutic strategies for patients with ALI, which makes the actuality of this study. The aim of the research was to detect additional pathogenetic mechanisms of the acute lung injury development in rats based on a comparative analysis of the correlations between the level of reactive oxygen species in blood and bronchoalveolar lavage, contents of neutrophils and blood gas composition. Tab. 2, Ref. 15.

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b17.3.2.14. Basal cell carcinoma in the area of chronic radiodermatitis – 3 case reports with long-term follow-up. /U. Wollina/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 7-10. – eng.; abs.: eng., rus., geo.

Chronic radiodermatitis is a delayed response of skin and underlying soft tissues after exposure to the ionizing radiation. It bears a risk of secondary tumors, in particular non-melanoma skin cancer (NMSC). We present 3 case reports of the patients with the development of BCC's ≥40 years after radiation of either childhood hemangioma or basal cell carcinoma. Patients with chronic radiodermatitis need a life-long dermatologic follow-up for early detection of NMSC and its consequent removal by Mohs surgery. Fig. 3, Ref. 20.

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b17.3.2.15. Epidemiology of neuropathic chronic pain in oncology patients. /V. Zhumaliyeva, A. Cialkowska-Rysz, V. Sirota, V. Kulishov, I. Omarova/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 10-15. – eng.; abs.: eng., rus., geo.

The aim of the study was to analyze the primary prevalence of chronic neuropathic pain syndrome in oncology patients of Karaganda (Kazakhstan), to estimate the structure of pain syndrome in randomly chosen patients, to assess the effectiveness of analgesic therapy in oncology patients.

All the patients with confirmed cancer admitted to hospital in Karaganda regional oncologic dispensary were studied. The study period was limited to 60 consecutive days. The results were statistically processed using 6.0 «STATISTICA» program. In 11,2±1,6% of the cases, oncology patients that got combined modality treatment suffered from the chronic neuropathic pain syndrome; 66,7±7,3% patients of them had the III cancer stage. 2. While studying the chronic neuropathic pain structure it was revealed that: 52,4±7,7% of the patients suffered from a mild pain, from average – 38,1±7,5% of the patients, from severe pain – 9,5±4,5%. Neuropathic pain syndrome in the form of numbness occurred in 47,6±7,7% of the respondents, tingling – in 38,1±7,5% of the patients and 14,3±5,4% of the respondents described it as «electric shock». 52,4±7,7% of the patients described temperature changes of the skin, 28,6±7,0% of them told about allodynia. The given pain can be correctly diagnosed on rare occasions. It brings about the low efficiency of currently prescribed standard pain treatment. It was 20%-effective only for ¼ of the patients. In sum, it can be brought into focus that each 10th oncology patient of the II clinical group in Kazakhstan may potentially suffer from the chronic neuropathic pain syndrome. The given syndrome in cancer patients requires selective differential diagnostics and constant management of the pain treatment regimen because of occurrence of standard regimens incapacity, progression of tolerance to the actual pain treatment and significant deterioration of oncology patients' life quality. Fig. 1, Ref. 11.

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b17.3.2.16. Outpatient antimicrobial treatment for acute tonsillopharyngitis. /A. Beisenayeva, G. Muldaeva, I. Azizov, Z. Kalbekov, N. Kim, E. Litvinova, A. Ibysheva/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 15-19. - rus.; abs.: eng., rus., geo.

One of the most significant problems in antimicrobial therapy (AMT) is widespread administration of antimicrobial agents without relevant medical conditions. The aim of the research was the analysis of antimicrobial agent prescribing practices for outpatient treatment of acute tonsillopharyngitis at the Karaganda Polyclinic №1 and Polyclinic №2. The analysis of antimicrobial agents prescribing practices for outpatient treatment of acute tonsillopharyngitis was conducted; medical records of outpatients with acute tonsillopharyngitis treated in 2014 at Polyclinics №1 and №2 were analyzed. Inclusion criteria: patients ranging in age from18 to 44, verified diagnosis – acute tonsillopharyngitis. It was found that in all cases antimicrobial agents have been prescribed speculatively, without previous bacteriological study or method of express diagnostics of Group A beta-hemolytic streptococcus (GABHS). In a majority of cases β-lactams were prescribed. Flemoxin Solutab was the most commonly prescribed β-lactam in Polyclinic №1; Amoxicillin was the most commonly prescribed β-lactam at Polyclinic №2; it associated with personal experience of administration of these agents rather than data of evidentiary medicine. Study of actual medicine administration showed that in half of the cases dosage regimen, rout of administration, dosage and treatment session duration have not been followed. For the development of clinical guidelines for rational treatment of acute tonsillopharyngitis is necessary to study the local spectrum of the major pathogens and their antimicribial resistance. Ref. 15.

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b17.3.2.17. The remote results of simultaneous laparoscopic correction of chronic duodenal obstriction and cholecystectomy in cholelithiasis. /H. Isayev, B. Akhverdiyev/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 19-25. - rus.; abs.: eng., rus., geo.

The aim of the research was to investigate the remote results of surgical treatment of 75 patients with cholelithiasis combined with chronic duodenal obstruction. Control group was composed of 40 patients who underwent laparoscopic cholecystectomy. Compensated stage of cholelithiasis with chronic duodenal obstruction was detected in 16 (21.3%) patients, subcompensated in 37 (49.3%) and decompensated stage in 17 (22.7%) patients. In 14 patients (18.7%) with cholelithiasis combined with chronic duodenal obstruction laparoscopic cholecystectomy was conducted due to the positive results of preoperative conservative treatment. In the long-term quality of life after surgery in the main group of patients were average 35.4% higher than in the control group; in the main group postcholecystectomical syndrome was diagnosed in one case (2,1%) and in 13 (32,2%) cases in the control group. Tab. 1, Ref. 21.

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b17.3.2.18. Hematological markers of the noreflow phenomen on inpatients undergoing primary percutaneous coronary intervention. /S. Şahinkuş, M. Cakar, S. Yaylacı, E. Aydın, Y. Can, I. Kocayigit, A. Osken, R. Akdemir, H. Gunduz/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 26-32. – eng.; abs.: eng., rus., geo.

The study aims to investigate hematological parameters of the no-reflow phenomenon (NRP) developed in patients underwent primary percutaneous coronary intervention (pPCI) due to diagnosis of ST elevation myocardial infarction (STEMI). The study sample consisted of a total of 90 patients, of which 44 patients who underwent pPCI and developed NRP without anemia and chronic renal failure (mean age was 64; 34 males and 10 females) were included in the experimental group, and the control group consisted of 46 patients with normal reperfusion flow (mean age was 58; 34 males and 12 females). In both groups, Red blood-cell Distribution Width (RDW), Mean Platelet Volume (MPV), plateletcrit (PCT), Platelet Distribution Width (PDW), and neutrophil count were observed. The demographic characteristics of both groups were similar, except the higher mean age of the experimental group (age; 64.0±12.6; 58.0±12.5). No correlation was found between development of no-reflow and incidence of risk factors such as hypertension, diabetes mellitus, dyslipidemia, smoking, family history and gender. In the no-reflow group, RDW level (16.2%±2.1; 14.2%±0.7, p<0.001), MPV level (7.9±1.2; 7.3±0.8, p<0.05), PDW level (18.1±1.2; b17.4±1.2, p<0.05), PCT level (0.2±0.06 vs 0.17±0.05) and neutrophil count (9.9±3.7; 7.1±3.3, p<0.001) was found to be higher than the control group. According to logistic regression analysis, RDW (OR; 23.4, <95% CI 4.6-118.9, p<0.001), PDW (OR; 2.8, <95% CI 1.2-6.4, p<0.05) and neutrophil count (OR; 1.4, CI 1.1-1.9, p<0.05) were found to be the predictors of NRP development. Hemogram is a cheap and easy to apply test. In our study, a relationship between the NRP development and RDW, PDW, MPV, PCT, and neutrophil counts was found in patients who underwent pPCI. At the same time, RDW, PDW, and the neutrophil count were found to be predictors of no-reflow development. Tab. 2, Ref. 30.

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b17.3.2.19. A model for prognosis of acute left ventricular failure in patients with acute myocardial infarction and type 2 diabetes mellitus considering tenascin C content. /M. Koteliukh/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 32-37. – eng.; abs.: eng., rus., geo.

The role of tenascin C in patients with acute myocardial infarction and type 2 diabetes mellitus still remains disputable today. The purpose of the study is to elaborate a model for the prediction of left ventricular failure in patients with acute myocardial infarction and type 2 diabetes taking into account the level of tenascin C, as well as to evaluate the prognostic value of this indicator in the development of acute myocardial infarction.

The study showed that over time the content of tenascin C decreased on the 10^{th}-12^{th} day in patients with acute myocardial infarction and type 2 diabetes mellitus compared to patients with acute myocardial infarction without type 2 diabetes. The results demonstrated predictive properties of tenascin C in the development of acute myocardial infarction in patients with type 2 diabetes. The study allowed the authors to elaborate a model for the prognosis of acute left ventricular failure, taking into account the level of tenascin C. Combination of tenascin C dynamics and frequency of respiratory movements increased prognostic properties of the model, particularly its sensitivity (84%) and specificity (83%). Thus, the study proved the expediency of the model based on tenascin C indices for prognosis of acute left ventricular failure in patients with acute myocardial infarction and type 2 diabetes mellitus. Tab. 3, Fig. 2, Ref. 6.

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b17.3.2.20. Prognostic value of some hemostasis-related, homocysteine, high sensitive CRP and multidetector computed tomography parameters in pulmonary embolism. /F. Todua, M. Akhvlediani, E. Vorobiova, A. Baramidze, G. Tsivtsivadze, D. Gachechiladze/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 37-42. - rus.; abs.: eng., rus., geo.

Nowadays, an arsenal of diagnostic methods is used in diagnosis of pulmonary embolism, which includes x-ray, angiography, perfusion-ventilation scintigraphy, CT and magnetic resonance imaging, Doppler and laboratory studies. Purpose of our study was to evaluate the diagnostic significance of determination of some parameters of hemostasis (D-dimer, Soluble fibrinmonomer complexes, fibrinogen), homocysteine, hs-CRP and multidetector computed tomography in

suspected pulmonary embolism. We have examined 54 patients - 31 men and 23 women, aged 18 to 76 years, with characteristics of pulmonary embolism. According to our data, Multidetector computed tomography angiopulmonography, measuring D-dimer, fibrinogen and related hyperhomocysteinemia with increased level of hs-CRP may serve as binding, diagnostically significant laboratory markers in the diagnosis and treatment efficacy of pulmonary thromboembolism. Tab. 2, Fig. 2, Ref. 11.

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b17.3.2.21. Granulomatosis with polyangiitis (wegener's): clinical case. /E. Zimba, O. Olkhova/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 43-47. - rus.; abs.: eng., rus., geo.

Granulomatosis with polyangiitis (Wegener's disease) - systemic vasculitis, initial manifestations, the clinical picture may be present in a wide variety. This leads to difficulties in establishing a timely diagnosis. The prognosis in untreated generalized granulomatosis with polyangiitis is extremely poor. The present case report illustrates a late diagnosis of granulomatosis with polyangiitis. A 53-year-old woman was diagnosed with granulomatosis with polyangiitis only after ten months of onset of disease. Wrong diagnosis of tuberculosis of ear leads to a lot of delay in the treatment this type of vasculitis. At the time of diagnosis she had generalized form of disease presented with involvement of the eyes, upper and lower respiratory tracts, kidneys, and nervous system. Remission was achieved with methylprednisolone and cyclophosphamide but suffered a relapse shortly afterwards. Further treatment with rituximab achieved a second remission, but the patient continued to suffer from dry conjuncti - vitis. Symptomatic therapy in this case was ineffective. An effective pathogenic therapy for this condition was instillation of cyclosporine eye drops. Tab. 1, Ref. 5.

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b17.3.2.22. Melatonin concentration in the blood of vitiligo patients with stress in an - amnesis. /N. Tsiskarishvili, A. Katsitadze, Nana Tsiskarishvili, Ts. Tsiskarishvilui, L. Chitanava/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 47-53. - rus.; abs.: eng., rus., geo.

In recent years, despite some progress in the study of vitiligo many aspects of pathogenesis and treatment of this dermatosis remain unsolved or are highly controversial. It is believed that progression of disease is associated with a genetic predisposition, autoimmune processes and oxidative stress, but the concrete role of stress on the processes having place in the organism of vitiligo patients so far is not investigated. As we know, epiphysis is the main regulator of adaptation of the individual to the environment. An important product of secretion of the pineal gland is the hormone melatonin - a universal regulator of vital functions and biorhythms of the body. Psychoses, neuroses, depression, immunopathology are aspects of disturbances in circadian, seasonal and annual rhythms of the synthesis of this hormone. Clinical and experimental studies indicate that the hormone melatonin, which is one of the links in a stress defense mechanism of the body, has antioxidant and immunomodulatory properties. The purpose of this study was to determine plasma level of melatonin in the blood of vitiligo patients (with stress in anamnesis), depending on the clinical form and duration of the disease. 41 patients with vitiligo (16 with segmental and 25 with non-segmental form) with stress in anamnesis and duration of disease from several months to 20 years were under observation. The level of melatonin in the blood plasma was determined by ELISA (IBL - international - reagent), the results were expressed in units of pg/ml. According to the results of our study, 8 patients with segmental vitiligo had the normal level of plasma melatonin concentration (in the range of 20.2-31.1 pg/ml), in 2 cases - the level was near the norm (19.2 pg/ml). In the group of patients with non-segmental vitiligo, the level of melatonin was below the norm (12.5 pg/ml) and in 2 cases, the content of melatonin was very low - 4.05 pg / ml. Correlation analysis of melatonin levels with duration of disease have shown direct correlation just in the group of patients with non-segmental vitiligo. For a complete analysis of our results concerning of melatonin levels in the blood of patients with stress in anamnesis and for getting of some principal conclusions that will allow outline the ways to effectively treat patients with this pathology, further research is needed. Tab. 2, Ref. 15.

Auth.

b17.3.2.23. Hernioplastic morfological features (experimental stady). /M. Gogoladze, M. Kiladze, T. Chkhikvadze, L. Tsivtsivadze, D. Jiqia/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 73-81. - rus.; abs.: eng., rus., geo.

Despite many years of experience in the field of hernia surgical treatment there still exist many unsolved problems such as a safe and non infected closure of defects of abdominal cavity wall. The aim of the study was to improve the result of treatment of abdominal wall hernias with the use of new antiseptic polymer, bio-composite protective mesh membrane covered with coladerm+chlorhexidine. Experimental study involved 21 rabbits. Meshes were fixed on anterior abdominal wall according to the following schewe: Option I: mesh size 10-20mm was put into both the groin area of the rabbits. Option II: A light standart mesh grid size 10-20mm covered with coladerm was placed on both sides of abdominal wall of the rabbits. Option III: A light mesh, covered with oladerm+Chlorhexidine was placed in to the abdominal wall of the rabbits. Removal dates of taking the animals from experiments were 14^{th}, 30^{th}, 45^{th}, 90^{th} and 180^{th} days for further histo-morpological and bacteriological research. The best result from these options was when implants we covered with coladerm+Chlorhexidine, which was shown on follow up period. In third control group experessed strong connective tissue formatting stromis picture,wich is the main task of modern hernia plastic. It is expected that new bio-composite meshes, covered with coladerm+Chlorhexidine, may be succesfuly used in clinical practice, which will reduce infectious complications of meshes and problems associated with them. Tab. 4, Fig. 12, Ref. 13.

Auth.

b17.3.2.24. Theoretical background of finding organs for transplantation among non-heart beating donors under unsuccessful extracorporeal resuscitation (literature review). /N. Khodeli, Z. Chkhaidze, J. Partsakhashvili, O. Pilishvili, D. Kordzaia/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 92-97. - rus.; abs.: eng., rus., geo.

The number of patients who are in the “Transplant Waiting List” is increasing each year. At the same time, as a result of the significant shortage of donor organs, part of the patients dies without waiting till surgery. According to the Maastricht classification for non-heart beating donors, the patients, who had cardiac arrest outside the hospital (in the uncontrolled by medical staff conditions) should be considered as a potential donors of category II. For these patients, the most effective resuscitation is recommended. The extracorporeal life support (ECLS) considers the connection to a special artificial perfusion system for the restoration of blood circulation out-of-hospital with further transportation to the hospital. If restoration of independent cardiac activity does not occur, in spite of the full range of resuscitative measures, these patients may be regarded as potential donors. The final decision should be received in the hospital, by the council of physicians, lawyers and patient’s family members. Until the final decision, the prolongation of ECLS and maintaining adequate systemic and organic circulation is recommended. Ref. 21.

Auth.

b17.3.2.25. The first report of laparoscopic radical cystectomy in Georgia. /D. Nikoleishvili, Z. Tchanturaia, G. Managadze, G. Koberidze, A. Pertia/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 7-11. – eng.; abs.: eng., rus., geo.

Bladder cancer is the ninth most commonly diagnosed malignant tumor worldwide. Radical cystectomy is the standard surgical treatment for non-metastatic, muscle-invasive bladder cancer and a recommended treatment of choice in a subset of highest-risk patients with non-muscle invasive disease. Recently, laparoscopic radical cystectomy has become an attractive alternative to an open counterpart and many centers worldwide have reported their early experiences with the technique. Laparoscopic radical cystectomy is a technically challenging procedure and current recommendations still consider it, with or without robotic assistance, to be experimental due to absence of long-term data on oncological and functional outcomes and possible selection bias in the reported series. In this paper, we report the case of a 61 year-old male with a muscle-invasive recurrence of bladder cancer, who underwent laparoscopic radical cystectomy at the National Centre of Urology in Tbilisi, Georgia. This is the first such procedure performed in Georgia and most of the former Soviet countries, with the exception, to our knowledge, of only the Russian Federation. The technique of laparoscopic radical cystectomy with simultaneous prepubic urethrectomy, extended pelvic lymph node dissection, and extracorporeal urinary diversion in the form of an ileal conduit is described. Laparoscopic radical cystectomy is a feasible minimally-

invasive alternative to the standard open surgery when performed by experienced surgeons in selected patients. We deem the introduction of the technique a step forward in the field of minimally invasive urology in Georgia. Fig. 6, Ref. 9.

Auth.

b17.3.2.26. Immunomorphological features of the placenta in multiple pregnancies. /I. Nikitina, A. Boychuk, N. Kalashnik, E. Pabot, M. Kolesnikova, D. Prasol/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 12-16. - rus.; abs.: eng., rus., geo.
Placentas clinical and immunological research in women with multiple pregnancy, noted the presence of morphological and functional, immunopathologic changes of varying severity. It is proved that in women with miscarriage at the level of multiple pregnancy placental insufficiency depends on the blood supply to the placenta and the nature of the inflammatory manifestations. The morphological pattern of placental disorders in miscarriage was revealed that the morphological features of placental insufficiency in non-infectious factors of miscarriage are early changes in the vessels of the decidua in a spasm, obliteration of the lumen of the spiral arteries, a decrease of vascular villous tree, reducing the amount of chorionic epithelium and peripheral trophoblast, increased maternal and fetal deposits fibrinoid. Thanks to the research will be possible to form a clear vision that would allow on the basis of public spending immunomorfological features pathogenetically substantiated therapy prenatal complications arising from multiple pregnancies. Tab. 1, Fig. 4, Ref. 11.

Auth.

b17.3.2.27. Nonspecific ulcerative colitis complicated with multiple repetitive perforations and diffuse fecalic peritonitis (case report). /A. Antadze, G. Mukhashavria, N. Lekvtadze, G. Tomadze, G. Chikobava/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 17-20. - rus.; abs.: eng., rus., geo.
Nonspecific ulcerative colitis is disease with complicated and not fully studied etiology and pathogenesis, and treatment of its complications is very difficult. Especially complicated is disease course with repetitive bleeding, toxic megacolon and perforation. We present a quite rare case of complication with multiple, especially repetitive perforations of transverse colon. After 13 days from the performance of subtotal colectomy, the patient underwent to the relaparotomy because of secondary perforation of sygmoid colon 2-3 cm lower from its cult and iliac intestine 0.2-0.3 cm distance from nearby ileostoma. The full eventration took place on the 6^{th} day and was performed repetitive laparotomy. On the 8^{th} day patient was released from artificial ventilation of lungs and on the 66^{th} day from hospitalization patient was discharged from the hospital with satisfactory status. Such kind of serious course of the treatment process was determined by the late hospitalization and developed serious complications. Situation mentioned above more impressively underlines the value of the positive result of presented case. Ref. 11.

Auth.

b17.3.2.28. Physical and mathematical grounds landforms basis plate dentures when applying the complex method of prevention of prosthetic stomatitis. /A. Zverkhanovsky/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 27-32. - rus.; abs.: eng., rus., geo.
Objective - to develop the form of the drug reservoir to hold the vegetable oils under the basis of the prosthesis. The research was conducted on the Bench PMMA samples. The comparison group consisted of smooth plate PMMA. Two study groups were PMMA plates with grooves on one side of a square with sides of 2 mm and depth of channel - 1 mm. The third group consisted of the experimental plate with diamond-shaped notches with the same parameters. The lowest value of the stress in the plate having a rhombic grid, they are 54% less than in the smooth plate and 37% less than in the plate with a square lattice (the best strength characteristics in a rhombic plate with grille). Equivalent move from the plate with a rhombic lattice is less than an order of magnitude than that of a smooth plate and by 5.8% more than at the plate with a square lattice, which indicates good performance design plasticity with rhombic grid. Basis with the rhombic lattice on the surface has the best record on the stress-strain state in comparison with other models considered (smooth plate with a square lattice plate). Tab. 1, Fig. 9, Ref. 14.

Auth.

b17.3.2.29. Ultrasound and CT guided thoracic biopsy approaches - effectiveness and complications. /T. Azrumelashvili, M. Mizandari, T. Dundua, D. Magalashvili/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 32-39. – eng.; abs.: eng., rus., geo.

Percutaneous needle biopsy of thoracic pathology has gained popularity showing a good accuracy with a less invasive procedure. The purpose of the paper is to present our experience of ultrasound and CT guided thoracic biopsy approaches regarding procedure effectiveness and complications. 398 Image guided percutaneal core biopsy procedures of thoracic pathology (mediastinum, lung, pleura, bone and soft tissue) has been performed to 380 (95.5%) patients. In 18 (4.5%) cases the repeated biopsy procedure has been performed as the obtained specimen appeared to be non-informative. All repeated procedures were needed when the target size was above 2-5 or >5 cm using CT guided biopsy and it was due to tumor necrosis. No complications were detected after US guided procedures; No repeated procedures were needed as the first one enable to obtain the informative biopsy specimen. Procedure related complication were detected in 48 (12.1% of all procedures) CT guided cases in total; among them in 35 (8.8%) cases pneumothorax, in 5 (1.3%) hemothorax and in 7(1.8%) hemophtisis was detected. Slight bleeding along the needle pass with the hematoma formation was detected in 1 (0.2%) case for soft tissue lesion. 47 (11.9%) complications were detected on transpulmonary approach cases and only 1 (hematoma formation – 0.2%) - on extrapulmonary approach. Percutaneous image-guided core biopsy of thoracic lesions is an accurate and safe procedure, which enables to get the tissue material from all thoracic compartments. The vast majority of complications should be expected on transpulmonary approach cases. Tab. 1, Fig. 6, Ref. 19.

Auth.

b17.3.2.30. Estrogen related mechanisms of hypertension in menopausal women. /M. Buleishvili, N. Lobzhanidze, G. Ormotsadze, M. Enukidze, M. Machavariani, T. Sanikidze/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 45-51. – eng.; abs.: eng., rus., geo.

The aim of our investigation was to establish the role of estrogens in the pathogenesis of hypertension during menopause. Menopausal women (40-55 years) with hypertension who had been admitted to “The N. Kipshidze Central University Clinic” (Tbilisi, Georgia) during 2011-2015 and without hypertension were investigated. Essential hypertension was defined as elevated blood pressure while in a sitting position, exceeding 160±10/90±10 mm Hg 60/95 mm Hg, for three consecutive measurements over a period of at least 4 weeks. Determination and verification of menopause was provided based on the criteria of at least 12 months of amenorrhea. All the patients had given their informed consent before any procedure. Study protocol was approved by Local Ethical Committee of Davit Agmashenebeli University. In each group blood content of estradiol, free nitric oxide (NO) and nitrosilated hemoglobin (HbNO), endothelin-1 and angiotensin II (ANG) were investigated. Decrease free nitric oxide (NO) (by 10%) and increase in endothelin-1 (by 14%) and Angiotensin II (ANG) (by 12%) content in the blood of menopausal women with hypertension were identified. In some patients with hypertension it was detected low intensity of NOHb EPR signal in blood (~1,5±0,07 mm/mg). In blood of hypertensive postmenopausal women there was revealed statistically significant correlation between estrogen level and NO content (r=-0,7935, p=0,0061), estrogen level and ANG II content (r=-0,7080, p=0,0328), statistically nonsignificant dependence between NOHb EPR signal intensity and estradiol content (r=-0,29, p=0,12). In normotensive postmenopausal women correlation between blood estrogen and NO level, blood estrogen and ANGII level was not statistically significant (r=-0,4342, p=0,2429; r=-0,2676, p=0,4547). These data indicate that in postmenopausal women in the regulation of arterial pressure in addition to the estrogens involve other factors, like as was shown in our previous investigation, oxidative stress. The results of our studies indicate on the complexity mechanisms of hypertension in postmenopausal women. Identification of these factors, including their cause-effect relations, is necessary for the timely prevention and effective correction of hypertension in postmenopausal women. Fig. 4, Ref. 36.

Auth.

b17.3.2.31. Structural heart anomalies (review). /N. Osovska, N. Kuzminova, M. Ovcharuk, O. Serhiychuk/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 66-77. – eng.; abs.: eng., rus., geo.

Structural heart anomalies (SHA) are congenital abnormalities of cardiovascular system, characterized by various anatomical departures of heart and great vessels from normal conditions. SHA are a part of connective tissue dysplasia syndrome (CTDS), one of the most common congenital autosomal-dominant diseases in people of young and middle age. The most common SHA are a mitral valve prolapse, abnormal chords of left ventricle and their combinations. The clinical significance of these anomalies depends on a degree of severity and impact on intracardial hemodynamics, as described in the article. The most prognostically dangerous are multiple abnormal chords of left ventricle, which can be a sign of serious hereditary disease – a left ventricular non-compaction. Fig. 6, Ref. 60.

Auth.

b17.3.2.32. The obesity impact on inflammatory markers in patients with arterial hypertension. /A. Shelest, J. Kovaleva, B. Shelest/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 81-85. - rus.; abs.: eng., rus., geo.

The aim of the study was to determine the concentrations of inflammatory markers C-reactive protein (C-RP) and cytokines - IL-1β, IL-4 in patients with arterial hypertension (AH) and obesity. The study involved 64 patients with hypertension, who were divided into 2 groups. The first (main group) consisted of 39 patients with arterial hypertension II degree and obesity 1 st. The second group was performed by 25 patients diagnosed with hypertension II degree without obesity. The study of serum cytokines was carried out by ELISA using the company›s «Ukrmedservis» sets, Ukraine, and for the C-RP – set, company «DRG International Inc.» (USA) following instructions. Obesity was assessed by body mass index and waist to hip ratio. The study found that hypertension with obesity is characterized by a more pronounced increasing in the C-RP and IL-1 β and reducing in anti-inflammatory IL-4, in comparison with the control group. And this is the evidence of a significant activation of inflammatory processes in such cohort of the patients. Thus immunoinflammatory disorders are essential in the development of hypertension in combination with obesity. A direct link is detected between obesity and the severity of inflammation in patients with hypertension. Tab. 1, Ref. 16.

Auth.

b17.3.2.33. Biliary atresia: current concepts and future prospects (review). /K. Chakhunashvili, I. Pavlenishvili, M. Kakabadze, D. Kordzaia, D. Chakhunashvili, Z. Kakabadze/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 104-111. – eng.; abs.: eng., rus., geo.

Treatment of biliary atresia is a major challenge in pediatric surgery. Early diagnosis and availability of Kasai procedure with its modern modifications improve outcome of biliary atresia treatment. But Kasai procedure does not fully restore anatomical integrity of biliary tract, because Oddi sphincter is not included in reconstructed system. Constant reflux of intestinal content into the biliary tree is a cause of recurrent cholangitis and change in biliary epithelium that, which is a predisposing factor for cholangiocarcinoma. Various methods have been developed to improve Kasai procedure and prevent the reflux (anti-reflux valve, different enteric conduits, etc.). Many authors used biological grafts made from artery, vein, appendix, urether as well as synthetic materials to restore hepaticocholedochus. Although, neither of these methods were implemented in clinical practice. Nowadays, huge attention is paid to organ and tissue bioengineering. Present advances of tissue bioengineering may assist to create bile duct equivalent, which can be used to restore biliary tract in patients with biliary atresia. Ref. 63.

Auth.

b17.3.2.34. Once more about juvenile idiopathic arthritis. /G. Chakhunashvili, T. Kutubidze, N. Jobava, K. Chakhunashvili, D. Chakhunashvili/. Pediatric cardiology. – 2016. – #10. – pp. 20-34. – geo.; abs.: geo., eng.

There is a huge demand among pediatricians and pediatric cardio-rheumatologists for additional modern information about management of juvenile arthritis. The aim was to present analysis info of patients recorded since 1980. Juvenile arthritis is a disease in which there is inflammation (swelling) of the synovium in children aged 16 or younger. The synovium is the tissue that lines the inside of joints. Juvenile arthritis is an autoimmune disease. The article should encourage pediatricians, pediatric cardio-rheumatologists, even parents, to seek information and knowledge regarding this matter. Ref. 30.

Auth.

b17.3.2.35. Morphological changes as the criteria for the differential diagnosis between chronic ulcer, malignant ulcer and primary ulcerative gastric cancer. /S. Jaiani, O. Merculov, B. Tsutskhiridze, G. Tsutskhiridze/. Pediatric cardiology. – 2016. – #10. – pp. 53-55. – rus.; abs.: geo., eng.
1. Only morphological changes can serve as the criteria for the differential diagnosis between chronic ulcer, malignant ulcer and primary ulcerative gastric cancer. Sprawl scar, granulation tissue with impaired muscle layer structure, vascular and nerve endings of the stomach wall characterize the ulcerative process and their mix with atypical cellular structures characterizes the malignant ulcers. 2. Long-term results of surgical treatment of malignant gastric ulcers depend not only on the extent of surgical intervention, but on the prevalence of cancer invasion in the thickness of the gastric wall. Only at damage of mucosa, 5-year the survival rate is 90%, at lymph node metastases (regardless of the degree of invasion of the gastric wall) the survival rate is 33%. 3. In the absence of reliable criteria for the degree of destruction of the gastric wall, the choice of operation for malignant stomach ulcer should be considered radical subtotal resection of the stomach, performed in compliance with the oncologic operating principles. Tab. 1, Ref. 15.

Auth.

b17.3.2.36. Retinopathy in premature infants-terry syndrome. /M.Chalisuri, M.Chipashvili/. Pediatric cardiology. – 2016. – #10. – pp. 60-62. – geo.; abs.: geo., eng.
Our theme refers to an extremely important subject, which eventually determines lifestyle and status for some individuals. This disease is retinopathy of prematurity, known by terry syndrome. We considered it necessary to cover the basic concepts and aspects of this disorder in order to raise awareness in premature in fants, diagnose and treat it in a timely manner. Precise example of this disorder is world-famous singer Stevie Wonder. Ref. 4.

Auth.

b17.3.2.37. Management of persistent diarrhea in children. /Ts. Parulava, M. Chkhaidze, I. Khurtsilava/. Social, ecological & clinical pediatrics. – 2016. – #18-13-12. – pp. 54-59. – geo.; abs.: geo., eng.
The major causes and the prevalence of chronic diarrhea differ between developing and developed countries. In the developing world chronic diarrhea is typically associated with serial enteric infections and malnutrition. It is manifested by a chronic enteropathy, with impaired mucosal healing and diminished digestive and absorbtive capacity. In developed countries, children are less likely to be exposed to serial enteric infections and malnutrition. In these populations chronic diarrhea is more likely to be induced by underlying disease causing malabsorbtion or maldigestion (celiac disease, inflammatory bowel disease, allergy). However, enteric infections (in immunocompromised patients), malnutrition and dietary factors play role in some cases. The difference in etiology and pathophysiology in developing countries as compared to those in developed countries calls for different approaches to diagnosis and management in the two settings. Tab. 1, Ref. 3.

Auth.

b17.3.2.38. Interesting aspects of child nutrition. /N. Totadze/. Social, ecological & clinical pediatrics. – 2016. – #18-13-12. – pp. 60-62. – geo.; abs.: geo., eng.
In this work importance of sufficient child nutrition and nutrition as a global problem is emphasized. Also, the ways of proceeding and developing the project – “Georgia Without Hungry Children”. Ref. 3.

Auth.

b17.3.2.39. Renal damage during Henoch Schonlein Purpura. /B. Zenaishvili, N. Kvirkvelia, D. Kvirkvelia, M. Tsanava, T. Abuladze, G. Chitaia/. Social, ecological & clinical pediatrics. – 2016. – #18-13-12. – pp. 63-64. – geo.; abs.: geo., eng.
henoch-schonlein purpura (HSP), also termed IgA vasculitis (IgAV), is a systemic vasculitis with a prominent cutaneous comPonent that is characterized by the tissue deposition of IgA-containing

immune complexes. The pathogenesis of this disorder may be similar to that of IgA nephropathy, which is as sociated with identical histologic findings in the kidney. Ref. 10.

Auth.

b17.3.2.40. Psychoemotional characteristics of the adolescents with allergic rhinitis. /N. Adamia, I.Chkhaidze, I.Ubiria, L.Zhorzholiani, R.Karseladze, L. Saginadze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 3-6. – geo.; abs.: geo., eng.

According to the research results, allergic rhinitis is characterized with emotional instability, anxiety, as manifested by unsatisfactory adaptation, instable nature, depression, low resistance to the stress situations. Based on the conducted research, we regard that individual assessment of psychological profile of patients with allergic rhinitis would be reasonable, for the purpose of management optimization. Tab. 3, Ref. 16.

Auth.

b17.3.2.41. Rare case of short bowel syndrome. /G. Azmaiparashvili, G. Tomadze, A. Megreladze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 6-8. – geo.; abs.: geo., eng.

Short bowel syndrome is characterized by malabsorption following extensive resection of the small bowel. It may occur after resection of more than 50% and is certain after resection of more than 70% of the small intestine, or if less than 100 cm of small bowel remains. Successful postoperative management of short bowel syndrome has been discussed. Patient was operated because of cancer of hepatic flexure of large bowel with invasion in stomach, pancreas, retroperitoneal space, mesentery of small bowel. Right sided colectomy and excessive resection of small bowel with limphodissection was performed and only 80 cm of small bowel was left together with the left part of the colon. Ileotransversoanastomosis was performed. After the adequate course of chemotherapy and partial parenteral nutrition patient's general condition became satisfactory. Patient started to gain weight. Adequate postoperative treatment determined postoperative period without surgical and nutritional complication. Ref. 9.

Auth.

b17.3.2.42. Oral manifestations of dermatoses and their clinical histological correlations. /M. Borjadze, L. Jashi, Kh. Gogishvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 17-19. – geo.; abs.: geo., eng.

The aim ofo our research was to examine the oral cavity of patients with some dermatosis, to develop a research algorithm and to establish clinical histological correlation algorithm, based on which we could make differential diagnosis of these deseases in a timely manner and would emphasize significant sequence of diagnostic criteria. We observed 18 patients aged 40-62 years (11 women, 7 men). After collection of detailed history and indexation of the pathological processes of mouth and lips, we looked at the skin and examined biopsy material. Based on clinical histological correlations, we identified histopathological markers of oral mucosa and developed a specific algorithm, which we believe will assist dentists in everyday practice. Tab. 1, Ref. 6.

Auth.

b17.3.2.43. HIV/aids-related oral lesions statistics in Georgia 2013-2015. /E. Bukhnikashvili, M. Tsintsadze, N. Abashidze, L. Jashi/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 19-22. – geo.; abs.: geo., eng.

The aim of our research was to detect the frequency of oral manifestations among the new revealed HIV-infected persons in 2013-2015. For this we studied the data from the center of AIDS, according to the testimony we studied those patients who needed stationary treatment and we got these results: In 2013 out of 490 new cases the presence of specific oral manifestations was found in 253(51.63 0.796%) patients. From whom we investigated 69(27.270.61%) people. 45(65.220.45%) of them had oral candidiasis and 34(49.270.45%) disorders were caused by herpes-virus. In 2014 were revealed 564 new cases and the number of different concurrent intraoral lesions were found in 295(52.300.82%) patients. We investigated from them 146(49.490.66%) people and the result was next: 98 (67.120.32%) were different kinds of oral candidiasis and 54(36.990.32%) diseases - caused by herpes-virus. In 2015 out of 717 new cases

the HIV-associated oral manifestations were found in 381(53.130.86%) patients. We investigated 184(48.290.73%) people and as a result - 118(64.130.46%) cases of them were oral candidiasis and 67(36.410.32%) were diseases caused by herpes-virus. Accoording to the study it is obvious, that HIV-associated oral manifestations are met quite often among the HIV/AIDS patients. It is very important to know specifications of these disorders, to make some right investigations and correct diagnosis in all situations, especially when it takes place HIV-associated oral lesions. Dentists should take in account the importance of instant diagnostic of oral manifestations in HIV/AIDS patients. Fig. 4, Ref. 6.

Auth.

b17.3.2.44. Microcirculation changes in crush syndrome. /N. Gamkrelidze, T. Petriashvili, N. Pavliashvili, M. Namoradze, R. Otarashvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 22-24. – geo.; abs.: geo., eng.

By using classical method of crush syndrome modeling, experiments were carried out on randomly chosen 50 white rats (200-250 gr) with various degrees of crush syndrome in compression and decompression periods. Microhemocirculation and microvascular adrenoreactivity was investigated in rats' small intestine mesenteric arterioles by biomicroscope "Nikkon Labopot". Microvascular adrenoreactivity was studied by means of pharmacological analysis, specifically with the use of epinephrine on the basis of **α-** and **β**- adrenal receptor blockers action. The study results revealed, that crush syndrome leads to microhemocirculation disturbances in mesenteric arterioles. It is obvious due to numerous changes in microhemocirculation, microvessels diameter, blood flow linear speed, adrenoreactive structures dysfunction. The severity of the changes correlates with compression and especially with decompression period duration and is directly related to **α-** and **β**-receptors dysfunction. Tab. 4, Ref. 8.

Auth.

b17.3.2.45. Peacetime gunshot maxillofacial injuries. /Z. Gvenetadze, G. Lagvilava, G. Gvenetadze, G. Toradze, I. Devidze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 24-26. – geo.; abs.: geo., eng.

For the past years, peacetime gunshot injuries became topical for maxillofacial surgeons. Seven patients (all were males) with isolated gunshot injuries were under observation of the authors. According to the types of guns, two cases were with pistol, five with hunting guns (16 caliber), respectively. According to the injury structure, four cases belonged to suicide attempts (three – hunting guns, one pistol) and three to negligent handling of firearms (two hunting guns, one pistol). Patient hospitalization time was 2-16 hours after the accident occurred (four patients were transferred from the region). Degree and character of gunshot injuries depended on the type of weapon and gunshot distances. The wounds were contact-penetrating, directed from under the chin area and traveled upward. All injuries belonged to the category of heavy traumas, but wounds due to suicide attempts using 16-caliber hunting gun, were considered as especially heavy (three cases) - extensive injury of soft and hard tissues with tissue defects, chin, nose, upper jaws were torn off. Basic principle of surgical treatment of gunshot wounds was - one moment primary surgical treatment of wounds with fixation of bone fragments and application of plastic surgery methods to regenerate tissue defects. According to the authors' data, regarding wide scope of maxillofacial gunshot injuries, specific approach to the diagnostics and treatment is needed. Late and incomplete primary surgical treatment leads to the development of sustainable and difficult to repair scar deformities, for elimination of which complex, multi-step surgical interventions are needed, results of which are not always satisfactory. Fig. 3, Ref. 5.

Auth.

b17.3.2.46. Neurodevelopmental disorders of children prenatally exposed to antiepileptic drugs. /N. Gogatishvili, T. Ediberidze, M. Metreveli, N. Khachapuridze, S. Kasradze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 28-30. – geo.; abs.: geo., eng.

Treatment decisions for women with epilepsy are difficult due to conflicting risks. Although the majority of children born to women with epilepsy are normal, these women are at increased risk for complications during pregnancy, and their children are at increased risk for poor outcomes. Risks include prematurity, low birth weight, increased fetal and neonatal death rates, congenital malformations, and developmental delay. From the current literature, the most salient point

regarding a specific AED is that fetal valproate exposure poses a special risk for cognitive development in the child, and that this effect is dose dependent. Valproate also carries the risk of anatomical teratogenesis in addition to the behavioral/cognitive risks. Carbamazepine and lamotrigine appear to have low risk based on current studies. Due to inconsistent or absent data, the risks for other AEDs are uncertain. It appears that polytherapy exposure poses a risk for cognitive development based on limited studies. Present guidelines are constructed to minimize risk to the fetus and the mother while obtaining the maximal benefit of seizure control. This includes optimizing epilepsy treatment prior to conception, choosing the most effective AED to control se zures, using monotherapy and the lowest effective dose if possible, and supplementing with folate. The guidelines also recommend avoiding valproate when possible. Sudden cessation or lowering of AEDs should not be done by a WWE without consultation with her physician. Ref. 11.

Auth.

b17.3.2.47. Free radical oxidation at parodontitis. /N. Gogebashvili, M. Iverieli, Kh. Gogishvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 30-32. – geo.; abs.: geo., eng.

Reactive compounds of nitrogen, oxygen and lipids in saliva, blood and gingival tissue of patients suffering from moderate form of parodontitis was studied by means of the electronic paramagnetic resonance (EPR) method and spintraps (DETS, DMPO, PBH – Sigma). In patients with parodontitis content of free NO in saliva and blood increases, while in gingival tissue – decreases. In saliva, blood and gingival tissue of patients intense EPR signals of superoxidracals (O_2) and lipoperoxides (LOO) has been revealed indication intensification of processes of blood of patient is determined by high-expression of inducible NO-synthase triggered by oxidative stress, and increased activity of neuronal NO-synthase in saliva as a result of high concentrations of metacholine and P-substance intensely secreted at parodontitis. Decreased content of free NO in gingival tissue of patients with parodontitis compared to control is the result of biological degradation of nitric oxide (conversion of NO into peroxinitrite on the background of intense oxidative stress in oral cavity) and nitrosylation of mitochondrial electron transport of gingival tissue (characteristic for parodontitis) with further decrease in content of free oxide, suppression of intensity of mitochondrial respiration, energogenesis, development of ischemia in oral tissue leading to further initiation of destructive processes and progression of parodontitis. Ref. 8.

Auth.

b17.3.2.48. The use of lazolex during complex treatment of chronic recurrent apthous stomatitis. /M. Gogotishvili, N. Abashidze, Kh. Gogishvili, N. Gogebashvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 32-34. – geo.; abs.: geo., eng.

The aim of our research was to study efficiency of applying the new national gel Lazolex (5%) during the treatment of chronic recurrent apthous stomatitis. To achieve this aim we examined and treated 50 patients with age range 14-60 years. The patients were devided into two groups. One group included 20 patients (40±0,77%) - control group and the second one - 30 patients (60±0,63%) - the main group. We used the same treatment in both groups, but in the main group during the local treatment we applied the gel Lazolex (5%) and in the control group we used vitamin A, vitamin E and briar oil. Studies of our examination showed that in the control group the aphtes during phibrinal form started epithelization in 7-14 days - remission was 3-4 month. Aphtes during necrotic forms started epithelization in 10-21 days - remission was 2-4 month. Aphtes during glandular forms started epithelization in 14-20 days - remission was 1-2 month. After applying Lazolex epithelization started in 3-6 days during phibrinal form - remission was 6-9 month, in 7-14 days during necrotic form - remission was 4-6-7 month, in 9-14 days during glandular forms - remission was 3-5 month. Thus, it is recommended to apply Lazolex during the treatment of chronic recurrent apthous stomatitis. “Lazolex” is national, cheap, herbal gel that reduces epithelization period and increases the remission period. It has no side effects. Tab. 3, Ref. 13.

Auth.

b17.3.2.49. Analysis of Georgian pharmaceutical market concerning dental medicinal preparations. /N. Gorgaslidze, M. Getia/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 37-39. – geo.; abs.: geo., eng.

During the last decade, Georgian pharmaceutical market expanded and nowadays, commodity nomenclature of Georgian pharmaceutical market increases rapidly. In present study, we aimed to analyze Georgian pharmaceutical market of medical preparations, which are used in dental practice. According to the Drug Registry published by the State Regulation Agency for Medical Activities of Ministry of Labour, Health and Social Affairs of Georgia 11150 pharmaceutical products are registered in 2015. Among them more than 202 preparations are used in dental practice. In Georgian pharmaceutical market leading position has LTD Aversi (Georgia) and foreign companies - Ultradent Products, Inc, (USA) JSC "Vladmiva" Experimental Plant 14 (Russia), Medicinos Linija UAB (Lithuania). Determination of optimal nomenclature of dental preparations is important for the pharmaceutical companies and defines their optimal economic efficiency. Fig. 1, Ref. 5.

Auth.

b17.3.2.50. Chronic recurrent aphthous stomatitis-latest data on the forms, distribution and frequency of the disease. /M. Iverieli, T. Janjalashvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 67-69. – geo.; abs.: geo., eng.

Chronic, recurrent, aphthous stomatitis of oral cavity mucosa (K 12.00) is one of the most widespread autoimmune- allergic diseases. While its pathophysiology is not fully studied, in our patients its autoimmune and allergic etiology was apparent. Its provoking factors may include: trauma, stress, overfatigue, viral infections, premenstrual syndrome. The disease is closely linked to the reduction of Fe and B-12 vitamin, ulcerative colitis and Behcet syndrome. Chronic, recurrent, aphthous stomatitis is clinically revealed in four stages: pre-monitoring, pre-ulcerous, ulcerous and curing; in three forms: aphthae minor, apthae major and herpetic apthae. With respect of morphological types, forms of chronic recurrent aphthous stomatitis include: fibrous, necrotic, glandular, cicatricial and deforming forms. This work presents latest data of disease type, name, spreading and the frequency of this form of the disease. Drug allergy is one of the leading cause of chronic recurrent aphthous stomatitis. Special sensitivity and side effect like stomititis is revealed while using sedative, hematogenic and gastroenterologic drugs. Ref. 18.

Auth.

b17.3.2.51. Modified version of adhesive bridge, clinical case report. /N. Korsantia, M. Mamaladze, N. Khukhunaishvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 73-75. – geo.; abs.: geo., eng.

Restoration of primary and secondary partial adentia with adhesive bridges (Maryland bridges) is an achievement of Practical Odontology. This scientific article covers correction of aesthetic and functional discomfort caused by one tooth loss, using a splint. Despite the authors rich clinical experience in modeling of composite adhesive bridges (227 patients and 253 modeling teeth), it is not common in practice to use man's own tooth in restoration of partial adentia. The article describes a clinical case of a patient, who lost tooth due to localized periodontitis. The 2.1 tooth restoration was made not with composite crown attached to adhesive splint (INTERLIG, Angelus), but with own extracted 2.1 tooth. The clinical result was satisfactory. Maximum harmony was gained between modeling adhesive bridge, smile line and occlusion. Tab. 1, Fig. 1, Ref. 4.

Auth.

b17.3.2.52. Use of titanium platesand net during the acute craniofacial injuries for the surgical treatment of faceupper and middle zone injuries. /G. Lagvilava, Z. Gvenetadze, G. Gvenetadze, G. Toradze, I. Devidze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 78-80. – geo.; abs.: geo., eng.

The article refers to timely and effective treatment of one of the most important issues of facial bones fractures in the 24 progress of craniofacial combined injuries. 67 patients with craniofacial trauma underwent reconstructive operations on facial bones under the supervision of the authors of the article, in close contact with resuscitation specialists and neurosurgeons from for a week a few hours after receiving a trauma (depending on the severity of the brain damage). The approach to the facial bone fractured fragments was done in an open manner (coronary section, eye socket edges, nose base, intraoral areas), which allowed for free manipulation in the damage zone and the visual control. All fractured fragments were maximally maintained and fixed by titanium micro plates and bolts. In case of lamellar bone defect (frontal sinus front wall, eye socket walls, maxillary

cavity wall) they were recovered by net. Early reconstructive surgery on the face did not result in any worsening of progress of brain injury in any patient. No increase of general brain or focal symptoms has been observed. Usage of titanium plates and net for fixation of facial bones fractured fragments provides proper functional and cosmetic effects, minimizing the development of post-trauma deformation. Fig. 7, Ref. 7.

Auth.

b17.3.2.53. Study of the etiological structure of pyoderma using modern technological research. /E. Mirvelashvili, L. Baramidze, E. Kikacheishvili, I. Dgebuadze, N. Kvizhinadze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 89-91. – geo.; abs.: geo., eng.

The aim of the study was investigation of microecology of purulent, inflammatory diseases of the skin, skin adnexa and subdermal soft tissue and detection of their sensitivity-resistance against antimicrobial drugs using the API and ATB systems in 2013-2015 years during 6-6 month period. The research material was purulent discharge obtained from pyodermal area. The study of the etiological structure of pyodermitis using international microbiological methods revealed that in 2013-2015 years from 97 cases in 11 cases (11.4%) there was no microbial growth**.** As for the causative agent, in 50% of cases the main agents were staphylococci (S.aureus, S.epidermidis). Tab. 1, Ref. 6.

Auth.

b17.3.2.54. Rehabilitation of oral cavity defects in orthopedic stomatology (prosthodontics) under the conditions of diabetes mellitus. /S. Mghebrishvili, A. Svanishvili, G. Nakashidze, N. Kipiani, I. Barbakadze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 91-93. – geo.; abs.: geo., eng.

In case of patients with diabetes mellitus for the purpose of stomatological rehabilitation doctor has to apply following policy of treatment – she/he has to define the type of patient's diabetes mellitus and the degree of compensation together with the endocrinologist. The doctor has to explain in details to the patient that it is essential to scrupulously follow the recommendations of endocrinologist and what kind of complications will they face in case of not following them. For patients who suffer from compensated diabetes mellitus for a long time (1 year and more), it is recommended to conduct complete orthopedic treatment. In cases of subcompensated and decompensated forms it is advisable to conduct preventive treatments. Namely, occupational hygiene of oral cavity, antibacterial and anti-inflammatory therapy, eradication of traumatical occlusion, temporary prosthetics and splintage. Above mentioned manipulations should be carried out at the same time before moving to compensated stage of diabetes mellitus (that may last for 1-1,5 years), at the next stage it will already be possible to produce full value orthopedic structures. It must be noted that the patients who require treatment of parodontitis on the background of subcompensated diabetes mellitus, it is advisable to have produced partial mobile structures with splinting function or to provide temporary splinting with glass fiber threads produced by "Ribbond" or "Fiber-Splint" advantageous with their exploitation possibility for quite a long time. Great importance is attributed to the materials selected during the production of structures, as their quality, inertness and features of good polishing stipulate avoidance of relapses. Poorly polished work often stipulates generation of new colonies of microorganisms that itself causes exacerbation of parodontitis. Also it is advisable for basic material to use such inert material as titanium. Ref. 7.

Auth.

b17.3.2.55. Pancreatic metaplasia of gastric mucosa associated with acute erosive gastritis. /M. Rusidze, I. Tavzarashvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 99-102. – geo.; abs.: geo., eng.

We describe the case of a female patient aged 75, whose biopsy material was received in the Department of Pathology of Tbilisi State Medical University, with diagnose of acute erosive gastritis, defined by endoscopic examination. For the histopathology study we harvested gastric wall fragments (cardial area) from the lesion site. In the histopathology exam of the gastric wall at erosion area in the mucosal chorion (Lamina propria) we found numerous round or oval shaped nested formations, with diameters between 150 and 350 microns, which were separated by variable amounts of lax conjunctive tissue with rare vascular vessels, conjunctive fibers and cells. The acinar formations were formed by pyramid or pyramid body shaped cells with slight basophilic

cytoplasm, fine granules, with round basophilic nuclei frequently found in the basal region, with distinct nucleoli and eosinophilic cytoplasm. Cells were delimited by a thin basal membrane which continued with the basal membrane of the gastric glands. Acinar cells have delimited a small round or star shaped lumen at their apical pole. We also found hypertrophic mucosa with a rich chronic inflammatory infiltrate containing lymphocyte and plasmocyte cells in the chorion (lamina propria) and local fibrosis. Thus, the diagnose was Pancreatic acinar cell metaplasia related with acute erosive gastritis. The objective of description of this rare morphologic diagnose is Pancreatic metaplasia of gastric mucosa that can be localized at a cardiac level and can be associated with gastric erosion. From clinical point of view, differential diagnosis of this pathology to ectopic pancreas is important for purpose of definition of its oncologic potential and methods of further treatment. Tab. 1, Fig. 3, Ref. 11.

Auth.

b17.3.2.56. Association between children's behavioral problems and hair microelements. /T. Tabatadze, M. Kherkheulidze, I. Chkhaidze, T. Ivanashvili, E. Kandelaki/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 106-109. – eng.; abs.: geo., eng.

Aim: the aim of our study was to assess hair elemental status (27 elements, among them trace and toxic elements) in children with behavioral problems, determine micro-elemental misbalances and heavy metal concentrations and its impact on child behavior and development. Material and Methods: we studied from 4 to 5 years old 95 children. The target group involved 45 children with behavioral problems, among them children with conduct disorder symptoms and with hyperkinetic syndrome. For control were assessed 50 children of same age with normal behavioral and physical development. Child micro-elemental status was detected in the hair, with roentgen-fluorescence spectrometer method.The study was statistically analyzed using computer program SPSS 19. Results: study results clearly indicated deficiency of essential trace elements, especially zinc, cobalt and iron and high levels of lead and mercury and toxic concentration of bromine in children with behavioral problems. Lead invasion patterns were clearly seen in both (control and target) groups. Tab. 1, Fig. 2, Ref. 20.

Auth.

b17.3.2.57. Cholangiosemiotics of tumours of malignant genesis complicated with obstructive jaundice. /O. Urushadze, A. Mtvaradze, G. Nemsadze, I. Tortladze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 110-113. – geo.; abs.: geo., eng.

X-ray investigation has one of the most important places in biliary ducts diagnostics. Cholangiogram enables to evaluate the extension of neoplastic process into the surrounding anatomical structures. At the same time we can get rid of traumatic and complicated stages of the surgery. The subject of the research is the assessment of X-ray symptoms of tumors of malignant genesis complicated by obstructive jaundice. The patients were investigated at *Tbilisi State Medical University* the First *University Clinic* TSMU and Ltd N. Kipshidze Central University Clinic of Tbilisi State medical University The causes of the jaundice of malignant genesis were the following pathologies: Major duodenal papilla cancer (18%), common bile duct cancer (15%), pancreas cancer (15), porta hepatis cancer (19%), metastatic injury of lymph nodes of porta hepatis (11%). In order to assess and classify X-ray symptoms of hepato-pancreato-duodenal area cancers complicated by obstructive jaundice the following signs were identified: stump shape, stump contours, bile duct block character, stump extension in mm, "malignant" canal extension in mm, the length of intact part of bile duct in mm, cancer extension into intrahepatic duct. The real picture of hepato-pancreatoduodenal area cancers complicated by obstructive jaundice could be received on fistulocholangiograms performed in 7-10 days whilst two-projection and serial cholangiography do not bear any supplementary information. Fig. 5, Ref. 12.

Auth.

b17.3.2.58. Multislice spiral computed tomography as a key method for revealing and adequate treatment of traumatic injuries of pelvic bones and organs. /O. Urushadze, A. Mtvaradze, G. Nemsadze, N. Liparteliani/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 113-120. – geo.; abs.: geo., eng.

Multislice Spiral Computed Tomography (MDCT) is an achievement of recent advanced medical technologies. It is featured with the fast scanning, high definition image and 3D reconstruction

abilities, which provides oportunity for spatial analysis of pathologic process. In modern clinics MDCT is performed more readily in the early diagnosis of high grade polytrauma patients with pelvic bone and organ injuries. In the hemodynamically stable patients MDCT is a method of choice. There are some contraindications for performing MDCT, such as progressive pregnancy, hemodynamic instability. When angiography is performed, allergy to the iodinated substances and acute renal failure could limit the study. This monograph is based on the study results analysis of 100 patient. From these 100 patients 26% were female and 74% male. Mean age of observed patients was 48 years. Our own trauma diagnostic protocol was used. All different scanners used in this study showed equal efficiency and informativity overall. Substantial difference was found in the study performing times, namelythe same volume of performed study took 13-15-times more time on two-slice CT-s than on 16-and 64-slice scanners. Studies performed under I.V. bolus contrast agent injection delivered substantial information for traumatic injuries of vessels. On the late phases information about renal excretory function, urether and bladder ruptures had been received, which could be also defferentiated by retrograde contrast injection via bladder catheter. Image analysis were based on axial, 3D and multiplanar reconstructions. All images were viewed on Standart and Bone Plus regimens. Soft tissues and bone structures were evaluated as well. All received findings were sorted using 4 score system.1. nondiagnostic; 2. equivocal positive; 3. good; 4. best possible. 1- Nondiagnostic – image quality is not suitable for anatomical structure differentiation. 2 - Equivocal positive – image quality is very low. Multiple breathing, motion, bone and metal artefacts are present, highly dependent on radiologist's subjective opinion. 3 - Good – partly not sharp and minimal amount of artefacts. 4 - Best possible –images are thought to be 100% sharp, all anatomical structures are fully visible, no artefacts are seen. All performed 100 cases were given following scores: 1-0, 2-3, 3-14, 4-83. Fracture lines were clearly seen on all of our tomograms. The highest amount of information had been received using 0,6 mm slice reconstructions with special bone window filters. These reconstructed images were superior for more bone structures sharpness and precise bone cortex differentiation. Using MIP and MPR reconstructions on coronal, sagittal, axial and oblique images precise distance measurements between remote segments was possible. Using 3D reconstructions was most important for spatial analysis of fractured bones, especially during complex fragmented fractures. It gave ability for precise evaluation of fractured fragment disposition – their relation with other fragments and healthy bone portions. MDCT showed high diagnostic abilities in revealing pelvic soft tissue injuries and analysis of extraperitoneal (retroperitoneal) hematoma. In all cases of pathologic process, we received adequate information. MDCT is crucial for revealing pelvic main vessel injuries, which could be an indication for endovascular or general surgery. Analyzing both our studies and clinical data, MDCT in pelvic bone injuries showed 97.8% sensitivity, 95.7% specificity and 96.2% accuracy. For soft tissue injuries MDCT and MDCT with angiography showed 96% sensitivity, 95.7% specificity and 96.4% accuracy. According to the foresaid, it could be mentioned that MDCT gives very important diagnostic information for pelvic organ, bone and soft tissue injuries and plays substantial role in planning of adequate treatment of injured patients. Fig. 9, Ref. 9.

Auth.

b17.3.2.59. Aging and viability of red blood cells. /N. Pruidze, R. Khetsuriani, A. Shukakidze, N. Mamardashvili, T Sanikidze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 120-122. – geo.; abs.: geo., eng.

The purpose of the study was the determination of the viability (tolerance) of red blood cells in different age groups.The blood from volunteers of different age was stored at -17°C during various periods of time (1 day, 20, 40 and 60 days). As the result of the study it was found that red blood cells of young volunteers are much more resistant (tolerant) compared to the red blood cells of elderly volunteers. Red blood cells of older volunteers after longterm storage suffer hemolysis, which is manifested by reducing of their number and can be related to the human agedependent alterations of the red blood cell membrane protein composition. Fig. 2, Ref. 9.

Auth.

b17.3.2.60. Perspective of phototherapy of dermatoses by means of UVB-311 nm. /N. Tsiskarishvili, A. Katsitadze, Nana Tsiskarishvili, Ts.Tsiskarishvili, L. Chitanava/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 141-143. – geo.; abs.: geo., eng.

The paper presents the modern data concerning the spectrum of electromagnetic radiation and its impact on the structure and function of the skin at various dermatoses. The possibilities of non-drug treatment of dermatoses using different UV spectrum are described. Particular attention is paid to the study of the most effective and safe method for treatment by means of narrow-wave phototherapy with a maximum emission at a wavelength of 311 nm (UVB-311). The results of the comparative analysis of efficacy and safety of PUVA photochemotherapy and phototherapy UVB-311, on examples of some specific nosologic units (psoriasis, parapsoriasis, vitiligo, mycosis fungoides, photodermatosis, atopic dermatitis) are presented. Based on analysed data, authors conclude that UVB-311 nm is an effective, well-tolerated, safe and alternative method for treatment of chronic dermatoses. The brief review of the available in literature data, allow authors to make conclusion about the possibility of widespread implementation of phototherapy method in practical dermatology. Tab. 1, Ref. 21.

Auth.

b17.3.2.61. Specific characteristics of electron paramagnetic resonance spectrum of different colors of hair. /N.Tskhvediani, A.Tsibadze, E. Chikvaidze, I. Kvachadze, L. Khutsishvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 144-145. – geo.; abs.: geo., eng.

In the result of interaction of the metabolic processes of the human organism and external factors free radicals are formed in tissues including hair. An objective assessment of an intensity of this process is possible by means of electronic paramagnetic resonance's (EPR) signal and its intensity indices. The purpose of the survey was a comparative evaluation of the EPR spectrum's specificity of black and brown hair and a study of a photo dynamic in the condition of a treating with blue light. The survey was conducted among young volunteers of age 17-21 on the base of their informed consent and with adherence of all bioethical requirements established for this type of research. No single person's hair involved in the survey was treated with chemical dye or active, specific remedy for hair care. This article analyzes data of young men donors. All measurements were carried out at standard conditions: room temperature (22-24^{0}C), humidity - 60-70%, the measurement error - ±5%. EPR spectrum was determined at the Department of Biophysics,TSU by means of a radio-spectrometer TSR-V. Study results have determined a uniform EPR spectrum and no difference in the intensity of the photoinduced EPR spectrum that indicates the equal concentrations of eumelanin in black and brown hair. Tab. 1, Fig. 1, Ref. 6.

Auth.

b17.3.2.62. Laboratory evaluation of the effectiveness of treatment with the Vector system. /T. Janjalashvili, M. Iverieli/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 150-153. – geo.; abs.: geo., eng.

Introduction of new methods of diagnosis and treatment of periodontal complex diseases in practice represents priority issues for modern dentistry. Diagnosis of the disease is based on clinical and laboratory findings. The active growth of bacteria in plaque and the appearance of increased virulence of periodontal pathogens is an important factor in the development of Periodontitis. Periodontal complex disease treatment depends on the type and progress of diseases, it is necessary to eliminate pathogens and carry out symptomatic treatment, which has been successfully achieved by conservative treatment with Vector system. Periodontal therapy by means of Vector device directly affects an environment of the tooth. It allows removing sub gingival dental plaque destroying pathogenic microorganisms and their toxins, washing out periodontal pockets carefully and polishing teeth roots. During treatment the hard tissues as well as gum are not injured. Periodontal therapy with the ultrasonic device leads to clinical improvements. It was found that Vector treatment was effective in the treatment of patients suffering from periodontitis. Fig. 7, Ref. 21.

Auth.

b17.3.2.63. The changes in clones of antigenereactive immune lymphocytes to different microorganisms during parodontitis. /L. Jashi, N. Abashidze, N. Gogebashvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 153-155. – geo.; abs.: geo., eng.

The activation of clones of immune lymphocytes to streptococci takes place at parodontitis. The number of noted lymphocytes significantly increases in the blood of patients with parodontitis as compared to healthy persons having intact parodontium (12.7±0.3 versus 3.87±0.32, P<0.001). At

various forms of parodontitis the growth of antigenreactive lymphocytes is expressed with different degrees. Particularly sharp increase is observed during severe forms of parodontitis as compared to average and light forms (the number of antigenereactive lymphocytes to streptococci in the blood respectively made up 16.9±0.59, 12.8±0.23, 9.5±0.27, P<0.001). As to immune lymphocytes to staphylococci and actinomycete, their activation was not revealed at parodontitis. The quantitative indices of the noted clones of lymphocytes in the blood did not essentially differ from analogical indices of healthy individuals (an average amount of immune lymphocytes to staphylococci and fungi made up 4.3±0.26 and 3.84±0.29, P<0.05 as compared to healthy individuals). Thus, the increase of number of lymphocytes having receptors to streptococci in the blood has been first established at parodontitis and its intensity was in direct correlation to the degree of the generalization of the process. Proceeding from the aforesaid, it is possible to think that the leukocytes accumulated as a result of chemotaxis in response to microbial aggression in the inflammatory focus, developed in the tissues of parodontium, especially neutrophils and macrophages induce the disorganization of streptococci and their antigens, including the release of antigens common to the tissues of the organism, followed by the development of reciprocal protective and destructive immune processes. Ref. 9.

Auth.

b17.3.2.64. Primary cough headache: case description and literature review./G.Gegelashvili/. Georgian Respiratory Journal. – 2016. – v. 12. #2. pp. 88-91. – geo.
Headache associated with coughing is a rare syndrome; it has been first described in medical literature in 1932 by Tinel. The article gives the disease study history, diagnostic conditions, epidemiology, pathophysiology, treatment. According to the International Classification of Diseases (ICD), since 2005 it has been known as *primary cough headache*. Exemplified is the case of a Georgian woman with the diagnosis of *primary cough headache.* Fig. 1, Tab. 1, Ref. 13.

/N. Chkhaidze/

b17.3.2.65. Pulmonary hypertension /T. Maglakelidze, N. Goginashvili, E. Khurtsidze/. Georgian Respiratory Journal. – 2016. – v. 12. #2. pp. 104-107. – geo.
Pulmonary hypertension is a type of high blood pressure that affects the arteries in your lungs and the right side of your heart. Although some forms of pulmonary hypertension are not curable, treatment can help lessen symptoms and improve your quality of life. The article deals with the disease symptoms and the disease establishment causes. According to causes, pulmonary hypertension (PH) is classified into 5 groups: PH; Pulmonary Arterial Hypertension (PAH); PH due to left heart diseases; PH due to lung diseases; Chronic thromboembolic PH (CTEPH); PH with unclear multifactorial mechanisms. The congenital heart disease (CHD),the so-called Eisermenger Syndrome causes PH. The article deals with the PH development risks, complications, diagnosis, methods of determining the disease severity and treatment. Fig. 1.

/N. Chkhaidze/.

b17.3.2.66. Chest pain from respiratory diseases. /T. Maglakelidze, N. Goginashvili, K. Vacharadze, I. Chkhaidze, E. Khurtsidze/. Georgian Respiratory Journal. – 2016. – v. 12, #2, pp. 116-124. – geo.
Chest pain from respiratory diseases is common. The nature and underlying pathophysiology of respiratory chain pain are poorly understood and studies of its qualification, clinical course, and management are limited. Respiratory chest pain most commonly arises from parietal pleura, chest wall and mediastinal structures. This article highlights the origin of respiratory chest pain and frequent causes, clinical aspects, management principles. It is noted that the issue of optimal treatment adequate of respiratory chest pain generally remains unclear and requires the conduct of focused studies. Fig. 1, Ref. 3.

/N. Chkhaidze/.

b3.3. Health science

b17.3.3.1. The importance of public-private partnership for enhancement of healthcare accessibility. /E. Motsonelidze, R. Kutateladze/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 23-29. – geo.; abs.: geo., eng., rus.
The issues and problems related to the enhancement of healthcare accessibility level are discussed and characterized in this work, on the basis of which organizational economic system of healthcare and public-private partnership will be developed. The authors propose ideas for the development of public-private partnership in healthcare system. The timely processing of these ideas will ensure better levels of healthcare accessibility and higher quality of government health-care policy. Ref. 6.

Auth.

b17.3.3.2. Pre-hospital emergency medical services for elderly population in Tbilisi. /S. Dalakishvili, N. Bakuradze, M. Gugunishvili, R. Jojua, M. Eremashvili/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 85-89. – eng.; abs.: eng., rus., geo.
The importance of the issue is determined by the current demographic situation in Georgia and the world in general. The trend of growing the number of older people and the increase of the life span is obvious. At the same time in the number of countries, particularly in the developed western countries and Japan, the decrease of birth rate is noticed. Similar processes are taking place in Georgia; this logically increases the number of sick and weakened people, which means that taking care of them becomes more acute problem. Therefore, the purpose of this paper was the study of the situation of the pre-hospital emergency medical services in the Georgian capital Tbilisi during the period of 2012-2014. For this reason, the data provided by the Tbilisi Emergency Medical Service were used. Besides, we have also looked for the statistics of the different countries, including the US, Japan and South-East Asian countries. Attention was paid to the recommendations proposed because of the Monitoring of the European Union Mission in Georgia, which focuses on the social and economic protection of elderly. The tables and diagrams, describing the current conditions are provided. Since 2012, there has been launched the state health care program for the elderly in Georgia, but based on research conducted, it does not cover home care services while, the majority of the elderly are chronically sick people and suffer from the number of diseases. Results of the study can be used for improving quality of the Emergency Medical Service model in Georgia and finding the possible ways for its reforms. Fig. 4, Ref. 11.

Auth.

b17.3.3.3. Predictors of post-traumatic stress disorder in military personnel deployed to peacekeeping missions. /G. Sikharulidze, T. Oniani, N. Gugushvili/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 89-94. – eng.; abs.: eng., rus., geo.
As the empirical evidence suggests PTSD, depression and anxiety represent prevalent and severe problem in armed forces. High co morbidity of these disorders with each other further complicates clinical picture. Georgian military personnel regularly take part in different peacekeeping missions, however there is no existing data regarding associations of mental health problems in Georgian armed forces. Data was collected between 2014 and 2015, after 6 month deployment. Participants were 2810 Georgian military personnel who took part in peacekeeping missions. All participants were male, average age: M=31,2 (SD=6,3). All instruments used in the study were self-report scales. PTSD was measured by PCL-5; Depression and anxiety was measured by PHQ (Patient Health Questionnaire). Both variables **-** Severity of Anxiety symptoms and severity of depression symptoms independently predicted PTSD, but after being placed together in the same regression model, only depression symptom severity accounted for significant portion of variance. Due to the fact that the participants of our study (n=69) were young (*M=29,68 ; SD*=5,8) male personnel, our findings cannot be generalized. Also it should be considered, that for PTSD screening we used self-report questionnaires, which reduces liability of participants' answers and increases the tendency of self-biased responses. It is advisable for clinical practitioners and therapists to consider depression symptoms in patients with PTSD and screen for depression additionally, in order to exclude or include co morbidity factors in treatment course. Tab. 1, Ref. 38.

Auth.

b17.3.3.4. Vegetative regulatory mechanisms in different geomagnetic conditions depending on a degree of physical conditioning. /I. Kvachadze, A. Tsibadze, G. Sanadiradze,

D. Mzhavanadze, G. Chichinadze/. Georgian Medical News (GMN). – 2016. – #4(253). – pp. 104-110. - rus.; abs.: eng., rus., geo.

The aim of the study was to evaluate the vegetative regulatory action in healthy, untrained and trained individuals in different geomagnetic conditions. The study involved 94 healthy untrained young men aged 18-22 years - I group (control), and 60 trained volunteers aged 18-25 years - II group, who during the period of the study and for at least three years prior have been following active regular physical exercise regimen(weight lifting), but were not professional athletes. In order to evaluate the heart rate variability the following statistical indicators were studied: arithmetic mean, the arithmetic mean of the error variance, dispersion, the arithmetic mean deviation, coefficient of skewness, kurtosis, standard deviation of the mean. Geometric analysis was performed using a variation pulsometry. All the individuals were studied in natural/tranquil conditions, during naturally occuring or a simulated geomagnetic storm, which provided the use of the characteristics of vegetative balance as a marker for differential assessment of the impact of electromagnetic field (EMF). The forecast of natural geomagnetic conditions had been made at least three days before the study. Under the conditions of simulated geomagnetic storm the test subjects were placed in a solenoid with non-magnetic equipment. EMF inductance in the solenoid corresponded to the geomagnetic storm frequencies. The study had a nature of social experiment and was carried out by a single blind method: tested subjects were unaware of geomagnetic conditions during the study. This was an open, three-step, cohort, prospective study with parallel character. The results showed that under the uniform qualitative conditions (balanced, in particular) of initial state of vegetative equilibrium, the level of fitness of the human body determines the differentiated response to EMF exposure. Thus, with the possible inclusion of the EMF in the complex of therapeutic or preventive measures, it is necessary to predict homeostatic resources and body's reactivity to EMF exposure. Tab. 2, Fig. 1, Ref. 22.

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b17.3.3.5. Assesement of the severity of immunodeficiency in patients of Asian ethnicity with hiv/hcv co-infection. /R. Begaidarova, L. Asenova, G. Alshynbekova, Kh. Devdariani, A. Dyusembaeva, Y. Starikov, O. Zolotareva/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 53-56. – eng.; abs.: eng., rus., geo.

The aim of the study was to determine the HIV RNA viral load and CD4+ cell count to assess the severity of immune deficiency in patients of Asian ethnicity with HIV/HCV co-infection by different HCV genotypes. 181 HIV-infected patients of Asian ethnicity were studied from several regions of Kazakhstan, predominantly from Karaganda region, including prisons. The diagnosis of HIV infection was confirmed by immunoblotting after a positive ELISA screening test. The patient data for analysis were extracted from the patients' medical charts. Analysis of peripheral blood and urine, blood biochemistry tests were performed for each patient. The flow cytometry was used to determine the CD3, CD4 and CD8 lymphocytes in the whole blood. Detection and quantification of HCV RNA in clinical samples of serum or plasma was performed by reverse transcription of viral RNA followed by amplification using DNA real-time polymerase chain reaction (RT-qPCR) with hybridization-fluorescence detection of PCR products in real-time. Statistical analysis was performed using STATISTICA software package. Student's t test was used to evaluate the differences between the means. HCV antibodies were detected in 73 patients out of 181. HCV genotyping showed presence of first genotype in 18 (24.7%), genotype 2 in 19 (26.0%) and genotype 3 in 36 (49.3%) patients. The third genotype was the most prevalent according to our study. More severe immunosuppression was observed in patients with HCV genotypes 1 and 3 in comparison with those with HCV genotype 2. HCV infection is a negative risk-factor in the course of HIV infection, accelerating the decrease of CD4+ cells. The greatest risk of progression of HIV infection to AIDS occurs in the presence of HCV genotype 1 and 3 which can be explained by more aggressive course of the disease and a poorer prognosis in comparison with the infection with genotype 2. Tab. 2, Ref. 11.

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b17.3.3.6. Dynamics of opioid substitution treatmentin different initial substance user opioid dependent patients. /Kh. Todadze, S. Mosia/. Georgian Medical News (GMN). – 2016. – #5 (254). – pp. 56-61. – eng.; abs.: eng., rus., geo.

Injecting drug user size estimation studies carried out in 2009, 2012 and 2015 revealed growing trends of drug abuse in Georgia: estimated number of people who inject drugs (PWID) have been increased from 40000 and 45000 to 50000. Since Soviet period the most popular injective narcotics have been opioids: home-made opium, heroine, buprenorphine and home-made desomorphine ("Krokodile") replacing each other on the black market. Self-made desomorphine typically contains big amounts of different toxic substances and causes significant somatic disorders, especially skin, bone, blood infections, liver and kidney failure; is highly addictive, associates with frequent injections that enhance injecting-related harm, including the risk of HIV transmission, in comparison with typical opioids. The aim of the study was to determine the effectiveness of opioid substitution treatment (OST) on depression and anxiety in opioid dependent clients with history of different opioid substance use. 104 opioid drug users undergoing OST with intensive psychological counseling have been divided in 5 groups according to the principal opioid drug that was abused during past 6 months before starting treatment: heroine, desomorphine, illicit methadone injectors, illicit buprenorphine injectors, and multiple drug abusers consuming opioids as primary drugs. Level of depression (Beck Depression Inventory), anxiety (Spielberger Anxiety Inventory) as well as clinical symptoms, risky behavior, quality of life (WHO), and other data were measured before starting and after 3, 9, 15, 21 months of treatment. The illegal use of psychotropic-narcotics was checked through random urine-testing 1-2 times per patient per month. In all five groups remarkable decrease of depression and anxiety was observed in comparison with the starting data. Before inclusion desomorphine and poly-drug users had the highest scores of depression and anxiety while buprenorphine users manifested the lowest rate. Improvement of figures was observed in all groups in three month period that have been continuing during 21 month of treatment process. Study revealed normalization of scores forbothstatesin groups of heroine, desomorphine, methadone and buprenorphine users. The highest scores of depression and anxiety were observed in the group of poly-drug abusers andwhile depression rate hesitated in the range of clear "no-depression", anxiety index still remained close to the clinical important threshold after 21 month of treatment. Urine-testingon psychotropic-narcotic substances indicated remarkable decrease of illegal drug abuse in all studied groups in three month and although abuse of benzodiazepine drugs was highest in desomorphine and poly-drug abusers, the difference between groups was not statistically significant. Although some disparities have been observed in dynamics of subjects with different spectrum of initial opioid substance use, including homemade desomorphine, there is no significant difference between groups and OST effectively supports to improve depression and anxiety indices, and dramatically decreases use of illegal psychotropic-narcotic drugs during treatment. However poly-drug users seems to be the most resistant to achieve stabilization and require more treatment time and targeted interventions. Fig. 4, Ref. 8.

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b17.3.3.7. Complex evaluation of the health status of primary-school aged children (Adjara region). /Ts. Zhorzholiani, L. Zhorzholiani, N. Adamia/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 51-56. – eng.; abs.: eng., rus., geo.

Goal of the research was complex evaluation of the health status of the primary-school aged children residing in various regions (urban, rural) of Adjaria. Crosssection, one-stage research was conducted in the City of Batumi and village Tsikhisdziri. In the process of survey health status of children of 4 public schools, from 6 to 9 years old was studied. Observations covered up to 800 school children in total. Screening included consultations of the multidisciplinary group of specialists, additional laboratory and instrumental studies intended for the purpose of accurate diagnostics. Performed studied showed that 28.3% of the studied population was actually healthy, 55% had functional disorders and 16.7% - chronic diseases. In both, urban and rural areas the share of the digestion system, blood and blood-generating organs, nervous system, ophthalmological pathologies and locomotion system diseases prevailed. Tab. 3, Fig. 1, Ref. 20.

Auth.

b17.3.3.8. Analysis of some epidemiological rates of suicide in Georgia. /L. Kiladze, G. Lezhava, E. Gadelia/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 77-81. – eng.; abs.: eng., rus., geo.

In the last few years, significant increase in the incidence of suicide is observed in Georgia, especially among teenagers. Effectiveness of suicide prevention greatly depends on adequate

determination of causes of suicide. Statistics of suicidal death and attempts in Georgia are recorded in two agencies: the National Statistics Office (GeoStat) and the Ministry of Internal Affairs of Georgia (MIA). Data from both agencies - main epidemiological indicators of 2011 – 2014 have been statically processed, analyzed and compared with the WHO data. Conducted research revealed significant difference between data obtained from the GeosStat and the MIA that may be the cause of absence of complete, unified system. Besides, the data are substantially different from the WHO-recognized findings. Therefore, specification of suicide's substantive criteria and improvement of the statistical data collection methodology are necessary that require joint and coordinated actions of several agencies. Tab. 5, Ref. 11.

Auth.

b17.3.3.9. Methods for determining of training needs for health leaders. /Zh. Kalmatayeva, D. Kaliyeva/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 111-115. - rus.; abs.: eng., rus., geo.

The article presents the results of a study of health needs of the Republic of Kazakhstan leaders in basic and periodic training. The methodological basis of the study was to establish the relationship between the dynamics of the development of infrastructures of public and private health care organizations, on the one hand and the change in the number of their leaders, on the other. Analytical studies have allowed to develop a method for determining the needs of policy-makers in education to ensure long-term planning, adequate funding, and improve the quality of their training and retraining. Tab. 6, Ref. 8.

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b17.3.3.10. Hidden vegetative dysfunction and vascular hyperactivity as a foundation of modern valeology. /G.Chakhunashvili, N. Jobava, K.Chakhunashvili, D. Chakhunashvili, D. Tabutsadze, K. Chakhunashvili/. Pediatric cardiology. – 2016. – #10. – pp. 17-19. – geo.; abs.: geo., eng.

There is a new subject of valeology which studies health, healthy way of life and long life. The aim was to describe management of hidden vegetative dysfunction and vascular hyperactivity. Inclusion of cardiointervalogical transcript in clinical-orthostatic assessment of tonus of nervous system and vegetative reactivity is, to our mind, the most important issue. Value and low price of clinical-orthostatic tests is the reason for its wide use. While it also can easily detect hidden vegetative dysfunction and vascular hyperreactivity. Tab. 4, Ref. 10.

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b17.3.3.11. Principles of sanogenesis and recovery mechanisms. /I. Dolidze, G. Chakhunashvili/. Pediatric cardiology. – 2016. – #10. – pp. 38-41. – geo.; abs.: geo., eng.

Actuality: Since the pathological processes tend to develop more frequently, it is very important to define and explain stages, mechanisms of sanogenesis and recovery. **Aim:** Modern approach to sanogenesis and recovery. **Discussion:** A disease should not just be viewed as a pathological process, but complex process which also includes weakening of sanogenesis and its complexes. **Conclusion:** Modern medicine clearly needs to emphasize the importance of sanologicalprocesse and increase knowledge among medical personnel and general population. Ref. 15.

Auth.

b17.3.3.12. Healthiness starts from infancy. /G. Chakhunashvili, I. Dolidze/. Pediatric cardiology. – 2016. – #10. – pp. 41-44. – geo.; abs.: geo., eng.

Actuality: majority of classical recommendations in paediatry require revision since they no more correlate to a child's normal Physiological values. **Aim:** the aim was to prove the importance of establishing exact dates and methods for health maintenance.

Discussion: The first stage of valeological intervention starts in infancy with educating mother about physical-mental development and upbringing. **Conclusion:** Valeological education is key to being a successful country. It should be based on model of a developed country, in which it incorporates united governance of healthcare, sports and education, and it should help with improvement of general public knowledge and health. Ref. 16.

Auth.

b17.3.3.13. Modern tendencies of health value development in child population. /Sh. Zarnadze, I. Zarnadze/. Pediatric cardiology. – 2016. – #10. – pp. 45-46. – geo.; abs.: geo., eng.
Child care is the priority in every country. A healthy child is precondition to healthy society. Healthy generation Determines economic and cultural development of all countries. In our country children's health is also a priority. The aim was to study and evaluatemodern tendencies of health value development in child population. Descriptive study, document analysis. Official data and local, international publications were used for the study. Nowadays the pivotal part would be qualified management of mother and child health, while incorporating newer tendencies of development values. Tab. 1, Fig. 1, Ref. 3.

Auth.

b17.3.3.14. Feeding behavior in sportmen. /Sh. Zarnadze, I. Zarnadze/. Pediatric cardiology. – 2016. – #10. – pp. 46-48. – geo.; abs.: geo., eng.
In modern world, based on various international recommendations, countries are creating strategies to implement healthy feeding programs and recommendation documents. Assessment of main challenges in young sportsmen. Based on systemic analysis of various documents, feeding behavior was assessed in young sportsmen. Individual recommendations should be based upon: cooperation between qualified experts and sport sections. Individual feeding ration should be conjured in accordance with individual features, physical load, sex, age, physical development. Ref. 12.

Auth.

b17.3.3.15. Weight correction problems in young athletes. /K. Beridze/. Pediatric cardiology. – 2016. – #10. – pp. 49-50. – geo.; abs.: geo., eng.
Body weight correction-regulation is one of the major challenges for the modern sports medicine and sports practice, especially in adolescents. There is no safe and optimized method of body mass fast and durable weight loss (from the position of phycology) among athletes training methodology. The modern achievements of dietetics and nutrition, together with athlete's individual nutrition, alimentary factors, adequate and food regime and procedure, allow us to create a rational, balanced ratio; Maximize the use of inductive effect of food products on metabolic processes in order to strengthen metabolic processes and to create such metabolic background that is favorable for humoral regulators synthesis and realization of their actions. The proposed methods will enable us to adjust the athlete's weight in the optimal time and with the maximum effect ensuring the health safety. Ref. 4.

Auth.

b17.3.3.16. The importance of sports in pupil's physical development. /K. Beridze, S. Chitauri, Sh. Abramishvili, G. Abuladze, M. Lomidze, I. Sumbadze/. Pediatric cardiology. – 2016. – #10. – pp. 51-52. – geo.; abs.: geo., eng.
Physical activity is one of the major factors of healthy lifestyle, the perfection of the body's regulatory and adaptive mechanisms, harmonious physical and psycho-emotional development. In recent years, in vast majority of schools, for various reasons, sports classes either are not delivered at all or are not held properly. The aim of our research was to determine the impact of sports classes on physical development of children of 10-11 years age. The research showed that in schools, where sports classes are held, physical development indices are within a normal range: weight 65%, muscle development 67%. Scoliosis occurs in 44%. In the observing group (in schools where there are no sports classes) the same indicators where distributed as follows: weight 37%, muscle development 54. 5%. Scoliosis occurs in 54%. The obtained results show a positive effect of sports classes for pupil's physical development indicators. Ref. 7.

Auth.

b17.3.3.17. Main challenge of the 21st century - reorganization of public health by health-care governing criteria. /I. Dolidze/. Social, ecological & clinical pediatrics. – 2016. – #18-13-12. – pp. 35-40. – geo.; abs.: geo., eng.
Tgh work deals with the modern vision and importance of public health reorganization. The health itself is included in valeology. If disease forces a human to visit a doctor, patient can cure himself by living the healthy life-style and endeavouring auto-trainings. Psychologist and teachers play

significant role in preserving and enhancing health. Human is an object of research and has its own research methodology. Ref. 25.

Auth.

b17.3.3.18. Parasites and „memory". /D. Tskhomelidze, E. Mchedlishvili/. Social, ecological & clinical pediatrics. – 2016. – #18-13-12. – pp. 59-60. – eng.; abs.: geo., eng.
Parasites trigger varying degrees of change within their hosts using many equipments and enzymes (for example existence of duffy antigens on the plasma membrane on erythrocytes promote entering of merozoites of P. vivax to the red blood cells) It means parasites have special biological program ("memory") forgetting the body and travelling between the host tissues and cells, but without „helping" from host immunity system sometimes is very difficult to defeat so strong rivals as they are humans being and animals. We think epigenetics may be take part important role for activation and establishing the new relationship between parasites and hosts. By our opinion everything about it is written down in biological programs of parasites and hosts too. Ref. 2.

Auth.

b17.3.3.19. The aspects of impact of global climate changes and the eating behavior on the example of east Georgia. /T. Darsania, Sh. Zarnadze, I. Zarnadze, K. Murjikneli/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 41-43. – geo.; abs.: geo., eng.
Mankind is accustomed to live in the changeable climate conditions. Our study was conducted to determine the causal connection, which will allow us to create a model of nutritional changes in the condition of increasing climate modification. To achieve the goal we have studied the changes of eating behavior in the villages of the municipality of Dedoplistskaro. We have conducted a retrospective survey and studied the eating behavior to assess the nutritional status in given time. We created questionnaires, which contained questions about the frequency of consumption of basic food, which was traditional in the past before the climate changes in this region. During the study 207 respondents were interviewed. The study shows that the nutrition character has dramatically changed over the last 20 years. Their ration was diverse before the climate changes but since the economic hardships and climate modification the nutrition of our respondents has been limited due to the ration of supermarket food and financial availability. The survey shows that corresponding discussion of existing problem has not been started yet. It is necessary to raise public awareness about existing issues and about the ways of combating with them.The support from the state in order to improve efficiency is needful as well. Fig. 1, Ref. 9.

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b17.3.3.20. Combined treatment of HCV infections in prisoners with pegferon and rebetol. /E. Vashakidze, T. Imnadze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 49-51. – geo.; abs.: geo., eng.
Hepatitis C is one of the mostly spread disease worldwide causing chronic inflammation of liver-hepatitis, liver cirrhosis and hepatocellular cancer. The evidence of infections caused by HCV in Georgia is the highest, among that hepatitis C is the most challenging problem of healthcare in Georgia. 2010 prisoners with hepatitis C are under observation. The inclusion criteria are: Age (>18 y) in patients of both gender, who has anti HCV ELIZA active hepatitis C confirmed with HCN RNA chain polymerase reaction. The majority of patients (95%) are males, their average age is 25-45 y (71%). The cytolysis syndrome is frequent (increased activity of ALT, AST, GGT) in most of them AST>ALT (which indicates severe form of disease). In 2/3 of patients the level of common bilirubin is increased. More than half of patients have decreased level of albumine in blood. The level of glucose in blood is also important mostly in genotype III infected patients (its twice as often) compared with genotype I and II. In 2/3 of patients the high and very high viremia was found irrespective of genotypes. Tab. 1, Ref. 7.

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b17.3.3.21. Acute C hepatitis clinical and epidemiological characteristics. /E. Vashakidze, I. Mikadze, E. Pachkoria/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 51-53. – geo.; abs.: geo., eng.

Hepatitis C is one of the most common reason of persist viral infection of the liver, chronic hepatitis, Liver cirrhosis and/or Hepatocellular Carcinoma worldwide. It is very important to reveal cases of acute hepatitis timely and to establish route of transmission, that on the one hand will prevent the future prevalence of the disease. The aim of the research was to reveal clinical-epidemiological peculiarities of cases acute hepatitis C. In 2013-2015 years 31 patients were hospitalized with diagnosis of acute C hepatitis According to epidemiological anamnesis the main causes of spreading infection remain invasive medical and stomatological manipulations, intravenous drug injections. It is worthy to note that in high percentage of patients the route of transmission wasn't revealed. – this proves significance of different manipulations as causative agents in further increase of infected patients. Fig. 1, Ref. 8.

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b17.3.3.22. Electrophysiological indicators of influence of transcranial magnetic stimulation on opioid dependence treatment. /Kh. Todadze, M. Zakaraia, G. Lezhava/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 62-64. – geo.; abs.: geo., eng.

Transcranial Magnetic Stimulation (TMS) is a relatively novel therapeutic and diagnostic tool. It was successfully 20 used for the treatment of various pathologies. Data exists that TMS is sufficiently effective as mono therapy and along with treatment with different pharmaceuticals, also. Clinical research of the influence of low intensity, high frequency magnetic fields with the help of original magnetic stimulator was launched at the Georgian Research Institute on Addiction. Stimulation with low intensity magnetic fields is safe, and allows for the modification of the parameters of stimulation and therapeutic use in a relatively wide range. 420 patients suffering from opioid addiction take part in the research. Results may be summarized as follows: The high frequency, low intensity magnetic therapy in combination with conventional pharmacotherapy causes reliable improvement in coparision with standard treatment and placebo. Changes are more obvious in the spectral component of the bioelectric activity; examination of the brain electrical activity with various methods (EEG, frequency spectra and evoked potentials) enables us to suppose that observed results are caused by positive changes in metabolic activity; TMS improved effectiveness of traditional treatment and permits to diminish or entirely stop use of psychotropic medications on the late stage of treatment. Ref. 11.

Auth.

b17.3.3.23. Screening for high blood pressure among school teachers in Nadzaladevi District, Tbilisi. /N. Mebonia, S. Zhizhilashvili, M. Kakauridze, D. Trapaidze, R. Kvanchakhadze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 84-86. – geo.; abs.: geo., eng.

High blood pressure (BP) is the leading risk factor for death and disability globally (WHO). Aim: The purpose of this study was to assess the prevalence of undiagnosed high blood pressure and coexisting risk factors among a selected population in Tbilisi, Georgia. Screening of high BP was conducted among school teachers in Tbilisi. Three schools in Nadzaladevi district of Tbilisi were selected randomly, where all teachers were screened for blood pressure and were interviewed by using a standard questionnaire suggested by the World Hypertension League. The questionnaire included a history of previous diagnosis of high BP by any physician and information about other cardiovascular risk factors. Blood pressure higher than 120/80 mm/Hg was estimated as a high BP. Data were analyzed using EpiInfo software. In selected schools 156 teachers were screened; the age range was 28-69 years; Proportion of high BP was 34% overall (95% CI=26.6-41.4) and 48% (95% CI=38.0-58.1) in participants above 40 years. Among persons with high BP, 36% (95% CI=23.1-48.9) were not aware that they actually had high BP and did not receive the medicines. Among those who received medicines 14% (95% CI=2.3-25.7) received it without the recommendations of physicians. All participants with high BP were overweight (43%; 95% CI=29.7-56.3) or obese (57%; CI=43.7-70.3). Finally, Study revealed that the prevalence of undiagnosed high blood pressure and coexisting risk factors is high even among educated society in Georgia. Fig. 2, Ref. 8.

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b17.3.3.24. Vaccination against measles in Tbilisi. /I. Mchedlishvili, Ts. Dilebashvili, M. Gelenidze, D. Katsitadze, D. Gelovani/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 93-95. – geo.; abs.: geo., eng.

The vaccination status of patients diagnosed with measles was investigated in Tbilisi in 2013-2014, during an outbreak. During the time period mentioned above, 5108 cases of measles were reported in the capital city of the country. We investigated the vaccination status of 2451 patients. The study results revealed that 79.2% of patients were not vaccinated at all, b17.1% had single dose and 3.7% of patients only had two doses against measles. The incidence rate of measles was especially high among infants – 2 345,5$^{0}/_{0000}$. According to the national schedule existing in the country vaccination of children against Measles-Mumps-Rubella is started at the age of 12 months. Based on the above mantioned, we have a question - isn't it better to begin the vaccination against measles in infants erly, before 12 months? Moreover, the national schedule gives such possibilities. Tab. 1, Ref. 12.

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b17.3.3.25. Epidemiological characteristics of Crimean-Congo hemorrhagic fever in Georgia. /I. Mchedlishvili, N. Mamuchishvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 95-97. – geo.; abs.: geo., eng.

Epidemiological characteristics of Crimean-Congo Hemorrhagic Fever in 2009-2015 was investigated in Georgia. Maximum number of cases were detected in 2014, when 24 patients were diagnosed. Disease cases occurred in four regions of the country – in Shida and Qvemo Qartli, Samtskhe-Javakheti, Imereti and in Tbilisi also. The infection is highly distributed in Shida Qartli region, specifically in Khashuri. But natural area of disease distribution is gradually increasing and could be expected an intense spreading of infection in other regions as well. Intensification of epidemiological process is correlated with warm season. About 70% of manifested cases occur in summer period that is related with activation of vector of diseases, tick *Hyalomma.* At high risk are individuals 20 years of age and elders. A single case was detected among children only. At the modern stage there is an intensification of the epidemic process of Crimean-Congo Hemorrhagic Fever in Georgia. Ref. 5.

Auth.

b17.3.3.26. Pharmacists about the drug market in Georgia. /N. Nemsitsveridze, V. Eriashvili, T. Tchumburidze, T. Zarkua, N. Dugashvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 97-99. – geo.; abs.: geo., eng.

The research of problems on pharmaceutical market of Georgia is the permanent goal of our study. 50 respondents from pharmacies were questioned concerning situation on market. 60% of answers reflect that from point of view of pharmacists market is monopolized. 80% of answers reveal that some mechanism of governmental regulation is required for controlling the prices of medicines. The majority of pharmacists (95%) are gratified with the establishment of drug prescription system. 65% of pharmacists pointed that prices of drugs are high for population. 15% say that only insured patients are able to buy medicines and 20% consider that prices are normal for all patients. Fig. 4, Ref. 10.

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b17.3.3.27. Research of mineral water "Lashichala"-s curative properties on biliary tract dyskinesias in resort conditions. /N. Saakashvili, I. Chabashvili, T. Chilingarishvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 102-104. – geo.; abs.: geo., eng.

Chronic cholecystitis on the early stage is often complicated with biliary diskinesia, and nervous system plays important role in its formation. 180 patients with chronic noncalculous cholecystitis were observed. To the dietary food they added mineral water "Lashichala" intake and also underwent psycho therapeutic course. The results revealed that pain, dyspeptic and astenic syndromes decreased or nearly disappeared, motor-evacuative function of the gallbladder and biliary tract normalized and liver blood circulation improved. Complex treatment has sanitative impact on patients with biliary tract diseases and provides remission up to one year in 81% of patients. Tab. 2, Ref. 4.

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b17.3.3.28. Frequency of consumption of different food groups among adult population of Tbilisi. /G. Sulaberidze, M. Okujava, K. Liluashvili, M. Ghonghadze, K. Pachkoria, M. Tughushi/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 104-106. – geo.; abs.: geo., eng.

The goal of our study was investigation of the dietary patterns of adult population living in Tbilisi, further to contribute the prevention of chronic noncommunicable diseases and to develop the basis for future interventions. For the evaluation of the consumption of different foods we studied the product groups recommended by United States Department of Agriculture (USDA), in particular: dairy product; meat and meat products; eggs; legumes, nuts and seeds; grain products; vegetable and vegetable products; fruits and fruit juices; fats and oils; sugar and sweets. The survey was conducted among 156 respondents with age range 20-70. "Food consumption frequency questionnaire" was used for dietary patterns assessment. The results of our study revealed, that sugars and sweets are most broadly used food in all age groups. The unhealthiest food consumption pattern is typical for 20-40 years old adults, they are broadly eating sugars and sweets, backed products from grains, as well as vegetables reach with starch. The population of this age is used to eat out of home and eating events are frequent due to snacking habit. The dietary habits of males was unhealthier than females. The conducted investigation demonstrated, that the diet of adult population living in Tbilisi and, in particular, of its young part is loaded with products which are known riskfactors of noncommunicable diseases. Based on our research outcomes development of recommendations regarding principles of healthy diet is desirable for prevention of noncommunicable diseases, especially among young adults. Tab. 3, Ref. 8.

Auth.

b17.3.3.29. Detection of overreaching and overtraining due to physical activity in high level athletes with use of contemporary diagnostic criteria (Georgia). /T. Kajaia, K. Chelidze, V. Akhalkatsi, Z. Kakhabrishvili, L. Maskhulia/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 122-125. – geo.; abs.: geo., eng.

The goal of training competitive athletes is to provide training loads that will improve performance. When prolonged, excessive training occurs concurrent with other stressors and insufficient recovery, performance decrement can result first in functional overreaching (FO), then extreme overreaching or non-functional overreaching (NFO) and overtraining. Chronic maladaptations may lead then to the overtraining syndrome (OTS). As it is possible to recover from functional overreaching within a period of 2 weeks, the recovery from NFO needs several weeks or even months. Athletes who suffer from OTS may need months or even years to completely recover (1). Early diagnostic of overreaching is of high importance for prevention of overtraining as well as for interruption of progression of NFO/OTS. The purpose of the study was detection of non-functional overreaching and overtraining with use of contemporerary diagnostic criteria. Diagnosis of OTS was based on the checklist provided by the consensus statement of the European College of Sports Science (ECSS) and the American College of Sports Medicine (ACSM) (3). Examination of 348 high level athletes revealed 43 subjects with NFO/OTS, among them 37 with NFO and 6 athletes with OTS. Prevalence of NFO and OTS was seen in sporting disciplines with mixed high intensity workload - 27(62,8%) NFO and 4(9,3%) OTS, particularly, majority of NFO/OTS was revealed in wrestling: NFO - 19(44,2%) and OTS – 4(9,3%). Checklist criteria elaborated by ECSS and ACSM is efficient and flexible tool for diagnosing overreaching and overtraining in athletes. Most frequently NFO/OTS is seen in wrestling, which needs further investigation and regular medical monitoring. Tab. 2, Fig. 2, Ref. 7.

Auth.

b17.3.3.30. About the matter of labour conditions classification in Tbilisi subway. /N. Khunashvili, R. Kverenchkhiladze, L. Bakradze, G. Kverenchkhiladze, M. Tsimakuridze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 145-148. – geo.; abs.: geo., eng.

The aim of this research was the development of the hygienic classification of labour conditions of workers of the Tbilisi subway by indicators of harm and danger of work on the basis of appropriate standard document. The complex of adverse factors of the labour environment which is a potential risk for workers' health is revealed. It is established that the most adverse, i.e. extreme working conditions (a class of danger 4) are noted on a workplace of a machinist, that is generally caused by parameters of noise and vibration (a class of danger 3 and 4). In the distribution hall and on a workplace of the controller on duty a working condition corresponds 3. 1 class of danger, and on other workplaces to 3.2 class. The results of the designated research are used for development of complex improving measures, which include technological, sanitary and hygienic and medico-preventive measures. Tab. 1, Ref. 9.

Auth.

b3.4. Health biotechnologies

b17.3.4.1. Regeneration of the diaphysis of a long bone of the skeleton after the implantation into its defect of osteoplastic material «Easy-Graft CRYSTAL». /A. Korenkov/. Bulletin of the Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 147-152. – eng.; abs: eng., geo.
The aim of this work is the microscopic study of the dynamics of the healing of the defect of compact bone tissue after the implantation into its cavity of osteoplastic material «easy-graft CRYSTAL». The experiment was conducted on 24 Wistar rats. In the middle third of the femoral shaft of rats there was reproduced perforated defect in the diameter of 2.5 mm to the medullary canal, which was filled with osteoplastic material «easy-graft CRYSTAL». Fragments of the injured bones were examined on the 15th and 30th day by light microscopy with morphometry and scanning electron microscopy. It was found that the osteoplastic material «easy-graft CRYSTAL» in the area of the compact bone tissue defect shows high biocompatibility, osteoconductive properties and provides stability of the defect volume due to good integration with tissue-specific structures of the regenerate and the absence of reliable signs of resorption throughout the period of the experiment. Fig. 5, Ref. 10.

Auth.

b17.3.4.2. Local antibiotic therapy of osteomyelitis using nonabsorbable implant (review). /B. Tuleubaev, D. Saginova, T. Abiyev, M. Davletbaev, A. Koshanova/. Georgian Medical News (GMN). – 2016. – #6(255). – pp. 21-26. - rus.; abs.: eng., rus., geo.
Despite the variety of treatments available, including surgical procedures and antimicrobial therapy, bone infections is still a medical problem, because they are difficult to treat. Optimal treatment should stabilize the bone, promote the biological recovery of bone defects and destroy bacterial infection. Systemic antibiotics are part of the standard therapy after surgical treatment of infected bone, but their effectiveness is limited due to malnutrition and low absorption at the site of infection. Moreover, long-term treatment and higher doses are associated with serious side effects. In contrast, the antibiotic impregnated bone cements or fillers can act as a local anti-infective drug delivery system, which not only fills the dead space after debridement, but also provide high concentrations of antibiotics in a potential site of infection, no increase levels of antibiotics in serum. The review analyzed the use of antibiotic-impregnated cement as local delivery of antibiotics systems. Gentamycin impregnated polymethylmethacrylate (PMMA) beads, for the topical treatment of orthopedic infections clinically used for over 30 years. Application of antibiotic delivery systems using cement in the infected region is common method of treatment that continues to improve. On the downside of PMMA is that the material does not biodegradable requires subsequent invasive procedures necessary to remove the implant. Tab. 1, Ref. 31.

Auth.

b17.3.4.3. Influence of nanodiamonds and carbon nanowires on survival and cells structure in chicken embryo. /V. Lavrinenko, S. Zinabadinova, Yu. Chaikovsky, L. Sokurenko, L. Shobat/. Georgian Medical News (GMN). – 2016. – #6 (255). – pp. 93-99. - rus.; abs.: eng., rus., geo.
Aim - to determine the effect of nanodiamonds and carbon nanowires on the survival and ultrastructure of chicken embryo cells. The experiment was carried out on chicken embryos, incubated from eggs of Hy-Line breed. Control and two experimental groups were formed (total number of embryos - 100). Diamond nanoparticles and carbon nanowires were administered on day 3 of incubation as a suspension of a biocompatible dextran. Ultrastructural analysis and general study of embryos state were carried out. The most expressed pathological effects were observed in the group with the introduction of the CNW, which caused visual impairment of embryogenesis that started from the early incubation periods. As for ND we can claim their prolonged impact on the development of embryos, manifested in the gradual deterioration of the embryos condition with the manifestations of the pathology in the provisory organs and the body of embryos. The results of our study demonstrate that both types of nanostructures can cause sublethal and irreversible morphologic changes. Detection of morphological evidence of the impact

of nanomaterials at significant distances from the site of administration of nanoparticles shows highly penetrating ability of nanomaterials. The presence of damages specific for each type of nanoparticles shows affinity to various tissues and cellular structures. It is demonstrated that similar, at first glance, impact of nanomaterials, such as the induction of oxidative stress might be caused by specific structural transformations. So, ND cause vacuolization of mitochondria, and the CNW – deformation of their shape and appearance of dark inclusions in them. Fig. 5, Ref. 12.

Auth.

b17.3.4.4. Nasal bone reconstruction using bone cement - "Surgical Simplex P". /L. Atskvereli, O. Bregadze, N. Chuchulashvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 8-10. – geo.; abs.: geo., eng.

Surgical treatment of the defects and deformations in the facial area are still actual problems of reconstructive surgery. Medical and social aspects of the problem, pushes for intense search of the new materials for the reconstruction and improvement of surgical methods. The work presents an interesting clinical case description. The authors successfully used radiopaque medical cement "Surgical Simplex P" to fill in the deficit of the nasal bone and cartilage. It should be noted that the satisfactory effect was achieved in both functional and aesthetic point of view. Ref. 4.

Auth.

b17.3.4.5. The mouth gate soft tissue scar deformity correction by vestibuloplastic original method. /L. Atskvereli, N. Sekhniashvili, M. Bibichadze, M. Kepuladze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 10-12. – geo.; abs.: geo., eng.

The methods of the present vestibuloplastics basically ensure satisfactory functional and cosmetic effects, in cases of typical correction of the low arch of the mouth gate. The work sets out vestibuloplastic original method, which allows us to model the arch of the gate, when there is a significant tissue deficit, by using the tissue scrap taken from the vestibular surface of the lip. The method provides good functional and aesthetic effect and can be used on both jaws. Ref. 3.

Auth.

b17.3.4.6. Antioxidant activity of citrus polimetoxilated flavonoids extract. /I. Gvilava, G. Ormotsadze, S. Kiparoidze, M. Giorgobiani, T. Sanikidze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 26-28. – geo.; abs.: geo., eng.

The purpose of the study was an investigation of the radioprotective activity of citrus polimetoxilated flavonoids extract in an animal model system. The intensification of oxidative stress and lipid peroxidation in the X- rays irradiated rats was detected, that was revealed by intensive $LOO^{\cdot}$ - production and inactivation of antioxidant enzymes (catalase and SOD) in the animal's blood. Intensification of lipoperoxidation shows periodic character (after 1 and 4 days), that is due to X- rays initiated intensification of secondary oxygen and lipids free radical production after some days after irradiation. 7-day treatment of irradiated rats with the extract of citrus polimetoxilated flavonoids induced decrease of intensivity of lipoperoxides production and normalization of activity of antioxidant enzymes. Based on the analysis of the investigation results we suggested that the citrus polimetoxilated extract revealed antioxidant activity. Tab. 1, Fig. 1, Ref. 4.

Auth.

b17.3.4.7. Soluble epoxide hydrolase as a new target for therapeutic intervention. /N. Gongadze, L. Gabunia, M. Mirziashvili, M. Gvishiani, A. Archvadze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 34-36. – eng.; abs.: geo., eng.

Soluble epoxide hydrolase (EH) – bifunctional homodimeric enzyme has been identified in plants and mammals. It facilitates the conversion of epoxyeicosatrienoic acids (EETs) to the biologically less active Dehydroxyeicosatrienoic (DHETs) acids. Soluble EH takes part in the metabolism of arachidonic, linoleic and other fatty acids, as well as in the liberation of endogenous chemical mediators. According literature sources, soluble EH inhibitors by increasing of EEts level along with EET are involved in the positive alterations during arterial hypertension, diabetes, atherosclerosis and inflammatory diseases. This agents by opening of so-called high conductance Ca^{2+} channels and cells hyperpolarization can produce powerful vasodilator properties. In experimental studies has been shown their hypotensive effect in spontaneously hypertensive rats and angiotensin-II induced arterial hypertension with compromised renal function, which along with diminution of

arterial pressure was revealed in reduction of albumin secretion in the urine. In other experiments was showed that the EETs isomers by increasing vascular diameter augmented blood flow in different organs, which was associated with production of hyperpolarizing factor by vascular endothelium. Along with influence on the function of vascular endothelium these agents also produce direct action on the cardiomyocytes. It was postulated the possible involvement of EET and sEH inhibitors in vascular homeostasis. At the same time these compounds elicit also protective properties in brain ischemic injury. It has been established the anti-inflammatory and antiproliferative action of EET and EH inhibitors in TNF-áinduced apoptosis. In experimental studies these agents also revealed efficacy after angioplasty developing vasculopathy and restenosis which is due to inhibition of the proliferation of smooth muscle cells. It is suggested that different inhibitors of sEH and the EETs isomers are a novel compounds for the therapeutic intervention in cardiovascular diseases. Ref. 25.

Auth.

b17.3.4.8. Efficiency of Enfin Forte during the failure of pancreatic exocrine function. /E. Vashakidze, T. Megrelishvili, T. Gegeshidze, E. Pachkoria/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 53-55. – geo.; abs.: geo., eng.

The aim of the research was to estimate the effectiveness of nonorganic ferment(enzyme) *Enfin Forte* during the treatment of patients with pancreatic exocrine function failure. 42 patients with the diagnoses of chronic pancreatitis on exacerbation stage were observed. The patients age ranged from 18 to 75 years. Duration of the disease ranged from 3 to 10 years. The patients had 2 to 6 relapses of the disease per year. It has been revealed that nonorganic drug Enfin Forte which is resistant to the human and animal pancreatic gland enzyme inhibitors had shown high clinical effectiveness in patients with pancreatic exocrine insufficiency. It isn't necessary to prescribe the drug at the time of each meal. Enfin forte is effective when taken only once a day. Ref. 10.

Auth.

b17.3.4.9. The role of blood vessels invasion in joint cartilage in the pathogenesis of osteoarthritis. /D. Kandelaki, D. Kutalia, R. Chikhladze/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 69-71. – geo.; abs.: geo., eng.

Osteoarthritis represents a severe joint disease, that is characterized by an inflammatory reaction in every component of joint. During osteoarthritis for the realization of inflammatory reaction, excess amount of VEGF (vascular endothelial growth factor) is produced, that causes neovascularisation and ingrowth of blood-vessels in the joint cartilage: in superficial surfaces – from connective tissue and in basal layers – from subchondral bone. Ingrowth of blood-vessels in the hyaline cartilage causes firstly superficial and then profound damage, that ends with complete disorganization of cartilage. Ingrowth of blood vessels in cartilage tissue leads to its oxygenation rise, that causes calcification and metaplasy as bone tissue, that is finally followed by complete joint cartilage degradation and subchondral bone exposure. Based on the study result analysis, we can conclude that during osteoarthritis in the progressive damage and degradation of cartilage its vascularization process plays a considerable role. Fig. 1, Ref. 9.

Auth.

B4. AGRICULTURAL SCIENCES

b4.1. Agriculture, Forestry and Fisheries

b17.4.1.1. Ozone in agriculture. /R. Tushurashvili, M. Panchvidze, Ts. Basiladze, G. Shanidze, M. Mamardashvili, N. Kvirkvelia, G. Khidesheli, V. Matsaberidze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 292-294. – eng.; abs.: eng., geo., rus.

The influence of ozone on certain agricultural crops, in particular on cucumber and tomato seeds, has been studied for the purpose of acceleratingtheir germinationand achieving an increase in yields. Prospects for ozone treatment of seeds using ozonisedwater and ozone-air mixture have been established. Besides, the influence of ozone-air mixtureon extension of storage life of tangerines has been studied and it has been established that daily treatment of tangerines with ozone-air mixture during their storage can extendtheir storage life to three months. Fig. 2, Ref. 5.

Auth.

b17.4.1.2. Felling working process N11 processing of technological device for the cross portable rope-way log trail installations/L. Mezvrishvili, T. Gogishvili, G. Darakhvelidze, R. Tyemaladze, D. Mosulishvili, Z. Balamcarashvili/. Wood Bulletin. – 2016. – #11. – pp. 61-66. – geo.; abs.: geo., eng.

In this work are issues raised connected to difficulties with mastering Georgia's mountainous felling due to the difficult conditions of relief. It requires implementation of new promising technology and technique. Flowsheet N11 is designed for the fellings of the third group, where the slope is more then 250 and reaches 400. For this kind of fellings are designed bilateral two traction tow-rope cross portable rope-way log trail installation. Flowsheet $^{1}11$ and bilateral two traction tow-rope cross portable rope-way log trail installation for implementation it - in case of consistently planning the operations of technological process on the fell - gives us an opportunity of lowering bagged wood on the top warehouse by cross portable load-bearing ropes from the both sides of main rout of the rope-way installations. Fig. 2, Ref. 4.

Auth.

b17.4.1.3. The 21st century European forestry policy trends and Georgia. /T.Kandelaki, Uwe Kie/. Wood Bulletin. – 2016. – #11. – pp. 67-78. – geo.; abs.: geo., eng.

The paper gives the 21st century European forestry policy trends and the likely impact of these processes on the forestry sector. The authors discuss the development of the sector of economic and demographic factors, as well as changes in areas such as construction, energy, agriculture, environment, trade. Analysis of previous years, FAONations and other international organizations. Considered: the political situation and the impact of the forestry sector. Separated Transition countries, including Georgia, as well as the state's role in the development of the forestry sector. Ref. 8.

Auth.

b17.4.1.4. Investigation of the potential of alien varieties of grapevine. /L. Ujmajuridze, L. Mamasakhlisashvili, I. Amirkhanashvili/. Bulletin of the Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 127-132. – eng.; abs: eng., geo.

The results of phenologic, ampelographic, chemical and enocarpological studies of table and wine varieties of grapevine introduced in Georgia from leading viticulture countries and preserved in the collection of LEPL Research Center of Agriculture of village Jigaura are presented. Duration of the vegetation period of the studied varieties was determined that makes their displacement possible following the altitudinal gradient in different viticulture regions of Georgia for diversification of varieties. Differences between the tested varieties by studied indices, based on peculiarities of the particular variety and its genetic potential, were revealed. Evaluation of the potential of the particular variety has revealed differences between tested ones by the studied indices. Diversity of the parameters is responsible for the optimization of phytotechnical measures and is interesting from technological point of view. Varieties with high content of total anthocyanins (berry skin extract) and polyphenols (berry skin and grape seed extracts) were revealed for the evaluation of qualitative potential of the particular variety. Possibility of their application for the industrial purposes has been discussed. Tab. 2, Fig. 2, Ref. 5.

Auth.

b17.4.1.5. Peculiarities of agricultural production. /M.Vadachkoria, T.Lachqepiani/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 100-103. – geo.; abs.: geo., eng., rus.

The agricultural economy and its productive sector are considered to be of vital importance. Maintenance of the population with agricultural products is the major task of each country including Georgia. Therefore Georgia which is the agrarian country has all conditions to develop this branch. It should also be supported by the government but so far the support is considered as very weak. First of all the grants should be allocated in agriculture, adjust the prices for agricultural products, improve social environments in the countrysides and the main thing is that the state should struggle against pollution of the surroundings with all its forces etc. Ref. 4.

Auth.

b17.4.1.6. Reproduction and other biological peculiarities of olive under conditions of Imereti. /N. Kipiani/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 10-14. – geo.; abs.: geo., eng.

The olive is a subtropical plant. It is one of the ancient cultures and is extensively used for public and industrial porposes. It is worthy of note that the demand for the olive and its products keeps rising every year. Similarly the olive area is expanding. Consequently, it is immensely significant to study the biological peculiarities of this culture based on the geographical conditions related to the soil and climate, growth and development. We have studied the reproduction and other biological characteristics of 20 olive trees under the conditions of Imereti, more specifically, village Gumbra, Tskaltubo Region. The observation took place within the frame of the grant project of the Shota Rustaveli National Scientific Foundation. In order to achieve the objectives of the project, it is important to study the optimal environmental conditions for the olive. One of the biological peculiarities of the plant lies in the specific structure of its vegetative organs. More specifically, during drought all the vital processes are diminished and a number of adventitious shoots develop on the upper area of the root of the olive plant, which ensures plant restoration in the form of sprouts. Besides, it has highly developed leaves with a thin leather-like cuticle. The process of transpiration is relatively limited in these leaves. Another biological peculiarity of the olive is that its growth shoots tend to awake easily. It needs only 10-12^{0}C active temperature to start vegetation, 20^{0}C - to blossom and to produce fruit, 22-28^{0}C - to grow sprouts. Throughout the period of vegetation the total of active temperatures is to constitute 4500-5000^{0}C to ensure the proper development of fruits. „Gemlik" and „Ayvalik" olive species were planted on the demostration land within the frame of the grant project. These species are characterized by all the aforementioned biological peculiarities. While reproducing olive plants in order to build industrial plantations, olive plants are subject to vegetative reproduction with wooden and green cuttings to ensure early fruit of seedlings and speed up the process of the preparation of the seedling material. The use of this method of reproduction raised the percentage of blossoming cases up to 85%. The height of the seedlings reaches 45-60 cm. and the branches abound in leaves. The seedlings will be ready to be replanted to the constant area next autumn. Summing up, the olive plant takes the first place among other subtropical cultures, for it represents one of the most winter-hardy, drought-tolerant, evergreen plants that do not require much warmth. Proceeding from its biological peculiarities, it is necessary to pay proper attention to the further development of this precious culture not only in East Georgia, but also in West Georgia. Ref. 4.

Auth.

b17.4.1.7. Soils of Georgia and problems of their use. /T. Urushadze, Winfried E.H. Blum, J. Machavariani, T. Kvrivishvili, R. Pirtskhalava/. Annals of Agrarian Science. - 2015. – v. 13. – #4. – pp. 8-23. – eng.; abs.: eng., rus.

The paper deals with the main features of main soils of Georgia (Red, Yellow, Bog, Yellow Podzolic, Yellow Podzolic Gley, Yellow Brown Forest, Brown Forest, Brown Forest Black, Raw Carbonate, Grey Cinnamonic, Meadow Grey Cinnamonic, Cinnamonic, Meadow Cinnamonic, Black, Chernozems, Mountain Forest Meadow, Mountain Meadow, Mountain Meadow Cherrnozems, Saline, Alluvial), their distribution, areas, history of investigation, ecology – parent rocks, relief, climate, vegetation –, morphology, basic genetic signs – pH, Humus, Nitrogen, exchange cations, texture, bulk chemical composition, different iron forms, classifi cation, the use and improvement approaches. The work generalizes the approaches of many years' research and practice and devises the ways of their optimal use. Fig. 26, Ref. 67.

Auth.

b17.4.1.8. The peculiarities of early species of tangerine in Adjara. /P. Jabnidze, N. Jabnidze, S. Gigolashvili/. Annals of Agrarian Science. - 2015. – v. 13. – #4. – pp. 28-30. – eng.; abs.: eng., rus.

Phenological observations have been provided over 11 species of tangerines (Nichinani, Iura-Vase, Taguchi Vase, Miagava Vase, Kavada, Nankani-20, Ohotsu Vase, Ueno Vase, Aoshima, Okitsu Vase, Mukaiama) introduced from Japan in 2010 on the experimental plot of Daba Chakvi in Kobuleti Municipality. The studies showed that only three species of the abovementioned species of tangerines (Nichinani, Iura-Vase, Taguchi Vase) belong to the super early species of tangerine according to their biological peculiarities and massive ripening period of fruits. They ripen 35-40

days earlier than any other basic industrial species (broad-leaved Unshiu), their fructifi cation period is long and they are characterized with high productivity and better quality of fruit. Tab.2, Ref. 10.

Auth.

b17.4.1.9. Organic agriculture in Georgia. /M.Jorjadze, T.Urushadze/. Annals of Agrarian Science. - 2015. – v. 13. – #4. – pp. 62-67. – eng.; abs.: eng., rus.
The article provides brief information on the concept of organic agriculture and the basic principles of its functioning. It is shown that the most promising trend of directing agriculture in Georgia is associated with the Biological Farming Association “Elkana”. The organization, which was founded as early as 1994, by its energetic activity has gained high prestige among the broad sections of the public. Elkana’s activity enabled to fill up the information gap and agricultural workers have now a clear understanding of how to ensure the production of safe farming products. Together with the development of organic agriculture, an independent system of certifi cation has been established and recognized at the European market. A successful international conference on organic agriculture was arranged and held in 2009. Since 2006 the Ecological Farming and Nature Conservation Department has been successfully functioning at the Georgian State Agrarian University, which is engaged in research work and training of future cadres, and successfully cooperates with Elkana. Fig. 6, Ref. 32.

Auth.

b17.4.1.10. Agriculture of Georgia facing new challenges. /N. Chitanava/. Annals of Agrarian Science. - 2015. – v. 13. – #4. – pp. 99-103. – eng.; abs.: eng., rus.
The paper considers the problems of transformation of Georgia’s multi-branch agriculture. A number of features and trends have been revealed, contradictions created due to the infl uence of exogenous and endogenous factors have been outlined, recommendations to increase the effectiveness of agricultural production have been offered. Tab.1, Ref. 6.

Auth.

b4.2. Animal and dairy science

b17.4.2.1. Poisoning of bees. /M. Tsintsadze, N. Natroshvili, G. Natroshvili/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 106-109. – geo.; abs.: geo., eng., rus.
The article deals with the current state of one of the sectors of animal husbandry - beekeeping and its prospects for development. It provides the classification of bee poisoning by pesticides, as well as methods and activities for the prevension of diseases caused by poisoning of bees by pesticide to receive ecologically free products. Ref. 2.

Auth.

b4.4. Agricultural biotechnologies

b17.4.4.1. The use of polycarbonate for drying agricultural products. /K. Archvadze, T. Megrelidze, I. Chachava/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #4. – pp. 539-540. – eng.; abs.: eng., geo., rus.
For effective drying of agricultural products recommended is the drying in a solar drier covered with polycarbonate. The studies demonstrated that the use of this system reduces the drying time, improves the preserving of flavor and gustatory properties, the nutritional value, also ensures sterility and long shelf-life. Also mentionable is the fact that the product dried in a solar drier is more resistant to spoilage. Fig. 3, Ref. 4.

Auth.

b17.4.4.2. Enzymatic hydrolysis of lignocellulosic agricultural wastes to fermentable glucose. /R. Khvedelidze, N. Tsiklauri, T. Aleksidze, E. Kvesitadze/. Bulletin of the Georgian National Academy of Sciences. – 2016. – v. 10. – #2. – pp. 138-146. – eng.; abs: eng., geo.

Thermophilic micromycetes from the collection of microscopic fungi active strain producers of extracellular cellulases have been selected. Hydrolytic potential of cellulase preparations isolated from the selected strains has been investigated according to hydrolysis of cellulose in agricultural wastes. The wastes have been pretreated biologically (by basidial fungi) and thermo-mechanically (2 atm, at 140°C, for 1 hour). During 10-days of basidial fungi cultivation more than 50% of lignin was utilized from wheat straw, cornstubble, rice straw and potato straw. The following enzymatic treatment of biologically fermented substrates was converted from 54 to 85% of cellulose to glucose. These data are comparable and sometimes even exceed the analogous data of previously used thermo-mechanical pretreatment of substrates. Tab. 5, Fig. 2, Ref. 25.

Auth.

b17.4.4.3. New product – Dry Citrazh - making technology using citrus leaves. /G. Ghvaladze/. Science and Technologies. – 2016. – #2(722). – pp. 66-68. – geo.; abs.: geo., eng., rus.

The chemical and biochemical properties of leaves of citruses (tangerine, orange, grape-fruit, citron) were studied fir using in the production of a nyw kind of product – “Dry citrazh”. The product is noted for best organoleptic properties and bioactive substances, in particular the content of vitamins C and PP. The new product developed from the tangerine, orange, grape-fruit, citron leaves, the so-called “dry citrazh” will contribute to the widening of the range of dry, aromatic products (tea beverage type). Fig. 1.

Auth.

b17.4.4.4. Producing dietary foodstuffs from some wild berries and fruit raw materials. /E. Khvichia, G. Kaishauri/. Science and Technologies. – 2016. – #2(722). – pp. 69-72. – geo.; abs.: geo., eng., rus.

This work contains the discussion of the results of studying chemical substances of wild berries (wild pear, dewberry, cornel). Natural cans are produced from fruits (fruits with their natural juice). The main standard qualitative indices of given production are studied. Tab. 2, Ref. 6.

Auth.

b17.4.4.5. The technology for storing the pumpkin variety “Kartuli Tetri Hibriduli” /G. Kaishauri/. Science and Technology– 2016. – #2(722). – pp. 73-77. – geo.; abs.: geo., eng., rus.

The results of a research in storage properties of a pumpkin svariety “Kartuli Tetri Hibriduli” grown in the Georgia are given. It s found that this sort of “Kartuli Tetri Hibriduli” can be preserved for about 8- 9 months under conditions of natural ventilation without any spoilage. Tab. 1, Ref. 6.

Auth.

b17.4.4.6. Influence of climatic factors on the storage of fruits and vegetables. /E. Melikia, M. Tsertsvadze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 115-119. – geo.; abs.: geo., eng., rus.

The present article deals with the significance of impact of climatic factors on conditions of cold storage of fruits and vegetables. According to some researches performed, defining the proper temperature and humidity modes for products stored in cold-storage rooms and for those marketed in supermarkets is the issue of vital importance. The article clearly states the significance of temperature and humidity as being basic factors in product packaging. Depending on type of fruits and vegetables, the storage requires different temperatures and humidity. Various physical and biochemical processes run when they are stored at a low temperature that can be controlled in more efficient way provided they are stored in cold storage rooms or in supermarkets. Duly planned carrying and placement of the products are also an important issue as these factors have their influence on the product quality and weight loss. Tab. 1, Fig. 1, Ref. 7.

Auth.

b17.4.4.7. The role of biologically active food additives in the production of food products. /T. Kakashvili/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 120-123. – geo.; abs.: geo., eng., rus.

This paper examines the literature on one of the most important problems of food products extend the shelf life of food products and flavor-retaining properties of the product. To resolve this issue,

utilization of additives such as a bioflavonoids which retains the biological characteristics of the product increases the shelf life and others. And these products can be used as therapeutic and prophylactic products that pronounced antioxidant and anticancer activity. They do not include a toxic substance for humans and it causes them to be used widespread. Ref. 10.

Auth.

b17.4.4.8. The possibility of using local biofertilizers and pesticides in organic agriculture. /Sh. Kanchaveli, N. Chachkhiani-Anasashvili/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 15-21. – Geo.; abs.: geo., eng.

In organic agriculture, the main goal of plant protection is to prevent the introduction of pests. Therefore, in organic agriculture during crop cultivation, it's crucial to follow the indirect methods of plant protection and prevention measures. Indirect protection methods are used only in severe cases of the spread of pests. Indirect plant protection methods aim at creating better conditions for the development of plants, improving their durability against the negative impact of pests. Examples of these methods are: caring for the soil fertility and biodiversity, proper cultivation of the soil, nourishing the plants, selecting species, etc. In order to get ecologically clean crops, we should take into account the natural feature of the soil – its anti-disease action. Plants that grow in biologically active soils, develop natural immunity to fight against pests. If such anti-pest organisms are poorly developed or don't exist at all, pests start to grow in dramatic numbers. Therefore, in agro-ecosystems besides healthy soil, it's necessary to have a diversity of organisms (biodiversity), which act against the spread of diseases and pests. One of the major tasks of organic agriculture is to maintain a healthy condition for agricultural crops, for the purpose of which plant nutrition is of great importance. A properly nourished plant is resistant to pathogens. Using organic fertilizers for plants is a starting point for their protection. Some of the products made in Georgia, such as the fertilizer, Organica and pesticides Biocatena and Phytocatena have been successfully tested. Studies have been carried out in different regions and in different cultures. It has been estimated that joint use of organic biofertilizers and pesticides is effective in all regions and cultures. This helped to reduce the percentage of crop diseases and increase the harvest, in particular, the amount of grape harvest increased by b17.9-21%, potatoes - 9.7-10.7%, corn - 22.2-30.0% and wheat seed -22.2%. In addition to crop rising, product quality has also improved. Because of such situation, the organic biofertiler Organica can be used in organic agriculture. As for the pesticides Biocatena and Phytocatena, we can use them after their registration process has been finished, which is currently going on. Tab. 1, Ref. 3.

Auth.

b17.4.4.9. The effect of microelements on peroxidase and polyphenoloxidase activity in pepper leaves and fruits. /N. Mangaladze M. Gabrichidze/. Annals of Agrarian Science. - 2015. – v. 13. – #4. – pp. 24-27. – eng.; abs.: eng., rus.

The paper deals with the impact of micro-elements (B, Zn, Cu, Co, Mn) on the activity of ferments – peroxidase and polyphenoloxidase in th eleaves and fruit of pepper (Capsicum annum). Enzyme activity varies according to different vegetative phases of a research plant. Both in the control and microelement variants during higher activity of peroxidase, polyphenoloxidase activity is rather low. Due to boron activity polyphenoloxidase activity particularly increases when 4-5 leaves appear, in later phases it decreases. While treating seeds with zinc peroxidase activity decreases in pepper leaves in the early phase of vegetation and fruits, and even reaches a maximum when fruits start to appear. Copper and cobalt increase peroxidase activity in the leaves and fruits in the late phase. Manganese effect on polyphenoloxidase activity in the early phase of vegetation is lower than in the later phase. In pepper fruits polyphenoloxidase activity increases, while peroxidase activity is reduced. Tab.2, Ref. 7.

Auth.

B5. SOCIAL SCIENCES

b5.1. Psychology

b17.5.1.1. Cognitive properties of children with sensorineural hearing losses whith hearing aids. /T. Devdariani, N. Manjavidze, Z. Kevanishvili/. Collection of Scientific Works of TSMU. – 2015. – v. XLIX. – pp. 43-46. – geo.; abs.: geo., eng.
Applying Raven's procedure of determination of colored progressive matrices, the intelligence level has been estimated and compared in sensorineural hearing-loss children and with hearing aids. The test Group 1 covered the children with the II and III level of sensorineural hearing loss who were bearing hearing aids on one or on the both ear for several years. The test group 2 included children with the I and the II level of hearing loss. This contingent did not bear hearing aids. The control Group involved 62 normally-hearing healthy children. The age of children in both test and control groups was in range of 5-16 years. The comparison of Raven's indices in different species was performed by Mann-Whitney's nonparametric test. The Raven's values in sensorineural hearing-loss children of the Group 2 noticeably lagged behind that in Control group. The Raven's values in sensorineural hearing loss children with hearing aids did not differ significantly (10%-21%) that in normal hearing group children. The conclusion has been reached consequently that the sensorineural hearing-loss causes cognitive problems of children and the early habilitation/rehabilitation methods with hearing aids is the optimal result of the normal hearing of the children. Tab. 1, Fig. 2, Ref. 11.

Auth.

b5.2. Economics and business

b17.5.2.1. Georgia's tax rate mechanism of the model and its complit-differential recommendations. /O. Keshelashvili/. Agrarian-economic Science and Technologies. – 2016. – #2(31). – pp. 20-29. – geo.; abs.: geo., eng.
For the purpose of improveing the tax mechanism operating in the agrarian sector and fulfilling the set objectives, an economic analysis was made, as well as practical recommendations and target principles were developed on the basis of expert assessment and experience of developed countries. Together with other types of taxes, the attention was focused on the agricultural sector, the main component of the tax base – taxes on land and on the administrative-territorial differentiation of the imposition of existing taxes. Under Georgian legislation, the annual rate of tax on agricultural land is differentiated according to the administrative-territorial units and the land quality and shall be fixed annually in calculation per hectare. Tab. 2.

Auth.

b17.5.2.2. Food product pricing strategy and its regulation mechanism. /O. Keshelashvili/. Agrarian-economic Science and Technologies. - 2016. - #3(32). – pp. 5-20. - geo.; abs.: geo., eng.
Pricing is discussed for determining the correct meaning and impact of farmers' activities. Pricing of the key positions, and methods of determining the method of regulation. Pricing mechanism should be based on the following: - Free from the state regulation of prices and coordination; - Normative price calculation methods; - Ensuring farmers incomings; - Scientific and technological progress by stimulating circulation of efficiency to reduce costs; - Financial and credit system to optimize the relationship. We spoke about the establishment of agricultural products prices, account should be taken of the following conditions: - For the public to go to the range and volume of products; - Optimal proportion between accumulation and consumption; - The resources available within the software to maximize production efficiency. Agricultural production in its specificity, are often in need of assistance, including direct subsidies, price regulation, insurance and lending, the protectionist policies of some products, quotas, etc. In order to regulate the prices of agricultural products for farmers to have a guaranteed price, which can determine the state of the beginning of the year, as the starting price, however, inflation and other factors is not possible to be adjusted by increasing or decreasing direction.

Auth.

b17.5.2.3. Optimal econometrical modelling and management of financial sustainability at the major electric power processing institution. /D. Japaridze, Z. Jakeli-Khundadze, A.

Ioseliani/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 55-67. – geo.; abs.: geo., eng., rus.
The scientific substantiation of optimal modelling in terms of financial sustainability at the major electric power processing instituation is outlined. An analysis of the grounds of international experience in management and financial sustainability is made. According to the outcomes of the research, the optimal econo-metrical criterion for assessment of the financial sustainability has been generated. The criterion function is to provide maximization of the positive cash flows balance monthly, quarterly and yearly in terms of the commonly accepted boundaries of the financial stability indicators. The article outlines optimal ways of the financial sustainability as well as it illustrates innovative approaches of optimal econometrical modelling and major management methodology to be used at the electric power processing institution. This methodology implies universal function, that could be implemented at financial management of any institution. The outcomes received from the research are based on the example of Georgian State Electrosystem. According to the research, Georgian State Electrosystem has to undertake major event for improvement of the financial sustainability, as well as being up to date with the challenges of the modern environment. In order to improve the current state, it is necessary to involve the country government, as well as provide long term (3-5 years) electricity transportation tariff according to RAB method, Venture capital entry. Tab. 6, Ref. 15.

Auth.

b17.5.2.4. Business-as-usual scenario (BAU) for the Georgian energy sector development. /G. Arabidze, I. Pkhaladze/. Transactions of Technical University of Georgia. - 2015. – #4(498). – pp. 68-77. – geo.; abs.: geo., eng., rus.
Impacts of different programs and policies of Georgia's energy sector development are evaluated in business-as-usual scenario (BAU). The primary energy consumption by 2030 will reach 7189 thousand TOE resulting in increase of 72.2% compared to 2012. One third of increase will fall on natural gas. By the year 2030 the country will get an additional capacity, namely, 2601 Mw from HPPs, 50 Mw from the wind plants, 160 and 230 Mw from thermal plants operating on coal and natural gas. In total the new generation capacity of 3 041 Mw will require 3 831 million Euro investments, the majority of which will be covered by the private sector, including residential sector. According to the base scenario, the growing demand and growing prices will result in significant increase of fuel supply prices by 2030 and instead of current annual cost of 1 167 million Euro will reach 2 180 million Euro. This will have a serious impact on country's foreign trade balance. According to the base scenario, the installed capacity of HPPs will reach 5731 Mw. Starting from 2018 25-35 % from the installed capacity of 5 731 Mw will be exported. Tab. 3, Fig. 6, Ref. 8.

Auth.

b17.5.2.5. Innovative management and small and medium-sized enterprises. /E. Shilakadze/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 30-41. – geo.; abs.: geo., eng., rus.
After the analysis of condition of enterprises, it is very important to discuss the issues of enhancing their effective functioning, because from the moment of transformative processes small and medium-sized business became one of the stabilizing factors for the economy. Developing in very tight conditions, small and medium industry sector suppors transformation of economy and establishment of competitive environment with mature social conflicts though engaging the available and unemployed workforce. Ref. 7.

Auth.

b17.5.2.6. The main trends in the development of the financial market. /N. Kakauridze/. Professional's voice. – 2016. – # 3-4 (8). – pp. 5-11. – geo.; abs: geo., rus., eng.
World practice shows that there is a substantial profit for those financial institutions that are rapidly adopting society demanded technological innovation, or put capital investment in the shares of those companies which carry out continuous updating of technology. Modern companies, before their realized projects become profitable, are beginning to auctioning at an early stage of development. This process facilitates the creation of financial products that give us the opportunity to hedge against attendant financial risks. In own turn, credit organizations, by participation in such business processes whose potential is not yet fully open, look for a fraction of the inappropriately

discount and acquisition of this share get profit. The innovative components that increase the role of the securities in the investment portfolio have paramount importance for practice of credit institutions. New tools allow them to successfully reduce credit risks. Ref. 3.

Auth.

b17.5.2.7. The organizational strategy of the company in the context of global changes. /M. Kakauridze/. Professional's voice. – 2016. – #3-4 (8). – pp. 12-18. – rus.; abs: geo., rus., eng.
The paper deals with contributing necessity of the transpormation and innovations Organised strategy of the firm and the global changes of many branches of Economics and in the conditionif the increasing competition.innovations are indispensable Condition for modern firms to live, but the rule of the firm in pernament Alternation condition is presented as the inviolable part of each manager's Working. There are also some important things in bussiness, which caused the necessity Of systematic approach of manufacture fotthe analyse of the environmental Situations. It's not enough for the firms to reach in the competitive superiority, it Must be able to keep it, because the competitive one has a big importance for any Organizations. Ref. 7.

Auth.

b17.5.2.8. Econometric analysis of the theories of transition to market economy (Case of China economy). /G. Mikeladze/. Economics and Business. – 2016. – v. IX. – #1. – pp. 62-71. – geo.; abs.: geo., eng.
After the collapse of the Soviet Union the post-Soviet countries began their transition to market economy, which produced different economic theories. The article presents the review of shock therapy of the transition to market economy and gradualistic transformation theories and their empirical comparison in the case of China's economy. The given work discusses the possible consequences of shock therapy and effectiveness of the use of gradualistic transformation theory for China's economy. In empirical research there are given variables (GDP, inflation rate, and unemployment rate) examined in theoretical models and substitute variables (percentage rate of savings, percentage rate of investments, state foreign debt) of the factors presented in these models, as well as an individual approach to the determination of one of the factors (variable of the government's reforms and support). Based on the China's economic indicators, by the empirical realization of shock therapy model it is determined in China's economy that it was possible to successfully implement the noted theory. In addition, on the basis of the comparative analysis of the models the research determines the effectiveness of the gradualistic strategy and its advantage with respect to the strategy of shock therapy. Tab. 1, Ref. 6.

Auth.

b17.5.2.9. Development of macroprudential policy after financial crisis. /*Z.* Zedginidze/. Economics and Business. – 2016. – v. IX. – #1. – pp. 72-80. – geo.; abs.: geo., eng.
Formation and accumulation of systemic risks could not be detected by the financial supervisory practice before crisis, which became one of the causes for global financial crisis. These risks and their effective management have become a major objective of the new framework for financial supervision. The article reviews the development of macroprudential policy, which has taken place after the global financial crisis and has been paid growing attention by macroeconomists, as it necessitates analysis of financial regulation in the context of macroeconomics. Ref. 9.

Auth.

b17.5.2.10. E-commerce: Essence, Importance and the Factors Influence on It. /K. Janjgava/. Economics and Business. – 2016. – v. IX. – #1. – pp. 94-100. – geo.; abs.: geo., eng.
E-commerce is one of the most important instruments of the economy. It offers excellent opportunities for growth in developing countries. The Internet has enormous potential as a tool for development. E-commerce is indeed relevant and can be an extremely beneficial tool in developing countries. Globalization and blurring of national boundaries, accelerating information exchange, electronic commerce is one of the world's major economic trends. The economic effect from the use of e-commerce technology has a positive growth, and of course, now this sphere of activity is an integral part of society. Ref. 3.

Auth.

b17.5.2.11. Place of venture and business angel investment in the cycle of business financing. /L. Kokiauri, N. Kokiauri/. Economics and Business. – 2016. – v. IX. – #1. – pp. 101-114. – geo.; abs.: geo., eng.

Today positive state policies in the developed countries of the world are directed towards fundamental transformation and development of innovative economic sector. One of the most principle ways for solving tasks of priorities set for economic development is a correct direction of innovative activities; particularly, processing and implementation of the programs of public and private partnership in the financial, investment and infrastructural sectors; creation of a wide network of state-private venture funds, technoparks and business incubator center, etc. Likewise, extended nature of the terms of repurchasing of innovative and especially – venture investments should be emphasized. To our mind, in the development of innovative and venture entrepreneurial sector, as a united complex, we should distinguish two “narrow places”; the first – “primary” is nondevelopment of the initial investment; the second one – is the lack of qualified specialists. Business-angel, primary, seed and start-up investment sectors are not developed in Georgia and it includes narrow range of projects; at that, neither venture capital, not – institutions related with it possess serious financial resources. As for qualified specialists, there are many high-qualified specialists, and managers of serious investment projects in Georgia, but there is the lack of people, who comprehend difficult mechanisms of venture and business-angel investments. It is often very difficult to find common language between participants of innovative projection and investment processes; sometimes the parties do not understand each other; in the process of searching for investments, sometimes difficulties of preparing business-offers arise and etc. Due to this fact, many of potential interesting transactions fall through at the stage of negotiations. In the United States of America, and in fewer cases in the EU states, venture and business-angel fields are singled out as separate specialization. Their representatives are different in professionalism, and the best features of practitioners knowing standards and criteria. This lowers the above noted risks to the minimum. To our mind, solving said problems may be provided in two ways: In practical field the governmental – private partnership programs should accelerate development of the sectors of venture and business-angel investments. Together with the existed ones, it is necessary to develop programs of joint cofinancing of initial, seed and startup investment funds along with business-angels development programs. Tab. 1, Fig. 2, Ref. 16.

Auth.

b17.5.2.12. Mechanism of control in finances function system and prerequisites for its realization. /T. Okruashvili, K. Gudushauri/. Economics and Business. – 2016. – v. IX. – #1. – pp. 115-125. – geo.; abs.: geo., eng.

The article analyzes the connection of financial control function with other main functions in modern Georgia considering the experience of foreign countries. The the importance of the implementation of finances control function is highlighted. In addition, the focus is shifted to the finances distribution and regulatory functions. It is proved that there are strong economic ties between finances functions. There is offered the opinion that in Georgia’s practice the necessary prerequisite for successful implementation of finances functions is the provision of financial stability and hard national currency by the main bank of the country. The function of financial control is directly connected to its distribution function. The function of financial control is manifested in the conversion of the gross domestic product in relevant funds and then in the control of its targeted distribution. The movement of budgetary funds and the overall budgetary process - budgeting, review, approval, implementation and approval of accounting - is related to the financial control function. The objectives of the function of finances control are: the protection status of the country's financial legislation, control over the tax and customs services, banks, financial obligations and full control over the implementation of the budget system, the performance of mutual payments between enterprises and organizations. In the conditions of market economy, some experts estimate is fair, along with distribution and control functions, finances perform also regulatory functions; through the finances of the state (state spending, taxes, the state credit) it is connected to the regulation of production processes. It can be made the conclusion that the finances control function is closely connected with distribution and regulatory functions. It should be noted that effectiveness of the financial control function is highly dependent on the finances discipline existing in the national economy. On the basis of presenting the noted issues in a new way in the article there is made a conclusion that the National Bank should formulate such monetary policy which

will provide the approximation of the standard of minimal reserves to the standard existing in the international banking practice and change the “expensive” money policy with “cheap” money policy. At the present stage the important sphere of the banking system of developing countries is the development of financial markets. It is necessary to create in Georgia the Deposit Insurance Corporation, which will insure both individuals and legal entities savings. Ref. 9.

Auth.

b17.5.2.13. Monetary policy: structure and tasks. /G. Lemonjava/. Ekonomisti. – 2016. – #2. – v. IX. – pp. 26-37. – geo.; abs.: geo., eng.
The role and objectives of monetary policy, its components and introduction mechanisms are considered. The trends of monetary policy development and configuration of the targeted, inflation-focused monetary policy are analyzed. Tab. 1, Ref. 14.

Auth.

b17.5.2.14. The USA policy of innovation in agriculture and the possibilities of its use in Georgia. /T. Kavtaradze/. Ekonomisti. – 2016. – #2. – v. IX. – pp. 38-46. – geo.; abs.: geo., eng.
Certain issues of the innovation policy in the USA and EU countries agriculture are considered. An opinion of the application of such innovatmion policies in Georgian agrioculture is voiced. Ref. 11.

Auth.

b17.5.2.15. Effectiveness of subsidy programs in wine-growing and wine-making. /T. Lazariashvili/. Ekonomisti. – 2016. – #2. – v. IX. – pp. 47-54. – geo.; abs.: geo., eng.
The article analyzes the state policy aimed at attracting financial resources to the agrarian sector as well as the state subsidy program for developing the wine-growing and winemaking industry. Relevant mechanism ang grant program activation recommendations are proposed. Tab. 4, Ref. 4.

Auth.

b17.5.2.16. Diffusion index for Georgia: selection leading economic indicators. /L. Totladze/. eng., geo. Ekonomisti. – 2016. – #2. – v. IX. – pp. 83-89. – eng.; abs.: eng., geo.
Cyclical feature of economies in a violent environment is forcing researchers to search for early signals of turning points. The most appropriate tools to solve this problem are the leading indicators and indexes based on leading indicators. It is difficult to rank hich types of indicators have most weight in foretelling the course of the economy, and ubsequently, its impact on currency market. Given the volatile nature of transformed economy, there is a need an accurate leading indicator of economic performance (In particular for Georgia). In this paper we try collect leading economic indicators, study their features and engage diffusion index for Georgia. Fig. 1, Ref. 19.

Auth.

b17.5.2.17. Method of spectral analysis in research of economic cycles. /G. Tetrauli/. Ekonomisti. – 2016. – #2. – v. IX. – pp. 100-108. – geo.; abs.: geo., eng.
One of the most popular modern methods of study of the cyclic form of economy – theoretical issues and practical application of spectral analyzes after the example of Georgia are considered. The results of a spectrum analysis can be shown in a graphical form. Fig. 2, Ref. 16.

Auth.

b17.5.2.18. Juglar cycles in economy of Georgia. /G. Tetrauli/. Ekonomisti. – 2016. – #2. – v. IX. – pp. 109-1b17. – geo.; abs.: geo., eng.
The theoretical and practical problems of the modern economy cycling study technique – Hodrick-Prescott filter – are discussed. The Juglar cycles’ periods are computed and conclusions concerniong the country’s future economic development are made. Tab. 1, Fig. 2, Ref. 11

Auth.

b17.5.2.19. Influence of monetary policy on goverment securities market (on the example of Georgia). /I. Doghonadze/. Ekonomisti. – 2016. – #2. – v. IX. – pp.118-135. – geo.; abs.: geo., eng.

The effect of monetary shocks on the government securities and the real estate market is being studied after the example of Georgia. The article deals with the models used to analyze such effects. Tab. 5, Fig. 2, Ref. 42.

Auth.

b17.5.2.20. Comparative analysis of economic systems: specificity and evolution. /N. Grajevskaya/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 28-34. – rus.; abs.: rus., geo., eng.

The article highlights specific features and evolution stages of comparative economic analysis. The author shows the specificity of new economic comparativistics that was created on the basis of unorthodox research approaches to the comparison of economic systems (neo-institutionalism, evolutionary economics, and new political economy). In the author's opinion, modern economic comparativistics is oriented upon the study of real economic systems and characterized by a wide range of research programs. One of the promising directions of its development is a cluster analysis of the competitiveness of national economies. The article analyses methodology of comparative analysis of the global competitiveness of different countries in the world, created by the experts of the World Economic Forum. This methodology clusters national economies in terms of development of their competitiveness. It allowed the author to point out the necessity of improving institutional efficiency of transformation economies as a major step in their market modernization. Tab. 2, Ref. 12.

Auth.

b17.5.2.21. Economy of Hungary and characteristic of its development. /R. Javakhishvili/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 34-38. – geo.; abs.: geo., eng., rus.

Hungary belongs to the number of developed countries from Central-East Europe and the level of its economic development is about 2 times lower than the level of the developed West European countries. Despite the country's macroeconomic indicators growth is low, a significant growth of its economy in 2013-2014 years is observed. Hungary's economy's number of characteristics are the following: a large number of small and medium enterprises in the country, which accounts for 75% of workers and almost 40% of GDP; Investment growth and high levels of foreign capital share in the economy; the financial imbalance of the country, foreign debt and the increasedcosts offoreign debt's service; The innovation-driven economy'spriority sectors'recent development etc. Tab. 1, Ref. 5.

Auth.

b17.5.2.22. Knowledge economy. /M. Tetruashvili/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 38-43. – geo.; abs.: geo., eng., rus.

In today's society the concept of "knowledge economy" has become very popular. This definition is often used in both the scientific and the socio-political literature. This is due to the processes of transformation of society and the economy taking place particularly in the developed countries of the world. What is the essence of the idea of the knowledge economy? The theory of the development of the economy suggests that it is human knowledge, not a product or production, which is the basis of economic processes taking place in the developed society. Knowledge economy is the highest stage of development, it does not destroy the traditional system but on the basis of it promotes the further stage of development, logical one. Ref. 4.

Auth.

b17.5.2.23. History of insurance and stages of its development. /D. Vekua, A. Tsertsvadze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 43-47. – geo.; abs.: geo., eng., rus.

Nowadays the world's insurance companies are actively involved in the country's social and economic life. The insurance has been established as a special financial system which has its own financial resources and the organizational structure of the economy. Today's public life is impossible without the cooperation of the insurance, so the purpose of the article is to make specialists aware of the history of insurance and its stages of development. Ref. 4.

Auth.

b17.5.2.24. Ilia Chavchavadze's economic views about the landmarks of open economics: free trade and protectionism. /Sh. Veshapidze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 47-52. – geo.; abs.: geo., eng., rus.

Ilia Chavchavadze's economic views about successful external trade and landmarks of open economy are based on the principle of liberal customs policy. He also explains the postulates of adherents and opponents of free trade and protectionism, as well as priorities of open market for protection of nation's fundamental interests. Ilia condemns monopolism and appeals for implementation of fundamental principle of nation's general welfare and self-existence. Ilia notes that blocking of import of foreign goods, by means of customs policy, has the meaning, if society will get richer and gain benefit. When ilia considered free trade and protectionism, he always preferred nation's fundamental interests and open market. Ilia proved that time of reticence and hiding in the shell is in the past. Nowadays, our progress depends on others and not only on us. In his opinion, healthy economic policy that is beneficial for nation's interests is more than pure political interests of different countries. Ilia thinks that protectionist policy isn't beneficial for Georgia and condemns monopolism, because in his opinion means of subsistence should be guaranteed for everyone and monopolism prevents it. Ref. 8.

Auth.

b17.5.2.25. Problems of rational utilization and protection of land resources in Georgia. /T. Chkheidze, K. Kveladze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 53-58. – geo.; abs.: geo., eng., rus.

Sustainable economic growth and development of the country is not possible without utilization of natural resources. In natural resource potential the land resource as perpetual assets and basic means of production in agriculture has a special significance. Growth of world population, development of transport, intensification of agriculture and other anthropogenic phenomena have increased the human influence on land damaging it greatly. It should be noted that most arable lands of the country are deflated, fertile layer is dehuminizated, crop rotation and agrotechnical service are distorted. The area of arable lands is decreased in spite of including new lands into circulation. The main cause is an inexpedient use of agricultural lands, salinization, erosion desertification, bogging etc. against which proper measures are not taken. Optimal use of land resource has been more complicated because of inaccurate land reform, plotting into pieces land intended for privatization. In recent times the projects such as “Preferential Agrocredit,” “Product in Georgia”, “Agricultural insurance”, “Establish Future” etc. initiated by the government to help agriculture will promote the rational use of land fund in the country. Ref. 9.

Auth.

b17.5.2.26. Peculiarities of bank and financial management in banks. /L. Jangulashvili, G. Tsaava/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 59-65. – geo.; abs.: geo., eng., rus.

The article deals with functions, principles of bank management and strategic, financial and personnel management. Security management and financial management of the bank are analysed. Golden rules of banking, yield management of the bank, the system of basic indicators (coefficient) of return (profitability) of the bank's activities, management and classification of bank risk management and modern financial management system are also discussed. Ref. 6.

Auth.

b17.5.2.27. Economic situation of the regions of Georgia and ways of its improvement. /V. Burduli/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 65-70. – geo.; abs.: geo., eng., rus.

The article deals with the gross regional product in terms of Georgian regions; the indeces of gross regional product per capita of the population; the distribution of created value added in the regions according to the economic activities; the contribution of each region in the gross value added created in the country in each specific type of activity and the indices of value added per worker for each type of activity. Taking into account the results of the analysis of the economic situation of the regions the article deals with the ways to improve the economic situation in the regions of Georgia. Ref. 11.

Auth.

b17.5.2.28. Features of the regulation of banks' risks under changing environmental conditions. /G. Khantadze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 70-74. – geo.; abs.: geo., eng., rus.
Each bank has to take a systematic, complex works and measures to minimize the risks during its activities. The aims and goals of commercial banks' risk management are mainly defined by the ever-changing external economic environment, in which banks have to work. It is discussed in the article that a risk distribution in time plays an important role for predicting the expected losses while a risk occurrence. The process of taking into account of risky situation in the past makes it possible to avoid risks in the present and in the future. Mechanism of banking supervision represents a system of interconnected coordinated actions for regulation of bank activities directed towards the effective management of banking risks in order to maintain the stability of the ever-changing environmental conditions. Ref. 9.

Auth.

b17.5.2.29. Transformation of economy in Georgia. /G. Kvabziridze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 75-78. – geo.; abs.: geo., eng., rus.
The article deals with the characteristics of a market economy in Georgia. The author emphasizes that the economic policy of simultaneously connected utilization of monetary relations and the regulation of macroeconomic instruments and structural values, which aims at updating the priority sectors. Ref. 3.

Auth.

b17.5.2.30. About the improvement of tax rate. /O. Shavishvili/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 78-81. – geo.; abs.: geo., eng., rus.
Volume of state and local budget depends on the size of tax rate. The article mentions that the current tax rates cannot stimulate the recovery and development of local production. For this reason it is essential to gradually decrease income tax, profit tax, excise and VAT; as for import taxes, it is too low and according to the agreement with the World Trade Organization, should be increased. The reduction of tax rate will expand tax bases and will help the growth of state and local budget parameters. Ref. 5.

Auth.

b17.5.2.31. Features and importance of free economic zone. /G. Menaphire/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 81-88. – geo.; abs.: geo., eng., rus.
Free economic zone (FEZ) as an economic instrument is used in many countries of the world with different regulations and specialization from each other. Typically, its formation is related to attract investments, infrastructural improvement, increase employment, implementation of new technologies and management system. There are profit and non-profit cases. In the the meaning of FEZ and its characteristic factors are explained. Also there is an extensive review about the formation and development of free zones, the situation in Georgia as well as the international experience. Among them the parallels and comparative analysis are made. Ref. 14.

Auth.

b17.5.2.32. Effect of Foreign Direct Investments in the economy of host country (after the example of the construction business of the Autonomous Republic of Adjara). /T. Zhorzholiani/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 88-99. – geo.; abs.: geo., eng., rus.
The article explores the important profit, which influences the companies in the construction sector of the Autonomous Republic of Adjara. According to the author, the theoretical structure and framework of the research creates the basis to do the further theoretical and practical research and analysis for the deep study of the mentioned issues, which is essential for the identification of the present, basic tendencies of the influence of foreign direct investments, also to forecast the possible strategies and basic future directions. Ref. b17.

Auth.

b17.5.2.33. Motivation strengthening theory in modern management. /N. Lukhutashvili/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 31-39. – Geo.; abs.: geo., eng.
A special role of the theory of strengthening in Management theory and practice history counts more than 50 theories of motivation. Many of them are outdated in the modern stage of society development, or they have lost their relevance; many of them profoundly lacked practicality, or they were actually somewhat difficult to understand. There are theories that have withstood the challenges of society and still have their relevance. Among them are: content theories of motivation, procedural theories of motivation and theory of strengthening. If in the motivation content theories the focus is made on the relationship between human demands and their motivations, procedural theories explore behavior defining processes for workers which are focused on the features of each stage of the motivation implementation process and on functioning mechanism of incentive systems. Strengthening theory just analyzes the relationship between Behavior and its results for the employees. Motivation strengthening theory is not new. Its founder is American psychologist Edward Torndaikl (1874-1949), who in his experiments uses such animals, as chickens, cats, dogs and monkeys. Ref. 4.

Auth.

b17.5.2.34. Types of state audit and basic directions of its implementation in Georgia. /N. Vashakidze, D. Maglakelidze/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 40-54. – Geo.; abs.: geo., eng.
The purpose of the state audit in budgetary organization is to establish accuracy, rationality and advisability of spending budgetary funds, to observe legal standards and display eventual violations in the unit of audit. The strategy of the state audit, as a supreme form of control, should be directed to discovering problems in activity of the unit and solving them till the mentioned problems become serious. The methodologic ground of audit activity is the complex of methods related to research of the financial activity of the auditing unit, by means of which information on the results of activity of the object can be achieved. At present, in our country audit activity is based on the requirements of the international standards and the following basic requirements should be met: document "Audit program" and a more detailed document "Audit plan should be prepared.

Auth.

b17.5.2.35. State and private pension systems and perspectives of their development in Georgia. /D. Uglava/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 55-65. – Geo.; abs.: geo., eng.
According to the World Bank’s conclusion and given the demographic development trends in Georgia, in several years the State will be faced with te problem of covering its pension liabilities. The life span is increasing both globally and locally and, correspondingly, the number of the people of pensionable age also increases. A transfer to the contributory pension scheme is envisaged by 20b17.

Auth.

b17.5.2.36. The prospects of ecotourism development in Borjomi - Kharagauli National Park. /M. O. Azmaiparashvili, T.K.Patarkalashvili, L.D. Kvaratskhelia/. Annals of Agrarian Science. - 2015. – v. 13. – #4. – pp. 68-71. – eng.; abs.: eng., rus.
The Borjomi-Kharagauli National Park is one of the largest national parks not only in Georgia, but in Europe too. The park was endorsed and created with the support of the World Wildlife Fund and the German government in 1995 and was offi cially inaugurated in 2001. In 2007 the park became a member of PAN (Protected Area Network). The particular uniqueness of the park, along with its location and climate, is the diversity of geographical and ecological zones. The park is famous for its beautiful landscapes, historical monuments and diverse fl ora and fauna. The major part of the park is covered with coniferous and deciduous forests. At the border of western Georgia grew species characteristic to Colchic fl ora. We monitored the process of secure touristic management in those parts of the park, which are mostly endangered by visitors. As it was fi nd out, according to existed standards, the optimal loading of places takes place in mid-mountain forest zone. The touristic-recreational capacity on one hectare of forested area in this zone is two visitor a day, in forestless places less. By theoretical calculations touristic-recreational loading on one hectare/an

year is more than existing norms, but destructive adverse loading from visitors'side wasn't observed. On contrary, such destructive actions was noticed from indigenous people, who use perspective touristic territories for agricultural purposes. In places mostly visited by tourists the reduction of rare forest species takes place. Ehe main principles of sustainable ecotourism development are not maintained and the administration of the park should undertake decisive measures to improve the situation. Ref. 12.

Auth.

b17.5.2.37. Role of agriculture in speeding up economic growth. /M. Luarsabishvili, N. Karkashadze, A. Dolidze/. Annals of Agrarian Science. - 2015. – v. 13. – #4. – pp. 75-78. – eng.; abs.: eng., rus.
Careful consideration was given to principal directions of the government assistance in accelerating agrobusiness development in Georgia; attention was focused not only on large but also on medium and small enterprises. One of the ways to solve the problem is to promote cooperatives of different forms and purposes by amalgamation of family farms. Together with structural, organizational and fi nancial support, it is necessary to produce modern agricultural agents locally and launch assembling for small-size machinery and tools. Ref. 12.

Auth.

b17.5.2.38. Natural recreational potential of Georgia and prospects for its realization. /O.Paresishvili, V. Mirzaeva/. Annals of Agrarian Science. - 2015. – v. 13. – #4. – pp. 111-116. – eng.; abs.: eng., rus.
Georgia, despite relatively small territory, has a number of valuable natural resources. Their efficient use is of great importance for purposes of sustainable development of the country. A scientific study of the whole variety of Georgian natural resources in view of regions suggests that the country has considerable recreational opportunities. The paper contains a brief physical-geographic description of Georgia, and general characteristic of recreational resources. While considering the issues of realization of Georgian resource potential, it seems reasonable to get acquainted with the experience accumulated in European countries similar in physical-geographic parameters and possession of natural resources. For this purpose the authors examine two European countries (developed and developing ones): Switzerland and Slovenia. The authors give the information concerning natural resources of the mentioned countries, analyze different aspects of the development of recreational sphere in those countries which are of interest from the standpoint of the establishment of this sphere in Georgia. Ref. 33.

Auth.

b5.3. Educational sciences

b17.5.3.1. Cooperative game model for joint solution of the problems by a university students' group. /K. Shvangiradze/. Professional's voice. – 2016. – #3-4 (8). – pp. 25-29. – geo.; abs: geo., rus., eng.
The game model of cooperative teaching of university students is proposed. The cooperative model implies decision-making by the group members under cooperative action. The Shepley value Schmeidler's nucleolus. Ref. 2.

Auth.

b17.5.3.2. Student knowledge assessment forms and methods in Eropean and Chinese education system. /T. Menabde, S. Baliashvili, N. Kvachadze/. Automated Control Systems. – 2015. – #1(13). – pp. 200-204. – geo.; abs.: geo., eng., rus.
The article discusses the criteria of assessing students' knowledge in Georgian and Chinese higher education institutions as well as the system of credit ranging. The article also discusses the characteristics of Chinese higher education system together with the European and Chinese forms and methods for assessing students, as well as the similarities and differences between the assessment forms and methods. Ref. 5.

Auth.

b5.4. Sociology

b17.5.4.1. Study of factual nutrition in adolescents' organized contingent. /G. Grigorashvili, A. Khotivari/. Agrarian-economic Science and Technologies. – 2016. – #3(32). – pp. 38-44. – geo.; abs.: geo., eng.
Monitoring of the nutrition of adolescents uтder the present unstable economic conditions is absolutely necessary. We have studied the ration/food allowance in an organized contingent of adolescents. The study was conducted in the boarding house among 72 adolescents up to 17 years of age. The obtained results were compared to the norms of physiological requirements of adolescents for essential nutrient materials and energy. As a result of quanitiatuive and qualitative assessment, a number of imbalanced nutritive materials and microelements was revealed (zinc, iron, iodine), which may adversely affect the growth and development of the adolescents. Tab. 2, Ref. 11.

Auth.

b17.5.4.2. Unemployment problem in Georgia and ways of its overcoming. /N. Paichadze/. Economics and Business. – 2016. – v. IX. – #1. – pp. 9-27. – geo.; abs.: geo., eng.
At the current stage of socio-economic development of Georgia the most acute problem in the country is the raising of the level of population employment and, therefore, reduction of unemployment. Many interesting works by foreign and Georgian economist-researchers have been published on this problem. However, due to the complexity and permanent volatility of the noted problem, scientific study of the issues related to this problem is still relevant and will continue to be so in the future. This article mainly deals with the employment and unemployment-related issues, which, in our opinion, are relatively less studied by Georgian economists working on this problem. And, proceeding from the analysis of existing situation in employment in Georgia there are suggested some concrete measures for unemployment reduction.Tab. 4, Ref. 9.

Auth.

b17.5.4.3. The demographic trend - the most important component of the modern global geo-strategic landscape and its impact on Georgia. /B. Ramishvili/. Economics and Business. – 2016. – v. IX. – #1. – pp. 28-44. – geo.; abs.: geo., eng.
The author continues the series of articles, the aim of which is the identification of Georgia's position in the global geo-strategic landscape; the given work explores the demographic megatrend, which is determined by demographic explosion and started from the second half of the XX century and according to the projections it will last until the mid-21st century and will have a significant impact on the planet's geo-strategic landscape formation. According to the author, several important factors, contributing to demographic boom on the planet, can be identified, for example: the acceleration of economic development and the increase of social protection in this light, scientific and technological progress in general and in particular, the development of the health care system and pharmaceutical industry, the growth of international solidarity in the context of the humanization of mankind, etc. At the same time, in a number of regions there have been observed the downward trend of the reduction of growth rates, while some European countries face the threat of depopulation. According to the author, such processes give rise to many problems. For example, if in many countries there is the problem of excess population; Europe can soon face a shortage of labor resources. It is also emphasized that the global population aging process also exacerbates demographic problem in some countries. According to the level of economic development, the author considers the human factor as the main reason for the planet's sharp regionalization and therefore he makes a conclusion: first, in different regions, from economic standpoint, there is population of different effectiveness; second, the level of effectiveness of the human of a certain localization is conditioned not only by personal characteristics: education, professionalism, qualifications, performance, talent, etc. but also it is determined by the setting where a person has to work; third, because the individuals, living in different settings, have different possibilities of the use of their own potential and self-realization, it gives rise to a number of processes in the demographic point of view, among them migration and urbanization are of particular importance. In this regard, in the research context, the author

introduces the economic man's concept and considers the index of labor productivity as the most important criterion for the assessment of effectiveness; however, in this regard, he gives and analyzes the GDP, GDP growth, labor force, urbanization level and rates, median age, net migration indicators. The author believes that Russia has a great influence on the determination of Georgia's position in the global geo-strategic landscape; he pays great attention to the study of the demographic perspectives of this country. A separate chapter is dedicated to the issue in this work; in its final part there are opinions that Russia has not demographic resources for imperial formation and even more – proceeding from the size of territory and demographic problems, it doesn't have sufficient population for the formation of effective state. The final part of the work is devoted to the analysis of the impact of demographic megatrend on Georgia, which in the author's opinion, is still clearly negative. On the basis of different data he has presented the grave situation in Georgia in this regard and considers that it is necessary to formulate and start the implementation of the state demographic policy. It should be encouraged fertility, but to achieve fast results, it is necessary for a significant part of Georgian emigration to return to Georgia. Tab. 4, Ref. 12.

Auth.

b17.5.4.4. Application of comparative analysis of official polls and expert estimations of indicators in demographic projections. /A. Sulaberidze, G. Tsuladze, V. Sulaberidze, N. Gomelauri/. Ekonomisti. – 2016. – #2. – v. IX. – pp. 5-25. – geo., eng.; abs.: geo., eng.

Projections are generally based on official demographic polls of national statistics. The projections (especially in developing countries) that are based on inexact statistical information of expected natural movement and migration of the population have often some inaccuracies. In this regard, we argue that is preferably to have an evidence based expert assessment as an alternative measure to the official census while doing projections. Considering the example of Georgian census 2014, it can be said that expert assessments were more accurate. This means that in case of inexact projections, comparative analysis of official statistics and experts assessments will ensure enhanced and more accurate projections. Tab. 1, Fig. 7, Ref. 18.

Auth.

b17.5.4.5. Demographic development and demographic security in Georgia. /V. Lordkipanidze/. Bulletin of the Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 112-1b17. – eng.; abs: eng., geo.

The history of Georgian demographic development is rather rich and interesting. Since ancient time, politically and economically strong Georgia with its population and demographic behavior was always among the powerful and demographically well-developed countries of the world. That fact is confirmed in a number of Georgian and foreign sources of history and literature. Today, from the economical point of view, Georgia is considered to be a developing country but demographically it is among the developed countries. Modern problems of demographic development of Georgia should be considered against the background of the demographic processes going on in the world, the more so, given its specific geo-political position, Georgia might easily be involved in the conflict processes going on in the region or in the neighborhood, or even in the global processes of migration. Along with low birth rate and deformed age structure, it might aggravate the crisis of demographic processes in the country. In order to avoid all this it is necessary to work out a sensible conception of national security and to carry out proper state policy of demography based on it. Ref. 15.

Auth.

b5.5. Law

b17.5.5.1. The convergence process in the modern municipalizm. /K. Phridonashvili/. Law and Economics. – 2016. – #7. – pp. 4-20. – geo.; abs: geo., eng., fr.

This publication outlines the circumstances, the provisions of the self-government which are given in the European Charter and the democratic constitutions of some countries and are identical in terms of legal values and principles because the local government system is based on such universal values and principles of constitutionalism as are the vertical distribution, subsidiarity, decentralization, human community and natural rights. In addition, the author points out that there are similar processes in different various models of the self-governance. Such examples are seen

when during the depoliticizing process and when people as the source of government lose its initial relevance and become just a user of government. Having studied the relevant issues, the author develops the idea that such similarity of concepts and tendencies in self governance of different countries' various political and legal system is based on the irreversible process of convergence in the modern municipalizm. Ref. 16.

Auth.

b17.5.5.2. Clash of interests in the case of the Caucasus regionalism. /T. Abramishvili/. Law and Economics. – 2016. – #7. – pp. 29-37. – eng.; abs: eng., geo., fr.
The Caucasus is being faced with the clash of inetrests of different regional nations and integration formations from the Black and Caspian Sea. Under the conditions of universal globalization and new regionalism, the Caucasus regions are faced with the urgent aim of socioeconomic integration, but their complicated diverse socioeconomic, national-territorial and geopolitical interests slow down this process and today the prospects of Caucasian regionalism depends on the distribution of global forces in the new century's new world order. Ref. 14.

Auth.

b17.5.5.3. What is an administrative approach to environmental damage. /N.Kashia/. Professional's voice. – 2016. –#3-4(8). – pp. 30-35. – geo.; abs: geo., rus., eng.
Liability for the environmental damage is primarily regulated by the first civil-legal law. Interesting for such damages is the administrative and legal concept of such liability, which has undergone a thorough harmonization with the EU directive in Georgian legislation. It is different from "traditional damages" civil liability system. It should be noted that entrepreneurs engaged in damaging for the environment activities shall be also liable during the 10-year limitation period. Ref. 5.

Auth.

b17.5.5.4. The policy advocacy milieu and its impact on advocacy results in Georgia. /T. Koberidze/. Journal of Politics and Democratizatio (JPD). – 2016. – v. 1. – #2. – pp. 1-19. – eng.; abs.: eng.
Evaluations of advocacy outcomes are, in most cases, limited to assessments of the capacity of Civil Society Organizations (CSOs) to implement advocacy; they are commonly linked to advocacy project timeframes, an lab animal science d are therefore of a limited nature. With this in mind, this paper focuses on the advocacy milieu that affects advocacy outcomes, to a greater or lesser extent. The impact components or conditions reviewed in this paper are: a) state and political conditions, b) the impact of wider acceptance of advocacy issues, and c) the "motivational effect" and "theory of change" of CSOs to initiate an organization and/or policy advocacy. The article concludes that neither the unstable political environment of Georgia nor the wider acceptance of an issue by the public have an impact on policy advocacy. Instead, success of advocacy is related to the motivation to initiate civic organization and comprehension of the "theory of change." In addition, the article reveals that in Georgia's context it is not a concrete long-term and formalized strategy that is linked to the "theory of change" that matters for successful advocacy, but constantly maintaining critical issues on the agenda. Fig. 4, Ref. 22.

Auth.

b17.5.5.5. The Local Self-Government Code of Georgia. /A. Svanishvili/. Journal of Politics and Democratizatio (JPD). – 2016. – #1. – pp. 81-87. – eng.; abs.: eng.
The purpose of this article is the comparison of the concept of self-government provided in the European Charter, and the definition of it given in the Local Self-Government Code of Georgia, to demonstrate main differences which lead to a misinterpretation of the essence of self-government, and to answer the following questions: 1. What is the goal of self-government- to merely solve local issues or to solve these issues considering the interests of local population? 2. Which problems may arise as a result of the attempt to define in detail the powers of selfgoverning units and a procedure for exercising these powers? In response to the above questions, the following conclusions have been drawn in this article: 1. The differences definitions exert and their actual influence on the activity of local authorities; and 2. It is the scope of powers of self-government, not a procedure for exercising these powers that shall be prescribed by law. Ref. 11.

Auth.

b17.5.5.6. Validity of electronic signature – technological and legal aspects. /K. Meparishvili, L. Kardenakhishvili/. Automated Control Systems. – 2015. – #1(13). – pp. 210-214. – geo.; abs.: geo., eng., rus.
Legal aspects of e-commerce, implying definition of various contracts as as well as their completion technology, are considered. Legal regulations of electronic commerce in the law of the Continental Europe and the Anglo-Americal countries, as well as directives and guidelines developed by international organizations are discussed. Ref. 4.

Auth.

b17.5.5.7. Regulation of legal management of the State. /N. Maisuradze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 132-136. – geo.; abs.: geo., eng., rus.
The article carefully deals with the basic issues of the legal regulation of the State. The author considers the significant problems that occur in the process of legal regulation of the State and which are essantial for the State's development and progress. Ref. 5.

Auth.

b17.5.5.8. Economic and legal mechanisms of implementation of the investment activities of the government. /T. Kvabziridze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 136-141. – geo.; abs.: geo., eng., rus.
The paper discusses the investment activities of the Government and the economic and legal aspects of its implementation, which are expressed in state regulation of finance and economic and legal unity of the investment activity. The ways of improving the investment environment are highlighted and the focuse is made on the existence of a stable legal framework, which, for its part, provides for the investment process to ensure a healthy environment. The paper discusses qualitative characteristics of the budget investment and, as a whole, public investment, as wll as the status and characteristics of such relationships. On the basis of existing law, the types of guarantees of the government in the "Actions to Ensure Capitalizing Guarantees" are considered. Ref. 6.

Auth.

b17.5.5.9. Mediation in civil law relationships. /K. Koberidze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 141-146. – geo.; abs.: geo., eng., rus.
The article briefly reviews a form of alternative dispute resolution – mediation, analyzes Georgian history in terms of mediation and how Georgian contemporary legislation regulates this institution. The experience of U.S. and Western Europe is mentioned and how it effects the introduction of Mediation to the second world countries, such as Georgia are examined. Moreover, what significant difficulties Mediation meets and how this institution helps citizens are discussed. Ref. 7.

Auth.

b17.5.5.10. Insurance of civil liability and its legal aspects. /B. Tsertsvadze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 146-149. – geo.; abs.: geo., eng., rus.
With civil liability insurance contract, the insurer is obligated to release the insurer from the obligation imposed by a third party before the insurance period arising because of responsibility. There are various types of liability insurance. The most common is the insurance of civil liability of the motor vehicle owners being compulsory insurance in world’s leading countries. The article deals with the legal aspects of a civil liability insurance as well. Ref. 3.

Auth.

b5.6. Political science

b17.5.6.1. Critical analysis of Georgian-Turkish relations. /V. Modebadze/. Law and Economics. – 2016. – #7. – pp. 21-28. – geo.; abs: geo., eng., fr.
This article analyzes positive and negative sides of Georgian-Turkish relations. Although Turkey is considered a strategic partner of Georgia, tensions in Georgian-Turkish relations can still be observed. Ref. 7.

Auth.

b17.5.6.2. NATO eastern enlargement and the future of transatlantic relations. /T. Abramishvili/. Law and Economics. – 2016. – #7. – pp. 38-47. – eng.; abs: eng., fr., geo.
The current Russia's invasion in Ukraine showed the NATO alliance members the new problems and made the Europe to turn its attention from Afghanistan to the east-west parts of Europe by establishing six command centres in Eastern Europe. The new threats made all NATO members to increase defense budgets. But the question of the NATO east-west enlargement is still sensitive. During the 1990s and 2000s Western states did not want to provoke Russia despite Javier Solan's attempts to reassure the Kremlin that the expansion would not be a threat to Russia. By bringing into the alliance the former communist countries of Eastern and Central Europe and the Baltic States, NATO practically completed the reunification process of Europe. The aim of the article is to make a brief review of transatlantic relationships after the Cold War and make some predictions about the future of Eastern enlargement. Ref. 11.

Auth.

b17.5.6.3. Small states' fate – foreign security and policy of the post cold war Balkans and Caucasus states. /T. Abramishvili/. Law and Economics. – 2016. – #7. – pp. 48-60. – eng.; abs: eng., geo., fr.
The fall of the Soviet Union gave birth to the new states and totally changed the existing international system, opened up to new security dynamics and directions that facilitated the emergence of the new world order. The Western Balkans and the South Caucasus are the regions which experienced the same fate after the Cold War and faced lots of threats and challenges. In both regions people have lived through dictatorship , having no respect of human rights. The newly independent states faced lots of difficulties, internal and external problems threatening its sovereignty. The article presents a comparative analysis of the two regions – the Caucasus and the Balkans, discusses their security and foreign policy and due to current political events in the regions, suggests future perspectives and recommendations concerning the security and political issues. Ref. 27.

Auth.

b17.5.6.4. Boko Haram: diverging approaches to fighting insurgency. /J. Leach/. Journal of Politics and Democratizatio (JPD). – 2016. – v. 1. – #2. – pp. 20-40. – eng.; abs.: eng.
This essay argues that Nigeria's continued democratization is crucial to limiting the appeal of and damage caused by insurgencies such as the Islamist movement commonly known as Boko Haram. The popularity of insurgent groups can be mitigated with an emphasis on good governance measures, particularly those emphasizing local and national government transparency, emphasis on development and education, and strong links with civil society and the public (especially with regard to police and military operations). In achieving the above, the essay analyzes and dissects two key ongoing processes in Nigeria that have sometimes been conflated with each other; namely, the change of presidential administrations in 2015 and the fight against the Boko Haram insurgency based in the country's northeast. It seeks to establish that while the current Buhari administration has launched several relevant successes in fighting the group, some of the key factors allowing for a more successful push against the insurgency in 2015-16 were underway even before the change of administration, in a large part due to pressure from regional and international actors and internal fracturing within the group, itself partly a result of this regional coalition's success. The recent rising of instability again in the Niger Delta demonstrates that dramatic political promises and their implementation may still not be touching on Nigeria's underlying security concerns. Ref. 53.

Auth.

b17.5.6.5. A qualitative comparison of anti-corruption measures in Guatemala and Brazil. /J. Jensen, T. Anderson/. Journal of Politics and Democratizatio (JPD). – 2016. – v. 1. – #2. – pp. 41-62. – eng.; abs.: eng.
The purpose of this research is to compare recent initiatives aimed at addressing corruption within the public sector in Guatemala and Brazil. Political unrest in the last two decades, charges of

bribery and financial mismanagement by leaders, instances of electoral mismanagement, and other actions by national and local government officials in both countries have highlighted what has become almost commonplace throughout many areas in Latin America. Guatemala and Brazil represent countries that have taken different philosophical approaches to dealing with the recent corrupt acts and thus offer a good case for comparison. What remains to be seen is whether one approach is more effective than the other. Tab. 2, Fig. 1, Ref. 30.

Auth.

b17.5.6.6. Impact of the Georgian non-governmental sector on social capital in the process of policy advocacy. /T. Koberidze/. Journal of Politics and Democratizatio (JPD). – 2016. – #1. – pp. 27-41. – eng.; abs.: eng.

Since the 1990s, the donor-supported non-governmental sector in Georgia has become the synonym of civil society. As a result, it has been tasked with all rights and responsibilities that are characteristic to the western-type civil society. This study reviews policy advocacy campaigns conducted by Georgian non-governmental organizations (NGOs), based on the original research. Advocacy campaigns are defined as complex mechanisms of civic engagement that impact public policy and social changes, but also use leverages aimed at changing the social norms and develop social capital. The study concludes that in the process of policy advocacy, NGOs that have emerged in the post-Soviet environment are more oriented at political or social changes than at social capital development. The sector makes important positive contributions to public policy and social change. However, it is supposed that strategies utilized do not, or have a weak impact on social capital development in the short-term perspective. Ref. 22.

Auth.

b17.5.6.7. The influence of government size on economic growth. /S. Tabaghua/. Economics and Business. – 2016. – v. IX. – #1. – pp. 45-61. – geo.; abs.: geo., eng.

The correlation between the government size and economic growth in case of Georgia and EU member state by using double logarithmic regression model is analyzed. The research is focused on importance of the government size increasing/decreasing in the process of economic growth stimulation; also analyzed is causality between the government size and economic growth, ways of searching the government size indicator, defining optimal size of government and the role of budget deficit in the process of the assessment of government size. Tab. 1, Fig. 5, Ref. 44.

Auth.

b17.5.6.8. The main directions in the management of labour processes. /N. Gvedashvili/. Economics and Business. – 2016. – v. IX. – #1. – pp. 81-93. – geo.; abs.: geo., eng.

The article discusses the author’s opinions about the improvement directions in labour processes management based on the critical analysis of some researchers views on the management principles of labour processes, phases, peculiarities of labour rationing, norms currently operating in the health care system. They include the creation of conditions ensuring high labour productive for medical personnel as well as for patients’ examination and treatment. There are provided some recommendations for reduction of shortcomings existing in the given sphere. Ref. 5.

Auth.

b17.5.6.9. Islamic extremism in 1990s. /Z. Abashidze/. Bulletin of the Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 105-111. – eng.; abs: eng., geo.

The break-up of the USSR in 1991 enlarged the geography of the international terrorism. Islamic radical groups and organizations posed great threat to the world peace and stability. In 1996 the Taliban took state power in Afghanistan and Al-Qaeda engaged in the war against the USA. At present, the “Islamic State” is challenging the civilized world. The international community has to fight Islamic extremism on several fronts and Georgia will need to employ precise, faultless policy in its struggle against this global danger. Ref. 4.

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b17.5.6.10. Institutional problems of economic security and infrastructural challenges of Georgia. /S. Pavliashvili, Z. Garakanidze/. Metsniereba da Tskhovreba**.** – 2016. – #1(13). – pp. 12-19. – geo.; abs.: geo., eng., rus.

The expediency of integration of State Security and Crisis Management Council in the National Security Council is analysed in the article. It is shown that the crisis situation should be managed by the executive government leaded by the Prime Minister. For operative management of crisis situation the government needs effective body which in this case is represented as the State Security and Crisis Management Council. According to authors the issue of separation of functions of councils is rightly evaluated by the prime minister. It is considered that the State Security and Crisis Management Council as a coordinating one of executive government should basically focus on non-military aspects. Particularly, it should develop proposals to avoid and eliminate hard political, social, economic, ecological and others results. Authors believe that it should conceptualize non-military threats and its early detection. As for the elaboration of national security concept and other military issues, National Security Council should be responsible to manage such issues. To draw the conclusion, depending on geopolitical function of “Asia-Europe Bridge” of the country, under the auspices of State Security and Crisis Management Council the analysis of infrastructural security should be also made. Ref. 5.

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b17.5.6.11. The ways of improving making non-programmed decisions. /E. Barbakadze/. Bulletin of Akaki Tsereteli State University. – 2016. – #1(7). – pp. 23-30. – Geo.; abs.: geo., eng.
Decision-making is a procedure when a manager reacts on possibilities and threats, which appear after analyzing the choice of concrete organizational tasks and working plan. So, according to the level of definiteness and indefiniteness of informational support in system, decision-making process can be programmed and non-programmed by a manager. Programmed decisions are those that were made so many times in the past that managers have developed rules or guidelines to be applied when certain situations are expected to occur. On the other hand, non-programmed decisions are made in response to unexpected situations and lack of information, which is essential for creating such rules. Non-programmed decision-making situations can be discussed as the cases, when a decision-maker chooses among the list of controversial decisions. This means that it's possible to choose only one alternative among others. Choosing one of them can cause the result that is not under the control of a decision-maker. So, to reduce the chance of making a mistake and to expand decision-making quality there are two main models of making non-programmed decisions: classical and administrative. Managers who use classical models make a lot of possibilities to simplify the decision-making process. It means that a manager has to imagine the expected results of all alternatives and choose the best. In other words, due to the classical model managers can reach all the information, which they need to make the best decision which will bring the best results for their organization in the future. The representators of administrative model in decision-making (Albert Simon and James March) maintain that when managers make their decision, the result becomes satisfying and not maximum, as every situation carries indefiniteness to some degree. So, such decisions are set on three main things, they are: 'limited rationality', 'incomplete information' and depending on it -' searching the satisfying variant'. 'Limited rationality' means that there are a lot of cases when the number of alternatives and the amount of information are so large that before making decision it becomes very hard for managers to assess this information even partly. 'Incomplete information' means that managers will not be able to make the optimal decision, as they will not have the complete information, as information is always incomplete. It is incomplete because of its vagueness. It means that most information which belongs to managers is ambiguous, you can understand it in different ways, also conversely. So, managers who want to be successful, must not try to identify all the possible alternatives, their strategy should be 'searching for the satisfying variant', which means to study only concrete, limited amount from really possible alternatives and to find the best variant from them. It's natural - more better decisions are made more successful and resultful is the organization. But decision-making is mostly limited in time. In such cases, we think we'd better use three different approaches: when the decision-making time is limited, it's better to choose the best from the alternative variants you have. when you have some time to make decision, you'd better postpone the decision-making process to search for new alternatives, after that it's important to reduce the existing alternatives and choose the best one. when the decision-making is not time-limited, then extension of the process is the best way till finding the best alternative. Ref. 4.

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b5.7. Social and economic geography

b17.5.7.1. System analysis of traffic simulation goals, objectives, methods and technologies. /D. Satseradze/. Computer Sciences and Telecommunications. – 2016. – #2(48). – pp. 27-42. – geo.; abs.: geo., eng., rus.
The modern road infrastructure is an important and complex economic system. Sustainable management of the road infrastructure requires consideration of numerous parameters and planning of different activities. The article presents mathematical models of traffic flow, featuring movement of traffic and separate vehicles in different modes and cnditions.

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b5.8. Media and communications

b17.5.8.1. Development of info-communication technologies and info-communications environment on the way of establishment of global information society. /T. Burkadze, J. Beridze/. Transactions of Technical University of Georgia. – 2016. – #1(499). – pp. 61-67. - rus.; abs.: rus., geo., eng.
This article is dedicated to the phase of development of the global information society by mankind, which assumes the global information infrastructure to become its technical foundation. Definition and essence of an information society is described, which implies that such society should be able to produce all the necessary information for proper existence and provide all citizens with means of access to such information. The effect of development of info-communication technologies and services in the information society is shown. The sensor networks, the next generation networks and the Internet of Things are now successfully developing on the basis of core technologies. For many years, information and telecommunication technologies were considered separately. In recent decades, there is a continuous convergence of these technologies, turning them into the united info-communication technology. A new qualitative stage of developing of united info-communications environment will be the basis of a global information society. Fig. 4, Ref. 10.

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b17.5.8.2. Creation of electronic catalogue and resources in Azerbaijani libraries. /S. Khalafova, N. Ismayilova/. Bulletin of the Georgian National Academy of Sciences. – 2016. – v. 10. – #1. – pp. 118-124. – eng.; abs: eng., geo.
The article describes the impact of socio-political and economic factors on the computerization of the library work in Azerbaijan, particularly the damage inflicted upon the libraryinformation system of Azerbaijan as a result of the Nagorny Karabakh conflict. It touches upon the issues of creation of electronic catalogues and electronic resources through two fundamental libraries - the IRBIS Automated Library Information System (ALIS) applied at the Baku State University Scientific Library and VIRTUA ALIS applied at the M.F. Akhundov Azerbaijani National Library. It provides information about the ALISA (Automated Library System of Azerbaijan) centralized electronic library information system connecting Azerbaijani libraries in a common place and AZLIBNET used for implementation of common cataloguing activities in Azerbaijani libraries and creation of the combined national electronic catalogue system of libraries. The article discusses the problems related to creation of electronic catalogue and electronic resources in Azerbaijan and their solution. Ref. 8.

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b17.5.8.3. Professionalism and myths in covering conflict. /T. Tsomaia/. Journal of Politics and Democratizatio (JPD). – 2016. – #1. – pp. 58-80. – eng.; abs.: eng.
This research analyzes whether journalists when covering the conflicts in Georgia applied four principles found in the profession's Code of Ethics, which outline that journalists should: a) seek the truth and report it as fully as possible; b) act independently; c) minimize harm; and d) be accountable. The purpose of the study was to understand how journalists would act when faced with certain ethical dilemmas when covering conflict. It also sought to examine what expectations the readership would have of journalists in such situations. The research methodology consisted of developing five hypothetical scenarios, each involving an ethical dilemma for a journalist, adapted

from real case studies from the Caucasus region. These scenarios were posed to both journalists (news creators) and readers (news consumers), who were asked to identify from a number of possible responses to the ethical dilemma which decision a journalist should (in theory) and probably would (in reality) make, and asked to explain their choice. Ref. 12.

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b5.9. Other social sciences

b17.5.9.1. Analysis of scientific productivity at the meso- and macro-levels. /L. Chobanyan, T. Chubinishvili, N. Makhviladze, A. Phatsatsia/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. Int. Sci. Conf. Ureki. – 2016. – v. 42. – #3. – pp. 425-428. – eng.; abs.: eng., geo., rus.

The most important instrument for solving science management problems is analysis of scientific activity efficiency at both the microlevel and the mezo- and microlevels. Upon analysis of the scientific activity of researchers based on individual quantitative parameters, such as publishing activity (number of published works in high-ranking journals), citation index, taking into account of the scientific direction of a researcher or a research team acquires a particular interest. For example, an average number of citations per journal in the world flow of publications for different fields of chemistry can differ 5-6 times. For a scientometric analysis, taking into account scientific directions of an individual researcher and the research team, the effective citation indexes H* and I* have been introduced. Tab. 1, Ref. 22.

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