

GEORGIAN TECHNICAL UNIVERSITY
TECHINFORMI

Georgian Abstracts Journal

Published since 2000

Periodicity: 2 issues per year

10 (22), 2013



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List of Scientific Publications Reflected in Georgian Abstracts Journal

1	A.Janelidze Institute of Geology, Proceedings	ISBN 978-9941-406-51-5
2	Bulletin of Abastumani Astrophysical Observatory	ISSN 0375-6644
3	Agrarian-Economic Science and Technologies	ISSN 1987-6335
4	Modern Problems of Architecture and Town Planning	ISSN 2233-3266
5	Aghmashenebeli	ISSN 1512-2581
6	Akhali Agraruli Sakartvelo (New Agrarian Georgia)	ISSN 1987-8729
7	Akhali Ekonomisti (New Economist)	ISSN 1512-4649
8	Pediatric Cardiology	ISSN 1987-9857
9	Business-Engineering	ISSN 1512-0538
10	Business Courier	ISSN 1987-6041
11	Accounting	ISSN 1512-0805
12	Gadasaxadebi (Taxes)	ISSN 1987-9156
13	Gaenatis Matsne (Gaenati Herald)	ISSN 1512-4096
14	G. Tavartkiladze Teaching University, Scientific Works	ISBN 978-9941-17-347-9
15	Ganatleba (Education) – Scientific Journal	ISSN 1987-782X
16	Journal of Georgian Geophysical Society	ISSN 1512-1127
	a. Physics of Solid Earth	
	b. Physics of Atmosphere, Ocean and Space Plasma	
17	Economics	ISSN 1512- 1313
18	Economics and Business	ISSN 1987-5789
19	Ekonomisti	ISSN 1987-6890
20	Energy	ISSN 1512-0120
21	Experimental & Clinical Medicine	ISSN 1512-0392
22	Transactions of V. Bagrationi Institute of Geography	ISSN 1512-1224
		ISBN 99940-60-19-4
23	Scientific Works of Tbilisi Balneological Resort	ISBN 99940-845-7-7
24	Collection of Scientific Works of Tbilisi State Medical University	ISSN1987-8990
25	Collected Scientific Works of I. Kutateladze Pharmacochimistry Institute	ISSN 1987-7277
26	Caucasus International University Herald	ISSN 1987-863 X
27	Cardiology and Internal Medicine-XXI	ISSN 1512-1291
		EISSN 1512-1968
28	Critical Care & Catastrophe Medicine	ISSN 1512-2689
29	Metsniereba da Technologiebi (Science and Technologies)	ISSN 0130-7061
30	Science and Life	ISSN 1987-9377
31	Mermisi – Collection of Scientific Works	ISSN 1512-4585
32	Building	ISSN 1512-3936
33	Novation	ISSN 1512-3715
34	Georgian Journal of Radiology	ISSN 1512-0031
35	Scientific Works of Georgian-British Institute of International Law and Management	ISSN 1987-6866

36	Law and Economics	ISSN 1987-8303
37	Mining Journal	ISSN 1512-407X
38	Wood Bulletin	ISSN 1512-0546
39	Newsletter of Academy of Education Sciences of Georgia	ISSN 1512-195X
40	Bulletin of Centre of Strategic Development of Georgia	ISSN 1512-0813
41	Appendix to the Journal Newsletters of Education Sciences of Georgia	ISSN 1512-102X
42	Georgian Journal of Geography	ISSN 1512-1267
43	Bulletin of Georgian National Academy of Sciences	ISSN 0132-1447
44	Proceedings of the Georgian National Academy of Sciences, Biological Series A	ISSN 0321-1665
45	Proceedings of the Georgian Academy of Sciences, Biological Series B	ISSN 1512-2123
46	Proceedings of the Georgian National Academy of Sciences, Biomedical Series	SSN 0321-1665
47	Proceedings of the Georgian National Academy of Sciences – Chemical Series	ISSN 0132-6074
48	Georgian Oil and Gas	ISSN 1512-0457
49	Georgian Pediatrician	ISSN 1512-1542
50	Respiratory Journal of Georgia	ISSN 1512-2778
51	Georgian Medical News (GMN)	ISSN 1512-0112
52	Georgian Scientific News (GSN)	ISSN 1987-7234
53	Transactions of Technical University of Georgia	ISSN 1512-0996
54	Georgian Chemical Journal	ISSN 1512-0686
55	Air Transport	ISSN 1512- 4916
56	Social, Ecological and Clinical Pediatrics	ISSN 1987-9865
57	Herald of Sokhumi State University	ISSN 1987-572X
58	Collection of Scientific Works of Sukhishvili University	ISSN 1987-5711
59	Transport and Machinebuilding	ISSN 1512-3537
60	Collected Papers of Institute of Water Management	ISSN 1512-2344
61	Khandzta	ISSN 1512-3812
62	Institute of Hydrogeology and Engineering Geology, Proceedings	ISBN 978-9941-405-81-5
63	Hydro Engineering	ISSN 1512-410X
64	Transactions of the Institute of Hydrometeorology	ISSN 1512-0902
65	Computer Sciences and Telecommunications	ISSN 1512-1232
66	GEN-Georgian Engineering News	ISSN 1512-0287
67	Nano Studies	ISSN 1987-8826
68	The Caucasus and the World	ISSN 1987-7293
69	Culture & Philosophy	ISSN 0132-1447

List of Periodical Publications Reflected in the Present Issue:

- 1 Bulletin of the Academy of Agricultural Sciences of Georgia – 2012. – #30
- 2 Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference – 2012
- 3 Mining Journal – 2012. – #1(28)
- 4 Law and Economics – 2011. – #2,3
- 5 Mecniereba da teqnologiebi (Science and Technologies) – 2011. – #4–6,
- 6 Business–Engineering – 2012. – #2(3), #4
- 7 Accounting – 2012. – #4–10
- 8 Agrarian–Economic Science and Technologies – 2012. – #2,3
- 9 Actual Topics on Women Health – 2012. – #1
- 10 Bulletin of Georgian National Academy of Sciences – 2011. – vol. 5. #3; 2012. – vol. 6. – #1
- 11 Social, Ecological & Clinical Pediatrics – 2012. – #14–9–8
- 12 Pediatric Cardiology – 2012. – #6
- 13 Metsniereba da Tskhovreba – 2012. – #1(5)
- 14 Tbilisi State Medical University's Collection of Scientific Works – 2011. – #45
- 15 Collected Papers of Institute of Water Management – 2011. – #3
- 16 Proceedings of the Georgian National Academy of Sciences. Chemical Series – 2012. – vol. 38. – #1
- 17 Hydroengineering – 2012. – #1–2(11–12)
- 18 Proceedings of the Georgian Academy of Sciences. Biological Series B – 2011. – vol. 9. – #1– 4
- 19 Akhali Ekonomisti (New Economist) – 2012 – #1,3
- 20 Transactions of Technical University of Georgia – 2012. – #1(483)
- 21 Proceedings of the A. Eliashvili Institute of Control Systems – 2012. – #16
- 22 Georgian Engineering News – 2012. – #3. – v. 63
- 23 Georgian Medical News – 2012. – #10(211)
- 24 Nano Studies – 2012. – #5,6
- 25 I. Gagnidze. Country Competitiveness and Clusters: History and Nowadays – 2012
- 26 R. Asatiani, VI. Papava, I. Meskhia, etc. Georgian Economics – 2012

Subject entries

A. SOCIAL SCIENCES

- A1. State and Law. Jurisprudence
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B. NATURAL AND EXACT SCIENCES

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D. INTERSECTORAL PROBLEMS

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A. SOCIAL SCIENCES

A1. State and Law. Jurisprudence

10.A1.1. Conception of Georgian political and legal doctrine. /K. Pridonashvili/. Law and Economics. – 2011. – #2. – pp. 3-13. – geo.; abs.: rus., eng.

The work sets tasks and ways of settling modern national values. The author tries to determine the main principal directions for developing the Georgian ideology and analyzes tendencies observed in the Western civilization and their connection with the Georgian reality, taking into consideration their economic, socio-demographic and humanitarian aspects.

Auth.

10.A1.2. Institute of jurors in Georgian criminal law (theoretical aspects). /I. Basilashvili/. Law and Economics. – 2011. – #2. – pp. 14-23. – geo.; abs.: rus., eng.

This article deals with introduction of the institute of jurors (lay judges) in Georgia, its terms, judicial trial procedure and history. Many positive aspects of introduction of this institute in Georgia are outlined, such as involvement of Georgian population in the implementation of justice, also that the population will partly master the language of criminal procedure and raise the level of the sense of justice.

Auth.

10.A1.3. National issue according to modern civil society. /K. Pridonashvili/. Law and Economics. – 2011. – #2. – pp. 24-32. – geo.; abs.: rus., eng.

The present work discusses the national problem in civil society. The author gives an overview of political and legal tendencies in European and civilized environment which have a qualitative impact on the civil society formation process, where self-consciousness and individuality are apprehended in a new way. The author considers that all citizens of Georgia should be regarded as Georgians and this should be duly reflected in ID card. It is said that the declaration of the Georgian language as the state language implies that other languages are foreign and therefore an appropriate reform needs to be carried out to do away with the outdated Soviet heritage.

Auth.

10.A1.4. Fields of competence of the public defender in Georgia and foreign countries. /K. Pridonashvili/. Law and Economics. – 2011. – #2. – pp. 39-61. – geo.; abs.: rus., eng.

In a political and legal system of the Public Defender it is of importance that together with independence the Public Defender would have the corresponding authority in order to appropriately respond so violations of law. Given that democratic institutions and values are still rudimentary in Georgia, especially “parliamentarism”, which is directly associated with the institute of Ombudsman, the strength of the Public Defender’s Office for our country is of more importance than for developed western democracies. The article aims to review and analyze fields and competence of the Ombudsmen in Georgia and some other democratic countries.

Auth.

10.A1.5. Constitutional law in the system of division of state power in Georgia. /K. Pridonashvili/. Law and Economics. – 2012. – #3. – pp. 4-12. – geo.; abs.: rus., eng.

The functional importance of the constitutional law in the system of division of state power in Georgia is discussed. According to the author, for the purposeful and effective functioning of the constitutional law it is necessary that the country’s political and legal system be established in full compliance with the principles of division, interchangeability and continuity of powers. In addition, the author considers the authority of the Constitutional Court and procedures of reviewing the Georgian Constitution to be closely linked as these two political and legal mechanisms should balance the parliamentary majority.

Auth.

10.A1.6. Ensuring principles of democratic regime and constitutional mechanisms. /K. Pridonashvili/. Law and Economics. – 2012. – #3. – pp. 13-33. – geo.; abs.: rus., eng.

The author gives a general review of main provisions, values and principles of constitutional science, the existence and consideration of which ensures effective functioning of a democratic process in the course of formation of political and legal system. The author pays particular attention to the following issues: the principles of division, mutual control and balancing of government, as well as the principles of subsidization, functional importance of the constitutional law in the divisional system of powers, the essence of self-government in the country’s political and legal system, the continuity and feedback of the government, the normative and guiding purpose of the constitutional preamble, as well as balancing the authorities of the Commander-in-Chief by the example of several countries.

Auth.

10.A1.7. On religious and mythological bases of the customary law. /M. Chikhradze/. Law and Economics. – 2012. – #3. – pp. 55-66. – geo.; abs.: rus., eng.

In the customary law regulations, clearly seen is the world outlook on which they are based. The archaic society used to draw a clear line between members of the society – natives and aliens. The alien was by all means considered to be a foe, as the opposite notion of the native. Transformation into a native by means of a rite served as the precondition for reconciliation with the enemy, and/or manifestation of benevolence with regard to the enemy. Conduct of a formal rite gave rise to a relevant obligation, indicating that law in the archaic society was based not on high morality and the corresponding feeling of justice, but on formal obligations elaborated based on the mythological world outlook.

Auth.

10.A1.8. Some problems of affirmative law. /S. Papiashvili/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 98-104. – geo.; abs.: geo., eng., rus.

In the work, based on a critical analysis of individual views and evidence established by active criminal procedure code, the concept of affirmative law, its essence and significance, types of evidence and their classification are newly established. The fallacy of definition of the term of “indirect testimony” given in Article 76 of the Criminal Procedure Code, ignoring a possibility of establishment of the objective truth and person’s guilt under a “reasoned suspicion” in a case tried in court are grounded. The author also thinks it incorrect to equate the notion of “evidence” with that of “proof”. To dissociate these two different notions, their definition, essence and meaning are given.

Auth.

10.A1.9. Criteria of appropriateness of using deprivation of liberty in criminal proceedings. /L. Papiashvili/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 105-118. – geo.; abs.: geo., eng., rus.

Attention is focused on the criteria and prerequisites of selecting measures of restraint, as well as the difficulties in connection with practical application and justification of the provisions established in the Georgian Criminal Code, such, for example, as the threat of fleeing, interference with the administration of justice, etc. In terms of review and monitoring of the measures of restraint used by the court regarding the matter of equality of the parties, the causes of high rates of using detention and other issues are discussed. Considered are the requirements to and preconditions of using the measures of restraint under the new Georgian Criminal Code and an analysis of the judgments delivered by the European Court of Human Rights against Georgia is given; also considered are the most important decisions made by the Constitutional Courts of Georgia, Germany and Spain, and the U.S. Supreme Court, the practices of the Georgian general courts and their compliance with the requirements established by the Georgian Criminal Code and international obligations. Concrete recommendations on further improvement of the criminal procedure legislation are presented.

Auth.

10.A1.10. Drug business and the main tendencies of its development. /M. Gudavadze/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 129-132. – geo.; abs.: geo., eng., rus.

In combating drug addiction, in addition to socio-economic methods, measures of legal character have great value. The existing tendencies of development of a world drug situation allow concluding that in spite of the great efforts of many world countries against the scales of drug addiction and use of drugs, no cardinal changes are noticeable. The firm political will expressed on the part of government authorities for a straight-out struggle against drugs is only half of the work.

Auth.

10.A1.11. Problems of transfer of the subject of mortgage to the creditor’s possession. /V. Khasia/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 133-139. – geo.; abs.: geo., eng., rus.

The article is dedicated to the definition of the regulation governing transfer of a subject of mortgage to the creditor’s possession established by the Supreme Court. Unfortunately, the Supreme Court limited itself only to a general definition of the regulation and failed to corroborate it by any regulation defining method. In order to define the problem this paper discusses political, formal, material and legal aspects of the given and alternative definitions as well as gives the argued viewpoint on the basis of system-teleological and historical – comparative analysis different from that of the Supreme Court.

Auth.

10.A1.12. Some aspects of International Environmental Law. /A. Akhvlediani, A. Gogoladze, T. Akhvlediani/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 84-99. – geo.; abs.: geo., eng., rus.

The major legal documents adopted in the sphere of international environmental law are considered. The importance of the European Court of Human Rights’ practice is noted, which during almost its semi-centennial existence has approved many important decisions in the sphere of protection of human rights as environmental rights. The numerous agreements and conventions adopted by UN having great influence on

the development of international environmental law and its further perfection are also considered. Some legal acts and other important juridical problems connected with the protection of flora and fauna are presented.

Auth.

10.A1.13. Paradigms and dilemmas of politics and economy of Georgia. /I. Kveselava/. Business Engineering. – 2012. – #4. – pp. 30-34. – geo.; abs.: eng.

The process of political and economic formation of post-Soviet Georgia is considered. Reasons that have interfered with the building of a state functioning in line with the western democracy standards are described.

Auth.

A2. Sociology. Demography

10.A2.1. Official unemployment statistics and real situation in Georgia. /B. Kitsmarishvili/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 55-59. – geo.; abs.: geo., eng., rus.

Unemployment is an acute problem for the population of Georgia. The official data, according to which an unemployment rate in 2010 was 16.3% (9-18% in regions, 30% in Tbilisi) and had a tendency to reduced, is not trustworthy. On the basis of materials of public opinion poll and expert studies the actual unemployment rate should be within 55-60%. In order to end the deadlock, the country needs to overcome the so-called pseudo-liberal ideology dominating in the economy and fully activate the state's economic function. The government must pursue a science-based active employment policy through measures aimed at promoting the creation of new jobs and maintaining the existing ones.

Auth.

A3. Economy

10.A3.1. Advertising and methods of evaluation of its economic effectiveness. /N. Kaishauri/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 371–373. – geo.; abs.: geo., eng., rus.

Advertising is mentioned as a technical activity directed at familiarizing the consumer with the product merits, also such issues as product supply, its appeal, making the consumer buy it and its effectiveness is of great practical importance under the present-day complicated marketing conditions. Methods of evaluation of advertising effectiveness are given.

Auth.

10.A3.2. The role of planning, forecasting and programming in the system of territorial regulation of economy. /N. Grdzelishvili/. Law and Economics. – 2011. – #2. – pp. 62-70. – geo.; abs.: rus., eng.

The article deals with the problems of planning and forecasting in the national economy regulation system. The importance of regional planning, the necessity of the national and regional planning, the regional program and forecast are considered. Functions and tasks of the national and regional planning under modern conditions are reviewed.

Auth.

10.A3.3. Monitoring of regional situations and problems. /N. Grdzelishvili/. Law and Economics. – 2012. – #3. – pp. 67-78. – geo.; abs.: rus., eng.

The paper discusses monitoring of the regional situations and problems. The subject and objectives, types, problems and methods of monitoring as well as peculiarities of regional monitoring are discussed.

Auth.

10.A3.4. Problematic issues of a single global currency. /I. Chiladze/. Accounting. – 2012. – #4. – pp. 34-38. – geo.; abs.: geo., eng.

The article reviews a difference between definitions of the “world (global) money” and the “single global currency”. The money is the unit of invisible common value which is created as a result of reasonable and natural contribution (of total production) through efforts. Currency (coins, notes) is a quantity measure of this unit with invisibly existed value or actual money, its symbol. The world money will be created when units with invisible value issued by all states will be equated by themselves or as a result of evolutionary development. Correspondingly, any kind of national currency will be of the same value. Therefore, the world money does not mean the single global currency. Creation of the single global currency is rather dangerous act since it will involve a great many unsolvable problems. In particular, it negates the world democratic development conception, restricts state sovereignty; it suppresses the national spirit and relevant international obligations, setting thus absolute nihilism; it will give a permanent character to the world economic crises; the world will find itself within a financial “magic circle” of absolute distrust and chaos, from where no escape will be possible. Therefore, the author believes that the world money does not imply introduction of the single global

currency. The world money will be a logical product of mankind's progressive and civil development, which will not put up with bank-notes printing. Introduction of the single global currency will be an artificial, rude and dangerous event interfering with the economic and cultural development everywhere, evidence of which is the "Euro" experience.

Auth.

10.A3.5. Accounting of amortization of intangible assets. /G. Nanuashvili, L. Sadagashvili, M. Buzia-shvili/. Accounting. – 2012. – #4. – pp. 39-42. – geo.; abs.: geo., eng.

The article deals with the issues related to the amortization of intangible assets. The emphasis is made on the direction of reviewing the amortization period and method. The definition of the useful life of intangible assets is given, taking account of many factors. Outlined are the issues associated with the amortization of intangibles that improves their accounting. The importance of the International Accounting Standards (IAS) in this connection is also stressed. Recommendations of the International Accounting Standards Board (IASB) in connection with the perfection of amortization of intangibles are mentioned.

Auth.

10.A3.6. The necessity of regulation of financial accounting and auditing in Georgia according to international standards. /L. Chumburidze/. Accounting. – 2012. – #5. – pp. 35-41. – geo.; abs.: geo., eng.

The article deals with the issues of regulation of financial accounting and auditing in the business sector in Georgia according to the international standards. The existing practice of regulation of financial accounting and auditing according to the international standards in Georgia, the present legislative specifications, the positive and negative aspects of the standards in use are considered. Based on an analysis of the present-day reality, recommendations on the improvement of regulation of financial accounting and auditing according to the international standards through improvement of the regulatory legislative base are given.

Auth.

10.A3.7. Budgetary classification as a basis for accounting of budget organizations. /M. Vardiashvili/. Accounting. – 2012. – #6. – pp. 24-30. – geo.; abs.: geo., eng.

The article concerns the issues of improvement of the accounting system in the government sector. The matter concerns importance of budgetary classification in consolidation of accounting information at each level of budgetary entities. It is emphasized that accounting of budgetary organizations as an integral part of the Georgian national accounting system ensures the preparation of accounting information at each level of the state finances management. Considered are the classification of financial assets and liabilities, the purchase and exist of assets, liability taking and coverage transactions, also the grouping of financial assets and liabilities by the types are considered.

Auth.

10.A3.8. Analysis of profitability and investment activity ratios. /A. Chechelashvili/. Accounting. – 2012. – #7. – pp. 10-21. – geo.; abs.: geo., eng.

Generally there are various methods of calculating and interpreting results of profitability and investment activity ratios. It is difficult to use all the existing ratios during an analysis of entity's financial standing. It is recommended to use the ratios ranked by priority. An analysis of profitability and investment activity based on specific entity's financial information for several years and the appropriate conclusions were made based on the analysis results.

Auth.

10.A3.9. Interrelation of basic assumptions of accounting and qualitative characteristics of financial reporting. /D. Sologhashvili, T. Udesiani/. Accounting. – 2012. – #8. – pp. 30-35. – geo.; abs.: geo., eng.

Financial accounting is mentioned as a structurally established picture of the financial standing of an enterprise and its business activity showing the results of the enterprise's resources management. The structural bases of preparation and presentation of financial accounting imply two main assumptions: the accrual method and the functional enterprise, the application of which is associated with the qualitative characteristics of financial accounting. This allows the user of information on the basis of correspondence, reliability, equitable presentation, neutrality, completeness and other evidencing and prognostic characteristics of the information content to make a proper analysis and assessment of the enterprise's past, current and future activities.

Auth.

10.A3.10. Simplified scheme of profit tax accounting. /I. Chiladze/. Accounting. – 2012. – #9. – pp. 30-39. – geo.; abs.: geo., eng.

The article considers the existing procedure of accounting of deferred tax assets and deferred tax liabilities arising upon profit taxation, an analysis of which allows concluding that the available tax liability accounting

practice could be simplified. It is considered expedient to compose only one simple clause of profit tax charging (9210) on the credit side of debit and tax liability (3310), not as the profit amount accrued from the accountable income but as the tax amount calculated from the taxable profit.

Auth.

10.A3.11. Peculiarities of modern theories of money. /S. Pavliashvili, L. Jangulashvili/. Metsniereba da Tskhovreba. –2012. – #1(5). – pp. 12-16. – geo.; abs.: geo., eng., rus.

In the course of centuries various economic views reflecting economic processes being characteristic for the given period used to be held. Together with the development of economy, economic models used to be developed and changed, which was frequently associated with the accelerated inflationary process. In the second half of the 20th century the Keynesian and the neoclassical conceptions had to be faced with this problem and failed in connection with definition of the role of money and monetary sector. As a result, a respective monetary economic policy has been formed. The development of world economy always encourages economists to create relevant economic models capable of overcoming existing economic crises or other problems.

Auth.

10.A3.12. Priority to utilization of national resources. /A. Silagadze/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 17-23. – geo.; abs.: geo., eng., rus.

In the work, complicated conditions of Georgian economics are briefly analyzed, the reason for which, as stated, is inefficient utilization of national resources that increases dependence on imports on a daily basis. The author believes that Georgia's one of the rich resources not efficiently utilized is the ground water and suggests a project for constructing a water pipe from Georgia to Europe that will be of greatest importance for both sides.

Auth.

10.A3.13. Modern commercial bank as an universal monetary institution. /G. Tsaava/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 32-36. – geo.; abs.: geo., eng., rus.

Banking institutions and diverse banks in modern society are engaged in various kinds of operations; they not only organize cash flow and credit relations, but also finance the economy, make purchase and sale of securities, and in some cases carry, brokerage and asset management, advise and participate in the discussion of legislative and economic programs, keep statistics, have their auxiliary companies. Bank as a specific company produces a product substantially different from that of material production; it produces not just a commodity, but means of payment in the form of money. Activities of the bank are focused primarily in the sphere of circulation and exchange rather than manufacturing. The bank is an intermediary between producers, being more seller than manufacturer.

Auth.

10.A3.14. Accounting and forecasting. /G. Nanuashvili/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 37-40. – geo.; abs.: geo., eng., rus.

It is noted that a subject of management should possess all necessary information about the object of accounting by the time of independent and responsible decision-making as well as afterwards. In the traditional accounting system, only the facts of economic life that have already been completed or are being decided are considered. Under rapidly changing conditions, all the above seems to be insufficient for proper management of a company.

Auth.

10.A3.15. Inflation and new Keynesian model for Georgian economy. /G. Khantadze/. Metsniereba da Tskhovreba. –2012. – #1(5). – pp. 40-44. – geo.; abs.: geo., eng., rus.

According to the official statistics, the rate of average annual inflation amounted to 8.5% in 2011. The experts of the International Monetary Fund created a macroeconomic model of the Georgian economy showing different parameters, such as how inflation is related to the exchange rate and output gap. By means of using this model the NBG will improve macroeconomic modelling and forecasting, which will enhance more efficient and comprehensive formulation of the monetary policy. The models of this type represent a new generation based on the new Keynesian approach, which has recently been extensively used in different central banks.

Auth.

10.A3.16. The main aspects of making and termination of contracts of insurance. /A. Tsertsvadze, I. Dzagnidze/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 44-49. – geo.; abs.: geo., eng., rus.

Signing an insurance contract implies the expresseion of a bilateral will and compliance with specific procedures. The fact of making an insurance contract is confirmed by an insurance certificate or insurance

policy. An insurance contract defines liabilities of the insurer and the policyholder. Termination of insurance agreement can be caused by several factors, for instance, end of insurance period, disappearance of insurance risk, death of the policyholder, and other reasons. Also, an insurance contract can be terminated at any time based on a mutual agreement, notwithstanding the period of insurance contract.

Auth.

10.A3.17. Price as one of the most important categories of the financial market. /O. Shavishvili, M. Zedginidze/. *Metsniereba da Tskhovreba*. – 2012. – #1(5). – pp. 49-55. – geo.; abs.: geo., eng., rus.

The market of securities, on the one hand, and the banking price, on the other are the most important economic categories. Their functions are inseparably growing according to the development of market relations. Pricing is executed on the basis of adequate laws on the national and world markets. Pricing must be based on adequate economic laws of the given social system. The basic defect of price systems of the post-communist period is that pricing failed to comply with the objective requirements of economic laws, particularly, the laws of correlation of the cost, demand and supply. The basis of the planned prices in the “socialist” pricing was considered an economic law of balanced development of the “national economy”, the objective activity of which is doubtful.

Auth.

10.A3.18. The institutional structure of the U.S. banking system. /N. Silagadze/. *Metsniereba da Tskhovreba*. – 2012. – #1(5). – pp. 59-63. – geo.; abs.: geo., eng., rus.

The article deals with the formation and development of banks and banking system in the United States of America, as well as competences and management structure and functions of the Federal Reserve System (FRS) banks, etc.

Auth.

10.A3.19. The development prospects of leasing business in Georgia. /O. Vardiashvili/. *Metsniereba da Tskhovreba*. – 2012. – #1(5). – pp. 64-67. – geo.; abs.: geo., eng., rus.

Modern leasing is frequently qualified as “funding without balance”, because it inspires the attraction of monetary sources. Leasing in some ways resembles a credit that is given in order to buy machinery; that is why it can be also called a property credit. The development of leasing is profitable both for entrepreneurs and the national economy as a whole. A sound leasing market promotes financing of the country’s manufacturing sectors, material and technical supply, development of SMEs, attraction of investments, etc.

Auth.

10.A3.20. Modernization of national economies in a globalizing world. /N. Grazhevskaya/. *Metsniereba da Tskhovreba*. – 2012. – #1(5). – pp. 68-74. – rus.; abs.: geo., eng., rus.

The article provides an analysis of the objective foundations of the modern world economic development and the specific socio-economic forms of realization of globalization processes in the context of the modern paradigm of modernization. Based on a study of the historical evolution of the theory and practice of modernization, it is concluded that globalization does not absorb the national economy, as the harmonious development of world economic integrity is possible only in the unity of the manifold. In this context contemporary modernization of national economies manifests itself in the dialectical unity of the common (post industrialization trends and globalization), special (post-communist transformation of the individual groups of countries), and a solitary (spatial and temporal, cultural and civilization identity of the individual economies) in the transformation process. Based on the analysis of global competitiveness ranking of 142 countries around the world in 2011-2012, it is justified that at the present stage of the modernization of the transformation economies actions of governments aimed on improvement of national competitiveness of the existing economic systems on the basis of structural, technological and institutional renewal have a very important meaning. The implementation of this strategic objective involves the formation of an innovative model of economic development and the establishment of an efficient market system that adapts to the global economy by continuous qualitative transformation of the existing institutional environment.

Auth.

10.A3.21. Practical ideas on accounting of agricultural activities. /R. Dzadzamia/. *Accounting*. – 2012 – #10. – pp. 27-41. – geo.; abs.: geo., eng.

The present work is a review of possibility of practical use of IAS 41 “Rural Economy”. It is focused on the issues that are specific for agriculture and in many cases needs a lot of time to find the right decision. The work considers the prerequisites for accounting system, which must be the basis for projecting accounting object by accountants. In addition, there is schematically shown the standard approach for assessment of biological assets and agricultural products; also underlined is the fact the under inexistence of an active market standards fail to define which approach should be prioritized – whether the market prices or costs, or

the capitalized values. It is mentioned that in such a case the enterprise itself is to decide on which approach would be most reliable to determine the real value.

Auth.

10.A3.22. Interrelation of hydro power stations construction projects and attraction of investments.

/N. Kodua/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 49-55. – geo.; abs.: geo., eng., rus.

The problems of development of the existing hydro resources for construction of hydro power stations are considered. It is shown that the most advisable and justified approach for attraction of investors is to present economically sound projects of hydro power stations construction designed at the pre-feasibility stage where the error of calculations may be about 10-15%.

Auth.

10.A3.23. Features of modern world economic models. /Sh. Veshapidze/. Akhali Ekonomisti (New Economist). – 2012. – #3. – pp. 14-21. – geo; abs.: geo., eng.

The article discusses such features and characteristics of world economic models as: the U.S economic model; the European model (UK, Germany, Sweden, Finland, France, Italy); the Asian model (Japan, India, South Korea); the Latin American and African models. Georgia should keep up with the modern world socio-economic models and build and expand own socio-economical models based on them.

Auth.

10.A3.24. Firm clusters in the global innovative economy. /M. Kapanadze/. Akhali Ekonomisti (New Economist). – 2012. – #3. – pp. 22-26. – geo; abs.: geo., eng.

The active development of clusters has been globally recognized as an effective tendency of innovative enterprise activity. For example, in the Declaration on the Strengthening of Economic Cooperation in Europe and action plan adopted in 1997 the forming of new cluster-based enterprise systems is recognized as one of the most actual ways of such cooperation. Globalization of clusters acts through the mobility of a capital. In this process transnational corporations buy local-scale enterprises. It is twice reflected on the functioning of clusters. On the one hand, it can cause breakup of close and sometimes informal linkages established between the clustered firms, as a result of which the inter-cluster relationships become basically vertical. On the other hand, entry of a transnational corporation can play a positive role on the development of clusters through the innovations and extension of sale markets (outlets) for clustered SMEs. Based on the historical experience, clusters will need about a 10-year period for getting real competitive advantages. This is one of the reasons that due to a 4-5-year election period, politicians do not pay proper attention to or disregard cluster approaches in their economic programs. Although, given the existing gathered experience, the above-mentioned 10-year period of time can be essentially reduced.

Auth.

10.A3.25. Views on investment redemption indicator. /Z. Gudushauri, N. Lazviashvili, I. Kuliani/. Akhali Ekonomisti (New Economist). – 2012. – #3. – pp. 27-30. – geo; abs.: geo., eng.

The article raises an issue of a joint use of the investment redemption indicator and the profitability index of investments. The article considers two options of income from investments. The first concerns the drawing of annual income on an even basis, the second – on an uneven basis. The even growth of income is depicted on the chart as a rectilinear curve; as for the uneven income, it is depicted in two ways: the greater growth of income in the first years – by the convex curve (FGD Curve), while the lesser growth of income in the first years and the further increase – by the concave curve (FHD Curve). The profitability index is calculated by the conditional example in 6 options and the advantage of investing in the given project with a high profit margin under equal conditions of redemption of investments for the investor is established.

Auth.

10.A3.26. Modern techniques of effective time management. /O. Shudra/. Akhali Ekonomisti (New Economist). – 2012. – #3. – pp. 31-34. – geo; abs.: geo., eng.

The article focuses on the up-to-date techniques of effective time management, such as: electronic database, mobile phone, commercial paperwork, relations with co-workers, skills of debate, etc. It is emphasized that the effective time management, its standard of economy is the standard of the development of the whole society rather than individual organizations.

Auth.

10.A3.27. Innovative quantitative method of credit risk evaluation. /N. Gongliashvili/. Akhali Ekonomisti (New Economist). – 2012. – #3. – pp. 35-37. – geo; abs.: geo., eng.

The article considers various methods of evaluation of creditworthiness of lending agencies companies that have been worked out lately by such scientists as Altman, Chaser, Beverly, and others. Despite their great number, every credit-scoring algorithm consists of such variables as net profit, circulating capital, realization, general liabilities, and the market price of private capital. According to the article, it is natural since these

indicators directly create the creditworthy potential of the lending agency. Out of the mentioned innovative techniques, the author gives preference to the Russian Model, corroborating it by similarity of the Georgian and Russian business environments.

Auth.

10.A3.28. Consumer attitude towards social responsibility of a company. /I. Gigauri/. Akhali Ekonomisti (New Economist). – 2012. – #3. – pp. 38-41. – geo; abs.: geo., eng.

The article discusses various studies confirming the overall positive effect of corporate social responsibility (CSR) on consumer attitudes and supports of the company. Consumers in many countries increasingly use ethical criteria in their purchase decision. Moreover, socially responsible consumption has also grown. Since ethical behavior is expected, the company is rewarded by the consumer's willingness to pay higher prices and thereby reward its ethical behaviors. However, the consumer may also buy from unethical companies, but punish them by demanding lower prices. While consumers in developed countries are concerned, supportive and have positive perception towards CSR, in developing countries, consumers are often unaware and unsupportive towards CSR. But despite this, CSR in developing countries also increases the positive attitude and loyalty towards the company and/or the brand, and improves its financial performance. Thus, social responsibility can have an essential and growing effect on the choice of marketing strategies, especially in terms of the impact on consumer values.

Auth.

10.A3.29. Inclusive business development prospects in Georgia. /T. Medzmariashvili/. Akhali Ekonomisti (New Economist). – 2012. – #3. – pp. 52-56. – geo; abs.: geo., eng.

Social entrepreneurship is a business for a social mission as it represents the process of manufacturing methods and means in order to achieve social goals. When we talk about entrepreneurship it is obvious that the main aim is to gain profit, although social entrepreneurship is separated from both commercial and non-profit sectors. It is important not only for economic efficiency, but for each participant's contribution to work out some important public issues. Inclusive business is one of the most important areas of social entrepreneurship. This business model is based on indigent people and conditions their involvement in the value creation chain. Entrepreneur's benefit from inclusive business is consumer's expansion, newly recruited and cheap labor force, stronger delivery and sales channels. Inclusive business gives the opportunities to indigent people for satisfying their needs, gaining a solid income, getting appropriate education, raising productivity. This trend is developing gradually in Georgia. There is a need of the government's involvement in this sector and access to some preferences for owners, because it is the precondition for attaining social objectives and the country's development.

Auth.

10.A3.30. The problems of employment and unemployment in Georgia. /M. Matiashvili/. Akhali Ekonomisti (New Economist). – 2012. – #3. – pp. 62-66. – geo; abs.: geo., eng.

The article briefly discusses unemployment as an inseparable phenomenon of a market economy. Its existence to a certain extent under conditions of full employment is quite possible. Unemployment has become the most urgent social and economic problem in Georgia. One of the ways to cope with this problem in Georgia, where over half of the population lives in rural areas, is to promote the development of small business and raise agricultural productivity.

Auth.

10.A3.31. Severity of tax burden. /N. Gelashvili, M. Sirbiladze, M.Davladze/. Akhali Ekonomisti (New Economist). – 2012. – #3. – pp. 67-70. – geo; abs.: geo., eng.

The article describes the evaluation of the severity of tax burden according to the effective legislation, under which the impact of taxes on investments is estimated by the corporate marginal effective tax rate (METR) and the corporate average effective tax rate (AETR). Administration costs are considered as one of the most important factors in assessing the tax burden. Statistical data regarding the current situation in the region are given. Also discussed is the impact of the war with Russia war and the world crisis on the tax burden. The article discusses important variables that determine the state of tax burden. Finally, it should be noted that the severity of tax burden has a very important role in the tax system, which affects the country's economic situation. According to regional studies, the country is ranked last, however, the ongoing reforms enable to predict that this situation will change and total GDP will balance the burden of growing taxes on society.

Auth.

10.A3.32. Country competitiveness and clusters: history and the present. /I. Gagnidze/. Publishing House Universal. – 2012. – pp. 119. – geo.

National competitiveness is one of the most controversial and complicated issues from the research point of view in the modern economic theory. At the same time, the post-Soviet transition countries with different

starting conditions and heritage, traditions and national cultural valuables face an important challenge of developing an economic policy and adapting to new economic conditions in order to progress in the shortest period of time. To achieve these goals, many countries with transition economies successfully use in their economic development the strategy of national competitiveness and cluster concepts. We believe that their application will also benefit the Georgian economy. The present paper will serve as a sort of guide for scientists working on these issues, students, practicing economists, and wide circles of interested readers.

Auth.

10.A3.33. Transport corridor of Georgia as significant factor of increasing international integration and competitiveness of a national economy. /S. Pavliashvili, B. Kitsmarishvili/. Akhali Ekonomisti. – 2012. – #1. – pp. 7-12. – geo.; abs.: eng.

The article considers the transport corridor of Georgia as a significant factor of the country's integration and increase of competitiveness of its economy. Its importance under the present conditions of globalization is shown. Some theoretical and practical features of competitiveness are given. Significant parameters for the oil pipeline, motor, railway, air and marine transport of the last fifteen years are discussed. The following are mentioned as the competitiveness development factors: the openness of economy, growth of transnational companies, supply and demand globalization, the deregulation of markets, and the development of high technologies. It is shown that such country as Georgia should constantly be focused on harmonization of the national legislation with the international legislation and should try to maximally avoid economic expansion and discrimination. Under current conditions the essence of the economic sovereignty consists in the adaptation to international economic integration and creation of institutions that would encourage convergence with the globalization process rather than in strengthening economic power on its territory.

Auth.

10.A3.34. Economic Discomfort Index: content and applied value. /J. Archvadze/. Akhali Ekonomisti. – 2012. – #1. – pp. 13-16. – geo.; abs.: eng.

Economic macroeconomic stability, its sustainability toward negative tendencies, is well depicted by the economic discomfort index, which is a total of the rate of inflation and the unemployment rate. The use of this indicator in USA has almost a four decade history; as to Georgia, in spite of the simplicity of calculation it is still not applied. It is expedient for every country to have the threshold value of the economic discomfort index. According to the author, for USA it is 7%, for Georgia - 15%. In the last 14 years the average rate of this index has exceeded 7% only by 1.385 percentage points in the USA; for Georgia, it exceeded 15% by 5.986 points, or 3.4 times more. According to the latest data, the average yearly inflation rate in Georgia exceeded 3.0 times (7.5% and 2.46%) to USA, and the unemployment rate it exceeded- 2.3 times (13.5% and 5.95%). All this point out that Georgia lags behind the USA not only by economic development, but also by the low index of economic sustainability and stable development. By this indicator our country's condition is also much worse than that of our neighbors – Azerbaijan and Armenia.

Auth.

10.A3.35. EU formulation's development and law of competition. /R. Lortkipanidze/. Akhali Ekonomisti. – 2012. – #1. – pp. 17-18. – geo.; abs.: eng.

The author develops the EU formulation for practical stimulation of effective structural changes of the economical reforms: $E = [(E_{io} + E_{it})/2] \Delta_{ai}$; $i=1; 2; \dots; n$ where E is the effectiveness of structural changes in the t time period; E_{io} is the starting effectiveness of the i structural element; E_{it} is the effectiveness of the i structural element for the end of the t time period; Δ_{ai} is the percent change (:100) of the i structural element of the used resource in the t time period; $i=1; 2; \dots; n$ is the structural element (sector, region, age or specific group, etc). To determine the economic competition strength (like the known current strength law), the author introduces two indices: $I1 = U/R1$ (where I1 is the first competition index, U is the total output of similar products, R1 is the output of similar products by the largest manufacturer), and $I2 = U/R0$ (where I2 is the second competitions index, and R0 is unrealized production. For final monitoring, the author proposes to calculate the average competition figure $K = N_0 \times I1 \times I2$, where N_0 is the number of firms supplying similar products to the market.

Auth.

10.A3.36. Main aspects of real estate market's general model. /A. Sichinava, Sh. Veshapidze, L. Kar-chava, L. Osadze/. Akhali Ekonomisti. – 2012. – #1. – pp. 24-33. – geo.; abs.: eng.

The article discusses a prerequisite for formation of a real estate market in Georgia that started in the 90s of the 20th century. The real estate market, which can be defined as a system of economic and legal relations, is described generally It is formed on the basis of interrelation of the turnover of commodities and money. The real estate market an automatic system consists of 7 main elements: demand, supply, price, management, marketing, infrastructure, and working procedures. The main functions of the real estate market include: commercial, information, pricing, promotional, competitive, mediatory, regulatory, investment,

social, and redistribution of land and other objects. The real estate market system is also analyzed as a sphere of investments. The information infrastructure and the main sources of database generation are characterized. The real estate market types and its faceted classification are given.

Auth.

10.A3.37. Commercial bank's security portfolio. /R. Papaskiri/. Akhali Ekonomisti. – 2012. – #1. – pp. 40-42. – geo.; abs.: eng.

The article describes a financial portfolio construction process. It is outlined that it can be done only after a technical and fundamental analysis of the securities market has been made. The work should be carried out by the bank's finance manager. The article lists the following economic indicators to be analyzed and assessed by the bank's finance manager: return on assets (ROA), overall liquidity ratio (K_0), capital structure (K^3) and debt/equity ratio – assets' market price/income per share (D/E). The overall liquidity ratio shall not be less than 200%; the capital structure ratio shall not exceed 50%, whereas the D/E ratio should be as less as possible.

Auth.

10.A3.38. Methodological aspects of the financial and economic independence of a region. /R. Tate-shvili/. Akhali Ekonomisti. – 2012. – #1. – pp. 43-45. – geo.; abs.: eng.

The international theories of regional development of a country and the available experience of economic policy regulation are considered, together with the study of elements of the regional budgetary and tax equalization policy. A special importance is ascribed to the state's active participation in the country's territorial development regulation processes, using the budgetary and tax mechanisms.

Auth.

10.A3.39. Transboundary cooperation of Ukraine: retrospection and prospects. /M. Shuba/. Akhali Ekonomisti. – 2012. – #1. – pp. 53-57. – geo.; abs.: eng.

The basic approaches to analyzing the phenomenon of transboundary cooperation and the most common forms of such cooperation in Europe are considered. The stages of development of cross-border trade of Ukraine during the Soviet era and the forms in which the transboundary cooperation is carried out at present are selected. The main factors that restrain the development of transboundary cooperation in Ukraine are considered. The recommendations concerning the future development of transboundary cooperation of Ukraine are generalized.

Auth.

10.A3.40. The role of human capital in the economic development of Georgia. /S. Akhvlediani/. Akhali Ekonomisti. – 2012. – #1. – pp. 58-61. – geo.; abs.: eng.

The article deals with the essence of human capital, its urgency in modern epoch and significant role in the economic growth of a country. Various survey results and statistics of international organizations are given. The problems of human capital development in Georgia are highlighted. Several ways of solving these problems are given, including the development of a correct attitude toward human capital and increasing the spending on education and training. Such investments in the human capital are to give a strong impetus to the country's revival, especially as 21st century is recognized as the century of "intellectual capital" and knowledge.

Auth.

10.A3.41. Poverty - the outstanding global problem and situation in Georgia. /G. Adeishvili/. Akhali Ekonomisti. – 2012. – #1. – pp. 62-67. – geo.; abs.: eng.

The article focuses on the problem of poverty in Georgia. The UN Development Assistance Framework (UNDAF) for Georgia, which should assist in reducing poverty in Georgia, is given. Also considered are survey results of the World Bank for Reconstruction and Development on meeting the population's living standards. The poverty level in Georgia is discussed in the regional context. According to experts, "the most effective way to reduce poverty" is a change in the subsistence level calculation methodology. Relevant critical expert views are discussed. The opinion on what should be done for actual improvement of the economic situation in Georgia and the nation's wellbeing is established.

Auth.

10.A3.42. Credit unions in Georgia. /T. Jabua/. Akhali Ekonomisti. – 2012. – #1. – pp. 68-71. – geo.; abs.: eng.

At present, the whole financial system and credit unions, in particular, are in the initial phase of their development. The situation that existed in Georgia in the 1990s had a negative impact on their development by creating numerous problems, which eventually resulted in their bankruptcy. Nowadays only eighteen of the

former credit unions are functioning. On the basis of the survey carried out by me it can be stated that the development of credit unions is determined by: Government support, relevant laws and regulations Government policy. At the same time, in order to achieve success the credit unions should study the specifics of the local market and the experience of foreign credit unions. While the credit unions in Georgia have a relatively short history compared to commercial banks, in the countries of Western Europe and in North America they are represented as far more stable financial institutions which turned out to be more resistant to the financial crisis. On the one hand, this is caused by their high liquidity and, on the other, by much bigger transparency and high involvement of members in the activity of credit unions.

Auth.

10.A3.43. Foreign direct investments in Georgia. /D. Jokhadze/. Akhali Ekonomisti. – 2012. – #1. – pp. 72-76. – geo.; abs.: eng.

The article estimates the necessity of a strong economy for sustainable development of Georgia, which is directly related to the volume of investments. The necessity of foreign direct investments is proved due to the shortage of local savings resulting from a high share of consumption in GDP. For example, in 2009 consumer expenses totaled 106% of GDP in Georgia. Statistical data on savings and incoming FDIs are given. The pros and cons of FDI are discussed. The adverse impact of the war with Russia and the global crisis on the flow of investments into Georgia is given. The article presents international ratings of Georgia and the factors which influence foreign investors. The necessity of entry in the European market is explained. The annual local consumption amounts to only 15.4 billion dollars, which is rather low to attract foreign investors. The statistics of investment flows and their allocation by the sectors of economy are given and analyzed.

Auth.

10.A3.44. Inflation causes and ways of overcoming them. /N. Nikogosovi/. Akhali Ekonomisti. – 2012. – #1. – pp. 77-80. – geo.; abs.: eng.

The article discusses the causes of inflation in Georgia and methods to reduce the inflation rate used by the National Bank of Georgia, the government, and the Ministry of Finance. The inflation rate of Georgia is compared with the inflation rate of leading and neighbor countries. The necessity of working out an anti-inflation program by the GoG is outlined. For this purpose, the government budgetary policy should be coordinated with the fiscal and monetary policy developed by the NBG. The government should care about balancing the budget and reducing the state expenditures. At this stage, the use of investment funds in the direction of foreign debt, also the reduction of the monetary stock on the market is one of the ways of reducing the shortage. All the steps directed at overcoming the inflation growth should be coordinated and thoroughly analyzed in order to avoid paralysis of the economy lending and slowing down the economic growth.

Auth.

10.A3.45. A comparative review of Georgian, Armenian and Azerbaijanian economies. /G. Kuchukhidze/. Akhali Ekonomisti. – 2012. – #1. – pp. 81-83. – geo.; abs.: eng.

Georgia, Armenia and Azerbaijan are economically and socially interdependent countries, which fact significantly affects economic standing of them. Therefore, a general economic overview of each of these countries is of interest and urgency. Georgia has good relations with Armenia and Azerbaijan, while the relations between these two countries are rather strained. Azerbaijan ranks second after Turkey by trade turnover with Georgia. Thus, its socio-economic condition is rather important for Georgia's economic growth and sustainable development. On the other hand, the Armenian and Georgian nations have maintained close economic, social and cultural ties from the ancient times. The article deals with various aspects of economies of these countries and their interrelationships, namely GDP, Gini index, income, etc.

Auth.

10.A3.46. Instruments to measure enterprise clustering in Georgia. /I. Gogodze/. Georgian Engineering News. – 2012. – #3. – v. 63. – pp. 65-71. – geo.; abs.: eng.

The article presents two instruments to evaluate the process of clustering: a modified methodology of the European Cluster Observatory and the clustering index, which can be used for developing enterprise clustering policy and monitoring the achieved results. The evaluations reflecting the state of affairs in the enterprise clustering process carried out through these instruments are considered.

Auth.

10.A3.47. Graphs in economics. /N. Varamashvili/. Business-Engineering. – 2012. – #4. – pp. 85-87. – geo.; abs.: eng.

The major tools of pictorial representations in economics are discussed. The rectangular coordinates, linear, quadratic, exponential, and several variable function graphs are considered and used. In some cases, the plotting rules and graphic conception of coefficients in formulas of mathematical functions are examined.

Some mathematical functions and their graphs that can be used for economic problem modeling and analysis are demonstrated.

Auth.

10.A3.48. The basic economic aspects of investment. /S. Sreseli/. Business Engineering. – 2012. – #4. – pp. 132-134. – geo.; abs.: eng.

In the unanimous opinion of the majority of foreign and local experts, various forms of collective investment has turned to be the most dynamic sector of the financial market lately. Collective investment tool are the most important element of the international capital markets. Investment funds build their activity on the accumulation of means of ordinary investors and their placement on dividend-bearing securities. The accumulation of funds is carried out by issue and sale of own stock and/or shares. Investment funds can direct the accumulated means only at investment activity. The positive role of collective investment is hardly assessable in the process of stabilization of the financial system of both individual countries and regions as well as of the world economy. The main economic advantages of investment funds are: the efficiency and information transparency; diversification; professional management; liquidity; convenience; tax privileges; controllability.

Auth.

10.A3.49. Economy of Georgia. /R. Asatiani, V. Papava, I. Meskhia, M. Kakulia, I. Archvadze, L. Chikava, O. Keshelashvili, T. Kandelaki, G. Kavtaradze, D. Chomakhidze, R. Abesadze, V. Kikutadze, V. Sartania, S. Pavliashvili, M. Tokmazishvili, N. Adeishvili/. – 2012. – 308 pp. – geo.

Economic and institutional reforms are analyzed on the grounds of specification of peculiarities of contradictory process of economic development and their interrelation; considered are the issues related to the reform of budgetary and monetary systems; described are the national wealth and demographic trends, peculiarities of regional economics, agricultural, manufacturing and service sectors, development of tourism, especially of resorts and rich recreational potential. All issues are considered in the context of global processes and the ways out of the crisis are indicated. In the authors' opinion, full copying of the development model of any other country is inadmissible for Georgia. Georgia has its own historical and socio-cultural traditions that can be matched only with corresponding model.

Auth.

A4. Education

10.A4.1. Knowledge assessment methods and innovation potential of Georgia. /M. Kopaleishvili, N. Makhviladze, I. Bedinashvili/. Business-Engineering. – 2012. – #2(3). – pp. 35-42. – geo.

The quantitative indicators of the country's innovation potential and assessment methods used by different international organizations are given. The structure of the European Innovation Board indicators, according to which competitiveness and innovation in the EU Member States are measured, is described. According to the state of innovation potential and development of information and communications technologies in 2009-2010, Georgia was ranked the 84th among 132 countries of the world. It is noted that the most comprehensive and proved system of qualitative and quantitative measuring of the scientific-technical and innovation potential of a country is the World Bank's Knowledge Assessment Methodology (KAM) being used for compiling two indexes – the Knowledge Index (KI) and the Knowledge Economy Index (KEI). According to these indexes, in 2009 Georgia was ranked the 18th (KI – 5.15; KEI – 5.21) among 27 European and Central Asian countries

Auth.

10.A4.2. Organization of the English language teaching process. /N. Tsotsonava/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 183-186. – geo.; abs.: geo., eng., rus.

The article deals with the precise pedagogical organization of teaching phraseological units in the English language at a certain stage and defining the ways and means of their solution. The article also touches upon the elaboration of the habits for understanding English phraseological units and their usage in oral speech.

Auth.

10.A4.3. Problems of holding exams at universities in terms of the learning process hygiene. /N. Chakhunashvili, E. Kharadze/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 186-189. – geo.; abs.: geo., eng., rus.

The current reform in the educational field considers the training of professional, competitive, modern specialists. To achieve this goal, one has to follow a rather difficult path, requiring proper planning of the entire educational process and compliance with the general provisions of school hygiene. The pedagogical process hygiene-related problems are most urgent among other problems faced by higher education

institutions, such, for example, as intellectual work hygiene of the youth, the pre- and post-examination hygiene, the hygiene of text-books, etc. The problems connected with the organization and holding of exams at universities and the deplorable results in case the hygiene rules are violated are discussed.

Auth.

10.A4.4. Social and psychological factors of the teacher's authority. /N. Saginashvili/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 189-194. – geo.; abs.: geo., eng., rus.

The article deals with the social and psychological factors of the teacher's authority in groups of junior and senior students and the final-year students of the faculty of education. As the study results have shown, the teacher's authority in the group of junior students is conditioned by personal factors, but senior students pay more attention to the teacher's professional component. The most important for them is the teacher's knowledge of the subject. As for the final-year students of the faculty of education, the professional competence of the teacher is most valued by them.

Auth.

10.A4.5. Main trends and problems of personnel management in educational institutions. /M. Gedevanishvili, N. Sozashvili/. Akhali Ekonomisti. – 2012. – #1. – pp. 19-23. – geo.; abs.: eng.

The ongoing democratic reforms in Georgia have authorized educational institutions to independently follow the personnel policy or, in other words, to implement human resource management themselves. The latter imposes a great responsibility on and makes new demands to the administration of educational institutions. The article focuses on the necessity of applying modern models of personnel management of the leading world countries with due regard for local traditions.

Auth.

10.A4.6. Free programs in educational and scientific activity. /M. Gegechkori, V. Bakhtadze, T. Zhvania, N. Narimanidze, T. Burchuladze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 207-211. – geo.; abs.: geo., eng., rus.

The article lists some modern priority free programs, compares their advantages over the proprietary programs and considers the positive aspects of transition to free software.

Auth.

10.A4.7. Business engineering training in foreign universities. /M. Kopaleishvili, N. Makhviladze/. Business-Engineering. – 2012. – #4. – pp. 12-15. – geo.; abs.: eng.

The academic programs of training in business engineering in a number of leading world universities are presented. It is mentioned that the theory and methodology of the discipline have not been sufficiently studied. Business engineering academic programs and the duration of studies are different in different universities. General for these programs are the compulsory general, engineering, economic and language training courses. Training is carried out in accordance with the European Credit Transfer and Accumulation System – ECTS. The training courses for degrees of Master of Business Engineering (MBE) and Bachelor of Business Engineering (BBE) in the universities of Belgium, Denmark, Switzerland, Germany, USA, and some other countries are described.

Auth.

A5. Informatics/Computer Science

10.A5.1. Questions of the choice of the working step for processes of measurement with optimum algorithms for discrete monitoring systems and gathering of the ground and flight information. /E. Hazarkhanov/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 113-117. – rus.; abs.: geo., eng.

Questions of a choice of a working step for processes of measurement with optimum algorithms for discrete monitoring systems both without handicaps, and in conditions of handicaps are considered.

Auth.

10.A5.2. Graphs transformation by means of factorization of vertexes and graphs coloring. /R. Kutateladze, A. Kobiashvili/. Transactions of Technical University of Georgia. – 2012. – #1(483). – pp. 116-119. – geo.; abs.: geo., eng., rus.

Different cases of conceptual representation of schemes as graphic models are discussed. The modes of conversion of graphs reducing their structure are represented and the advantages of coloring graphs and introducing dummy vertexes are analyzed. Concrete possibilities of graph transformation are demonstrated with an example.

Auth.

10.A5.3. On iterative algorithms for solving high-dimensional linear programming problems. /N. Jibladze, A. Topchishvili, M. Andguladze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 43-49. – eng.; abs.: geo., eng., rus.

Two developed iterative algorithms for solving high-dimensional linear programming problems are proposed: the first one is based on the gravitation centers method, the second one is realized on the basis of the constant step gradient method. Although the developed iterative algorithms are approximate, in most cases their application in high-dimensional linear problems is justified because they are characterized by such positive properties as simplicity of the algorithm and the program, speed and, most important, the appropriate software is devoid of “looping”.

Auth.

10.A5.4. On an algorithm for finding the best variant in the directed graph. /K. Kutkhashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 50-54. – geo.; abs.: geo., eng., rus.

The solution of many practical problems requires the construction of algorithms based on the graph theory methods. The article considers an algorithm for solving an optimization problem in the directed graph. Namely, a directed graph linked to n vertex on which arcs the weighted functions $T(n)$ and $R(n)$ are determined. It is necessary to construct an algorithm that would enable to find a way, through which all the vertices could be routed; at the same time, each vertex should be reached exactly once, so that definite restrictions attached to the weighted functions are implemented and this way is the best one in terms of any criteria.

Auth.

10.A5.5. Comparative analysis of searching for the shortest routes in graphs. /N. Ananiashvili, N. Otkhozoria/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 66-70. – geo.; abs.: geo., eng., rus.

Computing the shortest routes in graphs is a very useful and important task. The practical realization of these tasks is possible by using the existing and tested approaches. The realization of two algorithms (of Dijkstra and Bellman-Ford) was considered important. Given complexity of time, in the case of positive weighted graphs the use of the Dijkstra's algorithm is preferable, whereas in the case of negatively weighted graphs, preference is given to the Bellman-Ford algorithm.

Auth.

10.A5.6. Integrated-optic switch 4x4. /Z. Buachidze, A. Giginishvili, A. Chirakadze, N. Kavlashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 71-74. – geo.; abs.: geo., eng., rus.

The article describes the commutating switcher 4x4 based on an integrated-optic strip waveguide. Switching of coherent light emission from one channel to another is performed based on linear electro-optic effect. Switching speed is of the π s degree, while the switch signal's power of the μ W degree.

Auth.

10.A5.7. The semantics of two Georgian cases: instrumental and adverbial. /E. Dokvadze, G. Chikoidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 145-157. – rus.; abs.: geo., eng., rus.

Semantic structures of both cases are represented by tree diagrams; in both cases spatial meanings are taken as the initial (base) point: in the case of the instrumental diagram, this is a notion of “accompaniment” of two objects; as for the adverbial diagram, it starts in space, with the meaning of “reaching” some place, some position; the central semantic area of the former is characterized by the meanings of “instrument” and “cause”, while that of the latter - of “aim”.

Auth.

10.A5.8. Georgian “ancestors” of the logical implication. /G. Chikoidze, N. Amirezashvili, N. Javashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 158-165. – geo.; abs.: geo., eng., rus.

Many (if not all) essential abstractions have their roots in natural languages. Taking into account that “true” abstract concept must not lose its connection with the source from which it is developed, it is quite important to compare the current state of some concepts with the semantics of language units, which can be considered as its “ancestors”. The paper considers the particular case of this general relation by the example of logical implication and its semantic correspondences in the Georgian language. The considered English definitions indicate on relations between logical implications and the corresponding Georgian conjunctions in many other languages as well.

Auth.

10.A5.9. The computer communication system for handicapped people. /L. Lortkipanidze, L. Samsnadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 166-170. – eng.; abs.: geo., eng., rus.

The offered computer communication system will be developed for Windows as software and help a handicapped person communicate by using symbols.

Auth.

10.A5.10. Description of lexical unit “snow” by lexical functions. /E. Dokvadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 171-176. – geo.; abs.: geo., eng., rus.

The paper defines a lexical unit ‘tovli’ (snow), which belongs to the lexical units expressing “natural phenomenon”; its description is formulated in the terms of “lexical functions”, synonymic series”, etc.

Auth.

10.A5.11. The Georgian language computerization conceptions. /L. Margvelani/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 177-180. – geo.; abs.: geo., eng., rus.

The conceptions of both computerization and modeling of the Georgian language, also the ways of the solution of related to them problems are considered in the work.

Auth.

10.A5.12. Verbal models of medioactive verbs with i thematic marker for an electronic dictionary. /N. Javashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 181-184. – geo.; abs.: geo., eng., rus.

Databases completed with proper knowledge and rules are necessary for electronic dictionaries as well as for any other dictionaries. With the aid of knowledge storing computer-based expert system the bases are completed with rules which are based on grammatically correct paradigms. The medium voice models with i thematic marker, which are one of the subgroups of verb component of the Georgian language database, are presented in the work.

Auth.

10.A5.13. Immediate constituent structure of a sentence and synonymic substitutions in NP. /A. Chutkerashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 185-188. – geo.; abs.: geo., eng., rus.

Immediate constituent structure of a sentence is one of the most common representations of any syntactic structure, when a sentence is represented by models and relations between their extensions. The paper considers synonymic substitutions in the noun phrase of a sentence. The constituents of a noun phrase, which define the noun or the nucleus of NP are in a logical order, in case the sentence is stylistically and informationally neutral. Upon substitution of the NP constituents with their synonyms the word order might be changed.

Auth.

10.A5.14. The advanced quantum search algorithm. /M. Archuadze, G. Besiashvili, M. Khachidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 189-196. – geo.; abs.: geo., eng., rus.

In quantum computation the Grover’s algorithm is of most importance. The paper considers the quantum computing based on the mathematical machines of quantum groups and quantum logic gates. Such computing is used in unstructured data bases in one of the options for the iterative Grover’s search algorithm, where π is replaced by $\pi/3$ and the minimization of error probability happens stage-wise in the process of convergence of the algorithm.

Auth.

10.A5.15. Role and place of failures in information security of modern complex systems. /M. Surguladze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 197-202. – rus.; abs.: geo., eng., rus.

Intellectual and electromagnetic compatibility methods of active diagnostics of failures of hardware-software systems are considered and offered. The concept of the complex decision of a problem of increase of reliability of the space radio-electronic equipment in C-frequency range is presented.

Auth.

A6. Other Social Sciences

10.A6.1. The service quality and consumer loyalty. /G. Nadirashvili, Ch. Jashi/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 23-27. – geo.; abs.: geo., eng., rus.

The article explores the theoretical and methodological issues in the services sector. In particular, the relationship between the service quality and customer loyalty, methods of quality evaluation and their role in raising the service quality and customer loyalty are discussed. The given estimations and recommendations are very important for implementing effective marketing strategies and formulating long-term profitable relationships with customers. An increase in the service quality and satisfaction of customers are particularly important for under the prioritized tourism industry development in Georgia.

Auth.

10.A6.2. Ilia Chavchavadze's views on the problem of political elite and ideology. /A. Tukvadze, L. Lortkiphanidze/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 140-144. – geo.; abs.: geo., eng., rus.

Ilia Chavchavadze admitted the leading role of elite in the process of society's development and pointed to the elite structure of society. Based on the development dialectics, Ilia Chavchavadze proved the importance of convergence of liberal and conservative ideologies. In his opinion, only the nations sharing the values of both ideologies in the process of state building will succeed. The practice of development of modern democracies corroborates validity of his views. His political concept is topical, modern and has a pragmatic meaning in the process of the Georgian state building and democratization.

Auth.

10.A6.3. Turks in Germany: 50-year old unsolved problem. /G. Antelava/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 144-150. – geo.; abs.: geo., eng., rus.

On October 30, 1961 West Germany and Turkey signed a bilateral agreement on temporary sending of labour force from Turkey to West Germany. The "temporary" stay of the Turks in Germany turned out to be a myth. Found in a completely new linguistic and cultural space, they faced the necessity to accept new cultural standards. The Turks were challenged with a very difficult problem: to be integrated or to be assimilated.

Auth.

10.A6.4. Imagination in science. /F. Habashi/. Nano Studies. – 2012. – #5. – pp. 121-132. – eng.

There are many cases that show how instrumental was imagination of researchers and scholars in the progress of science during the history of our civilization. Some of these ideas, that used to be first an object of ridicule, have become later the foundation of modern science. Several such cases, beginning from the ancient Greeks, who used to measure sizes of the Earth, followed by calculation of its weight in the 18th century by a British scientist, to modern times, when nuclear (Uranium) fission was predicted by a German chemist five years before its discovery, are surveyed.

Auth.

B. NATURAL AND EXACT SCIENCES

B1. Mathematics. Mechanics. Physics. Cybernetics

10.B1.1. On the nature of light. /O. Lomaia/. Metsniereba da teknologiebi. – 2011. – #4-6. – pp. 42-48. – geo.; abs.: eng., rus.

The views on the nature of light and the tests conducted for studying the phenomenon of "quantum behavior" of electrons in experimental physics are reviewed. It is supposed that any type of radiation of a substance, including light, consists of radial and wave diffusion. They are variants of qualitative matter and energy that propagate in space with the velocity of light without mixing. Radiation does not comprise charged motionless. They originate during the propagation of radiation in space. Electron is a particle and not a wave-particle as stated by the leading quantum mechanics researchers.

Auth.

10.B1.2. On the Cramer-Rao inequality in an infinite dimensional space. /E. Nadaraia, P. Babilua, M. Patsatsia, G. Sokhadze/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 5-13. – eng.; abs.: geo., eng.

The Cramer-Rao inequality is obtained in Banach space by using the technique of smooth measures. The principle of maximum likelihood is formulated. The examples are considered.

Auth.

10.B1.3. The Cauchy-Nicoletti multipoint boundary value problem for systems of linear generalized differential equations with singularities. /M. Ashordia, M. Kvekveskiri/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 14-21. – eng.; abs.: geo., eng.

Considered is the Cauchy-Nicoletti multipoint boundary value problem

$$Dx(t) = dA(t) \cdot x(t) + df(t) \text{ for } t \in [a, b],$$

$$x_i(t_i+) = 0, \quad x_i(t_i-) = 0, \quad (i=1, \dots, n)$$

where x_1, \dots, x_n are the components of the desired solution x , $-\infty < a < t_i \leq t_{i+1} < b < \infty$, $f = (f_i)_{i=1}^n : [a, b] \rightarrow R^n$ is a vector-function the components of which are functions with bounded variations, and $A = (a_{ij})_{i,j=1}^n : [a, b] \rightarrow R^{n \times n}$ is a matrix-function such that the functions a_{ij}, \dots, a_{ij} have bounded variations on every interval from $[a, b]$ which do not include the point t_i for every $i \in \{1, \dots, n\}$. The sufficient conditions are established for the unique solvability of this problem in the case when the considered system is singular, i.e., the components of the matrix-function A do not have bounded variation on the interval $[a, b]$.

Auth.

10.B1.4. Partially independent random variables. /O. Glonti/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 23-31. – eng.; abs.: geo., eng.

In this paper the definition of A-independence of X and Y random variables is introduced and the example of A-independent random variables is constructed. Regression of X on Y and regression of Y on X are investigated. Also the joint characteristic function of this random variables is obtained.

Auth.

10.B1.5. On some approximation properties of Generalized Fejér Integral. /D. Ugulava/. Bulletin of Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 32-38. – eng.; abs.: geo., eng.

Problems of approximation in spaces of p -integrable for some $p \in [1, \infty)$, as well as essentially bounded functions defined on a locally compact Abelian group are considered. Analogs of Fejér well-known positive operators are taken as approximate aggregates.

Auth.

10.B1.6. On reconstruction of coefficients of a multiple trigonometric series with Lebesgue nonintegrable sum. /Sh. Tetunashvili/. Bulletin of Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 39-42. – eng.; abs.: geo., eng.

Cantor's functionals sequence notion for one-dimensional trigonometric series is introduced. Also, the possibility of reconstruction of coefficients of multiple trigonometric series with Lebesgue nonintegrable sum by iterated use of Cantor's functionals is established.

Auth.

10.B1.7. Characteristics of the solution of the consistently linearized eigenvalue problem for lateral torsional buckling. /M. Aminbaghai, H. Mang/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 47-58. – eng.; abs.: geo., eng.

The consistently linearized eigenvalue problem has proved to be a powerful mathematical tool for classification of buckling, based on the percentage bending energy of the total strain energy. Of particular interest are pre-buckling states with constant percentage strain energy. The two limiting cases of such states are membrane stress states and states of pure bending. Buckling at pure bending, referred to as lateral torsional buckling, is the topic of this work. The transfer matrix method is used to derive a secant stiffness matrix in analytical form. Formulation of the consistently linearized eigenvalue problem by means of this matrix yields the same solution as would be obtained by a formulation based on the tangent stiffness matrix which is an essential ingredient of nonlinear Finite Element Analysis. This remarkable finding permits analytical verification of hypothesized subsidiary conditions for lateral torsional buckling.

Auth.

10.B1.8. Non-local refined theory for nanobeams with surface effects. /I. Elishakoff, C. Soret/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 59-67. – eng.; abs.: geo., eng.

In this study we propose governing differential equations for beams taking into account shear deformation, rotary inertia, locality and surface stress effects. It is shown that the equation is both simpler and more consistent than the appropriate Bresse-Timoshenko equations extended to include locality and surface

stress effects. Proposed equation contains 11 terms with respect to displacement versus 19 terms appearing in the equations that extend the Bresse-Timoshenko equations to include non-locality and surface effects.

Auth.

10.B1.9. Delta-like singularity in the radial Laplace operator and the status of the radial Schrödinger equation. /A. Khelashvili, T. Nadareishvili/. Bulletin of Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 68-73. – eng.; abs.: geo., eng.

By careful exploration of separation of variables into the Laplacian in spherical coordinates, we obtain the extra delta-like singularity, elimination of which restricts the radial wave function at the origin. This constraint has the form of boundary condition for the radial Schrödinger equation.

Auth.

10.B1.10. Fusion and fission of rare radioactive isotopes by laser driven ions. /D. Garuchava, K. Si-gua/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 74-78. – eng.; abs.: geo., eng.

The dynamics of overdense ion bunches created by ultra-intense femtosecond laser pulses is studied in order to use them for the fusion of rare isotopes. It is possible to use them for creation of super-heavy elements as well as for fission of radioactive nuclei.

Auth.

10.B1.11. The non-perturbative analytical equation of state for the gluon matter. /V. Gogokhia, A. Shur-gaia/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 79-86. – eng.; abs.: geo., eng.

In order to derive the equation of state for the pure $SU(3)$ Yang-Mills fields from first principles, it is proposed to generalize the effective potential approach for composite operators to nonzero temperature. It is essentially non-perturbative by construction, since it assumes the summation of an infinite number of the corresponding contributions. There is no dependence on the coupling constant, only a dependence on the mass gap, which is responsible for the large-scale structure of the QCD ground state. The equation of state generalizes the bag constant at non-zero temperature, while its nontrivial Yang-Mills part has been approximated by the generalization of the free gluon propagator to non-zero temperature, as a first necessary step. Even in this case we were able to show explicitly that the pressure may continuously change its regime at $T^* = 266.5$ MeV. All the other thermodynamical quantities such as the energy density, entropy, etc. are to be understood to have drastic changes in their regimes in the close vicinity of T^* . All this is in qualitative and quantitative agreement with thermal lattice QCD results for the pure Yang-Mills fields. We have firmly established the behaviour of all the thermodynamical quantities in the region of low temperatures, where thermal lattice QCD calculations suffer from big uncertainties.

Auth.

10.B1.12. An investigation of bound qqq-systems on the basis of the Salpeter equation in the framework of simple approach with use of expansion in terms of hyperspherical harmonics. /T. Babutsidze, T. Kopaleishvili, V. Skhirtladze/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 87-95. – eng.; abs.: geo., eng.

The approach is developed to the solution of a problem of three bound constituent quarks (baryon) on the basis of Salpeter equation with two required 8-component spinors, having clear physical sense in the meaning of a particle-antiparticle (baryon-antibaryon), without so-called relativization of full wave function. The doubtful character of consideration of two-particle interaction under quark confinement conditions is stressed. It is proposed to use expansion in terms of hyperspherical harmonics for calculations of compact bound systems with three-particle interactions. Two elementary types of the central three-particle interaction - linear and oscillatory potentials - are considered. The approach proposed in this paper will be applied numerically to light baryon calculations.

Auth.

10.B1.13. Positive solutions of two-point boundary value problems for higher order nonlinear singular differential equations. /I. Kiguradze/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 5-10. – eng.; abs.: geo., eng.

For higher order nonlinear differential equations with singularities with respect to the time and phase variables, the sufficient conditions for the existence of positive solutions for the Dirichlet and focal boundary value problems are established.

Auth.

10.B1.14. Ito's formula in Banach space. /B. Mamporia/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 11-16. – eng.; abs.: geo., eng.

Ito's formula for the generalized random processes and for the random processes with values in separable Banach space is proved.

Auth.

10.B1.15. Non-classical problems with non-local initial conditions for abstract second-order evolution equations. /G. Avalishvili, M. Avalishvili/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 17-24. – eng.; abs.: geo., eng.

The non-classical problems for abstract second-order evolution equations with non-local initial conditions are considered. The existence and uniqueness results for general non-local in time problems are proved in suitable spaces of vector-valued distributions with values in abstract Hilbert spaces. An iteration algorithm of approximation of solution to non-classical problem by a sequence of solutions to corresponding classical problems is constructed and investigated. Applying general results obtained for non-classical problems in abstract Hilbert spaces, non-local in time initial-boundary value problems for hyperbolic equations and systems are studied.

Auth.

10.B1.16. Semimartingale backward equations with convex generator. /B. Chikvinidze/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 31-34. – eng.; abs.: geo., eng.

The work concerns the semimartingale backward stochastic differential equations (BSDE) with convex generators of quadratic growth. The existence of a solution for such equation driven by a continuous martingale with unbounded characteristic is proved. A suitable optimization problem is introduced and that the corresponding value process satisfies the above mentioned BSDE is proved.

Auth.

10.B1.17. Factorization of loops in loop groups. /G. Giorgadze, G. Khimshashvili/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 35-38. – eng.; abs.: geo., eng.

Loops in a loop group of compact Lie group are considered. In this context, generalizations of several results on existence of Birkhoff factorization for matrices with parameters are obtained and their applications to the Riemann-Hilbert problem in loop spaces discussed in the preceding papers by the authors are indicated.

Auth.

10.B1.18. Method of calculation of the breaking force of the continuous cast billets on a rotor-type casting machine. /G. Kevkhisvili, I. Zhordania, J. Loria/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 39-42. – eng.; abs.: geo., eng.

The process of breakage of continuous cast billets is the main factor in assessing energy-power parameters of a rotor-type casting machine. In the paper on the example of SiMn20, FeSi45 and FeSi75 the impact of various characteristics on forces occurring during breaking the billets is shown. These characteristics are chemical content of cast metal, physico-mechanical parameters, cross-section of continuous cast billet, geometry of knives for breaking of breaking mechanism, the distance between the pressure roll and breaking knife. The working principle (vibratory motion of breaking knives) that significantly decreases breaking forces for ultrastrong ferroalloys with the ultimate strength higher than 200 kg/mm² is offered.

Auth.

10.B1.19. On the deuteron relativistic wave function. /L. Abesalashvili, L. Akhobadze, V. Garsevanishvili, T. Jalagania, I. Tevzadze/. Bulletin of Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 43-45. – eng.; abs.: geo., eng.

Light front form of the relativization of the deuteron wave function is considered. Parameters of the wave function are extracted comparing theoretical results with experimental data. Experimental data are obtained on the two-metre propane bubble chamber of JINR (Dubna) bombarded by the deuteron beam with momentum of 4.2 GeV/c/nucleon.

Auth.

10.B1.20. Study of multi-particle azimuthal correlations of negative pions at momenta of 4.2, 4.5 GeV/c per nucleon. /L. Chkhaidze, T. Jobava, L. Kharkhelauri/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 46-50. – eng.; abs.: geo., eng.

The collective properties of π^- mesons in HeC, CC, CNe, MgMg, CCu, CTa and OPb collisions at momenta of 4.2, 4.5 GeV/c per nucleon have been investigated. The data stem from the SKM-200-GIBS streamer chamber and Propane Bubble Chamber systems utilized at JINR. Multi-particle azimuthal correlations of π^- mesons have been studied within the standard transverse momentum analysis method of P. Danielewicz and G. Odyniec. In the phase space the axis has been identified and pion correlations were observed with respect to this axis. The values of the correlations linearly depend on the mass of all colliding pairs of nuclei.

Auth.

10.B1.21. Heat capacity of rare-earth quasi-stoichiometric dihydrides. /N. Namoradze, I. Ratischvili/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 51-54. – eng.; abs.: geo., eng.

Temperature dependence of the total heat capacity of light rare-earth dihydrides is calculated. The results of calculations are compared with the corresponding experimental data and a number of parameters characterizing the metal-hydrogen system are determined.

Auth.

10.B1.22. Calculation of the trajectory of a test particle in the FRW space-time based on Lyra geometry for the perfect fluid with massless scalar field. /M. Yavari/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 55-59. – eng.; abs.: geo., eng.

The exact solutions of the field equations for the FRW cosmological model are presented when the source of gravitational field is a perfect fluid coupled with a massless scalar field within the framework of Lyra geometry. Then, the trajectory of a test particle in this space-time by using the Hamilton-Jacobi formalism is calculated.

Auth.

10.B1.23. The black hole phase of the universe. /R. Natsvlshvili/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 60-62. – eng.; abs.: geo., eng.

A state of the universe by its average density and possible radius is considered. By a mass assessed on the basis of these parameters, the expectable cases when the universe may occur inside the Schwarzschild's sphere and form the black hole, are calculated. An inner non-stationary nature of the Universe by an example of the evolutionary stages of its existence as the black hole are analyzed, which indicates that a non-stationary nature of the black holes is their usual form of state.

Auth.

10.B1.24. Probabilistic model of statistical system with nano-particles. /V. Tsitsishvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 57-61. – rus. abs.: geo., eng.

Statistical systems including nano-particles have been considered taking into account probability of stochastic changes in macroscopic ensemble configuration. Usual for simple homogenous systems Markov's chain is compared with stochastic process of non-Marcovian character described with application of fractional integral and differential operators. Balance equations are constructed and characteristic properties of self-functions of fractional integral and differential operators ("fractional exponents") are considered.

Auth.

10.B1.25. Study of the function of liquid motion in homogeneous initial and boundary conditions. /G. Kirmelashvili/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 76-83. – geo.; abs.: geo., eng., rus.

In order to study plane motion of viscous incompressible fluid it is necessary to find stream function $\psi(x, y, t)$ satisfying the equation
$$v\Delta\Delta\psi - \frac{\partial\Delta\psi}{\partial t} = \frac{\partial\psi}{\partial y} \frac{\partial\Delta\psi}{\partial x} - \frac{\partial\psi}{\partial x} \frac{\partial\Delta\psi}{\partial y}$$
 and the following limiting conditions: in initial moment the

values of stream function and on boundary surface its first order partial derivatives according to coordinates. It is proved here that in homogeneous initial and boundary conditions the equation has only one zero solution in steady-, as well as, in unsteady-state cases.

Auth.

10.B1.26. Separability of not necessarily convex sets. /V. Maisuradze, M. Salukvadze, V. Gabisonia/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 7-30. – geo.; abs.: geo., eng., rus.

The Hahn-Banach theorem about extension of linear functional defined on the subspace of given space on the whole space is widely known from the functional analysis. Fundamental statements about separability of subsets of linear space follow from the mentioned theorem. The theorem independently and geometric corollaries following from it play a large part in many sections of mathematics, particularly in the optimization theory. The possible expansion of geometrical form of the Hahn-Banach theorem about separability of not necessarily convex sets by not necessarily linear functional from the single point of view is considered in the presented article. The mentioned nonlinear functional has been built constructively. Results can be applied to the problems of vector and nonscalar optimization, namely to study the scalarization of nonscalar optimization tasks and other problems.

Auth.

10.B1.27. Structural identification of nonlinear systems using block-oriented models. /B. Shanshishvili, M. Salukvadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 31-36. – eng.; abs.: geo., eng., rus.

The problem of structural identification of nonlinear continuous dynamical systems is considered on the set of continuous block-oriented models, which is "greater" than the one considered earlier, under input periodical influences of the system. The criterion determining the model structure is developed.

Auth.

10.B1.28. Parametric identification of one class of the linear non-stationary systems. /B. Shanshishvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 37-42. – eng.; abs.: geo., eng., rus.

The problem of parametric identification of linear non-stationary dynamic systems is considered. Stated is the problem of parametric identification as, in a certain sense, an inverse problem of Cauchy's problem for linear ordinary equations. Under some restrictions on the system's parameters and input and output variables the existence theorem of such interval, in which a continuous matrix of coefficients is identified, is formulated and proved. The parameter estimation algorithm is investigated by the example of the second-order system identification.

Auth.

10.B1.29. Identification of thermal dynamic objects by regression and recursion methods. /Kh. Bardavelidze, A. Bardavelidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 55-59. – geo.; abs.: geo., eng., rus.

The work discusses the setting of a task of thermal dynamic object identification. For determination of the object's transfer function coefficients the least squares method is used. The curve obtained as a result of active identification is approximated by an aperiodic element of second order. The transient response is considered as parametrical dependence on the model's coefficients. It is established that the continuous model of the object causes some determined difficulties, so it is more convenient to use the object's discrete model. The object identification is studied by the regression and recursion procedures of the least squares method. The recursion procedure is found to be better compatible to the object's real response.

Auth.

10.B1.30. Research of the stationary magnetic field distribution; identification of its properties and scope of application. /O. Labadze, A. Lomia, D. Eremyan, V. Bakhtadze, T. Khutsishvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 79-82. – geo.; abs.: geo., eng., rus.

Distribution of magnetic field lines on the surface of the tripole permanent magnets made from hemispherical, spherical and prism magnets are obtained. Their characteristics, properties and scope of application are established.

Auth.

10.B1.31. Physical basics and features of the construction of a contactless three-position dynamic object. /O. Labadze, M. Tsertsvadze, T. Labadze, P. Manjavidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 83-88. – geo.; abs.: geo., eng., rus.

The physical basics and the implementation of contactless control of a three-position dynamic object based on studies of various symmetrical shapes of magnets are considered. The found and installed features ensure not only reliable operation of the control system, but also preserve the specific information of the magnet system after removal of the control pulses, reducing thus the consumption of energy.

Auth.

10.B1.32. On the Karman constant in the logarithmic formula of velocity distribution in a turbulent flow. /T. Magrakvelidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 112-115. – geo.; abs.: geo., eng., rus.

The paper considers some issues of velocity distribution in the turbulent bulk in case of liquid flow in the cylindrical pipe. It is shown that coincidence with experimental data of logarithmic formula of velocity distribution based on the theory of mixing range is better when Karman constant $k=e^{-1}=0.368$, than in case when $k=0.4$.

Auth.

10.B1.33. The effect of the Prandtl number on heat transfer in the apparatus with a stirrer. /T. Magrakvelidze, N. Bantsadze, A. Mikashavidze, N. Lekveishvili, J. Rusishvili, Kh. Lomidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 116-120. – geo.; abs.: geo., eng., rus.

The results of experimental investigation are presented, under which in the case of liquids with high viscosity the relation of heat transfer intensity on the Prandtl number both for smooth and rough surfaces is the same as in the case of distilled water.

Auth.

10.B1.34. On the role of mathematics in physics. /K. Gigineishvili, G. Goderdzishvili, T. Gegechkori/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 239-243. – geo.; abs.: geo., eng., rus.

The article deals with the amazing effectiveness of mathematics in natural sciences, especially in physics that is not subject to any rational explanation. Natural laws conform to mathematical rules with great accuracy. The role of mathematics in studying the regularities of the physical world and particularly in creating a unified theory is discussed.

Auth.

10.B1.35. New direction in construction of matrix one-way function and tropical cryptography. /R. Megrelishvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 244-248. – eng.; abs.: geo., eng., rus.

The goal of this paper is to substantiate the original high-speed one-way matrix function and key exchange algorithm for an open channel which is considered on the basis of the mentioned one-way matrix function. It is connected, obviously, to the existing global problem. This problem lies at the root of the fact that at present there are no other one-way functions (known and accepted) with a higher speed than the same functions in the algorithms of Diffie-Hellman and RSA. The author concludes that such a function can be the one-way matrix function that is described in this paper. The paper also examines the new tropical operations for building up the systems of tropical cryptography.

Auth.

10.B1.36. Measuring the mass of liquid gas in a closed reservoir. /Z. Azmaipharashvili, N. Otkhozoria, V. Otkhozoria, M. Narchemashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 128-132. – geo.; abs.: geo., eng., rus.

The system of measuring the mass of liquid gas and the algorithm of its performance are discussed. The system enables to measure the mass of liquid gases by means of electromagnetic waves raised by the resonator put in a reservoir. The system has high precision of measuring and is distinguished by simple design. The high precision of measuring is ensured by the type of a resonator and the microprocessor in which three own frequencies of a resonator are fixed and the algorithm of measuring the mass of liquid gas is realized.

Auth.

10.B1.37. Analytical representation of volt-ampere characteristics of the welding machine. /A. Sulamanidze, Z. Sabashvili, Z. Mchedlishvili, A. Gordeziani, N. Kodua, N. Kenchiashvili, T. Besiashvili/. Georgian Engineering News. – 2012. – #3. – pp. 49-51. – geo.; abs.: eng.

Based on the experimental research data, a mathematical analysis of external volt-ampere characteristics of the supply source designed for condenser cells of different capacity was performed. For this purpose, we used the expansion of the function into Fourier series, with the help of which the analytical representations of function $u=f(I)$ were obtained. These representations allow us calculate theoretically the current intensity value needed for welding.

Auth.

10.B1.38. Magnetization during finite radio-frequency impulses in magnetic-resonance imaging. /K. Kotetishvili, K. Kapanadze, G. Chikhladze/. Nano Studies. – 2012. – #5. – pp. 41-44. – eng.

At magnetic-resonance imaging (MRI), multi-echo signals are formed due to influence the distant dipole field (DDF), as well as the transversal T_2 -relaxation of the magnetization. This magnetization process is investigated. Analytical expressions for the magnetization revealing creation of de-phasing of the signal at multi-echo series of constant π -signals are obtained.

Auth.

10.B1.39. The effect of radio-frequency impulses at transversal and longitudinal magnetization caused by far dipole field. /K. Kotetishvili, K. Kapanadze/. Nano Studies. – 2012. – #5. – pp. 45-46. – eng.

It is known that the influence of a dipole magnetic field causes formation of the multi-echo signal. The radio-frequency impulses of the mentioned signal, in turn, affect the transversal and longitudinal magnetization due to the transversal relaxation. The effect of radio-frequency impulses on magnetization is analyzed and the results of the dipole field influence are presented.

Auth.

10.B1.40. Isochronous annealing of n-Si samples irradiated with 25 MeV energy protons. /T. Pagava, M. Beridze, N. Maisuradze/. Nano Studies. – 2012. – #5. – pp. 47-54. – rus.

There are experimentally studied the Hall-effect in proton-irradiated n-Si single crystals with the initial concentration of conduction electrons of $6 \cdot 10^{13} \text{ cm}^{-3}$. Irradiation with protons of energy 25 MeV is shown to lead to an anomalous increase in the electrons mobility due to the formation of metallic inclusions in the crystal with Ohm interfaces with the semiconductor matrix. Isochronous annealing forms a shell of negatively charged acceptor radiation defects around these metallic inclusions, which are non-transparent for conducting electrons, resulting in a sharp decrease in mobility. Oscillatory dependence of the mobility on the annealing temperature is explained by the change in a degree of shielding of metallic inclusions by the negatively charged shells. Clusters of interstitial atoms (metallic inclusions) are annealed at 400°C .

Auth.

10.B1.41. On theory of doping in nanosized crystallographic voids. /L. Chkhartishvili/. Nano Studies. – 2012. – #5. – pp. 73-84. – eng.

A realistic model allowing calculation of the binding energy of dopant atoms localized in nanosized crystallographic voids of a semiconductor lattice and their electron energy levels is constructed.

Auth.

10.B1.42. Evaluation of influence of various factors on magneto-optical properties of the ultrafine medium by statistical method. /L. Kalandadze/. Nano Studies. – 2012. – #5. – pp. 85-88. – rus.

The effect of the dielectric permittivity ϵ_0 on the magneto-optical properties of the magnetic ultrafine structures has been evaluated for the case of magnetite magnetic fluids. Calculations performed using the correlation analyses method showed that the effect of ϵ_0 on the equatorial Kerr effect frequency dependences is of 37%. It should be emphasized that this result will be also valid for any magnetic ultrafine medium, the optical constants of which n_m and k_m hold the condition $k_m^2 \ll n_m^2$. Besides, this result together with the concentration factor of magnetic structures gives a really good opportunity to predict the magneto-optical properties of the ultrafine medium and, therefore, to obtain such media with desirable parameters.

Auth.

10.B1.43. Exact equations for correlation functions of a subsystem interacting with a thermostat and their applications in the linear transport theory of polarons. /B. Kotia/. Nano Studies. – 2012. – #5. – pp. 103-116. – rus.

New exact quantum evolutional equations for equilibrium double-time correlation functions (Green functions) of a small subsystem, interacting with a thermostat (boson field) are derived with the help of Lowville super-operator formalism and by the method of projection operator. The random-phase-approximation (RPA) is not used at the derivation of these equations. As an application, electron-phonon system and Froehlich polaron model is considered. On the basis of Kubo linear response theory the consistent theory of electrical conductivity is developed. Analytical expressions for the conductivity tensor and mobility along the all range of low temperature and frequencies of external electric field are obtained. In these models, also obtained are temperature-corrections to electrical conductivity (mobility) conditioned by accounting initial correlations of electrons with phonons. A correct expression for low-temperature mobility of Froehlich polaron, analysis of which by different methods leads to different results is obtained.

Auth.

10.B1.44. Exciton-plasmon resonance in semiconductor ultrathin layers. /Z. Jibuti, N. Dolidze, G. Eristavi/. Nano Studies. – 2012. – #6. – pp. 55-60. – rus.

Exciton-plasmon resonance in ultrathin layers of n-Ge doped with shallow donors (As and Sb) was studied experimentally.

Auth.

10.B1.45. Magnetic phase diagram of a spin antiferromagnetic S=1/2 ladder with alternating rung exchange and dimerized legs. /N. Avalishvili, G. Japaridze/. Nano Studies. – 2012. – #6. – pp. 85-92. – eng.

The effect of leg dimerization on the ground-state magnetic phase diagram of a two-leg spin S=1/2 ladder with alternating rung exchange is studied. Two possible patterns for dimmers distribution along the legs corresponding to the checkerboard and columnar structure are considered. A system in the limit of strong rung exchange and magnetic field and mapping the model onto the effective spin $\tau=1/2$ chain model is considered and the continuum-limit bosonization approach used by the latter is studied. Four quantum phase transitions and corresponding critical magnetic fields, which mark transitions from the spin gapped regimes into the gapless quantum spin-liquid regimes are identified. In the gapped phases the magnetization curve of the system shows plateaus at magnetizations equal to zero, its saturation value $M = M_{\text{sat}}$ and at $M = M_{\text{sat}}/2$. It is shown that in the case of a checkerboard structure the intra-leg dimerization has no effect on the ground state properties of the system, while the columnar pattern leads to renormalization of the critical fields, in particular to extension of the gapped phases and respectively of the magnetization plateaus.

Auth.

10.B1.46. Peculiarities of the nanosized lepidocrocite and magnetite structures forming on the steel surface in the open-air system. /O. Lavrynenko, S. Netreba, P. Kosorukov/. Nano Studies. – 2012. – #6. – pp. 93-100. – eng.

The process of obtaining nanosized phases (Green Rust, lepidocrocite and magnetite) on the steel surface when it contacts with water dispersion media and air oxygen is studied. Studied are the kinetic regularities of the formation of iron oxygen structures depending on the temperature, pH value of the dispersion media contacting with the steel surface and concentration of ferric and ferrous iron built for such a system. The optimum conditions for the formation of lepidocrocite γ -FeOOH are the temperature from 3 to 10°C and pH value of 1.5. The most favorable conditions for magnetite FeFe_2O_4 formation are $T \sim 50^\circ\text{C}$ and the circumneutral medium.

Auth.

B2. Chemistry. Biology

10.B2.1. Radiation resistant materials. /N. Kekelidze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 177-187. – rus.; abs.: geo., eng., rus.

A new concept and new technology were developed and radiation-resistant high-effective electronic materials were created, in which the electrical and optical parameters do not considerably change even under irradiation by high fluxes of fast neutrons and electrons ($\Phi \geq 10^{18}$ particles/cm²).

Auth.

10.B2.2. ¹⁰B-based materials for neutron-shielding. /L. Chkhartishvili, O. Tsagareishvili, D. Gabunia/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 188-202. – eng.; abs.: geo., eng., rus.

Utilizing structural models, the maximum possible concentration of isotope ¹⁰B in crystalline, amorphous and nanostructured modifications of elemental boron, as well as in some boron compounds has been calculated. It is concluded that adequate neutron-protection is possible to be provided by thin layers of boron compounds and composites, on condition that the material is enriched with isotope ¹⁰B. The work describes technologies for such dispersed crystalline powder, which should ensure the formation of high-quality coatings by the plasma-method.

Auth.

10.B2.3. Corrosion of chromium in ambient CO+CO₂ mixtures. /O. Mikadze, A. Kandelaki/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 99-102. – eng.; abs.: geo., eng.

The results of an investigation of high-temperature corrosion of unalloyed chromium and the binary alloy Cr+0.5%Ce in an ambient 75%CO+25%CO₂ gas mixture under a pressure of 0.01 atm are presented. It is shown that cerium additions have a beneficial effect on the oxidation resistance of chromium.

Auth.

10.B2.4. The regularities of the electrolytic dissociation of 1,1-cyclopentane and 1,1-cyclohexanedicarboxylic acids. /E. Kvaratskhelia, R. Kvaratskhelia/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 109-112. – eng.; abs.: geo., eng.

The parameters of electrolytic dissociation of 1,1-Cyclopentane and 1,1-Cyclohexanedicarboxylic acids in their dilute (0.0001-0.01M) solutions were determined with the aid of original accurate and empirical equations suggested by the authors.

Auth.

10.B2.5. Polyurethanes on the basis of card-type polycyclic bisphenols and different diisocyanates. /E. Gavashelidze, N. Maisuradze, N. Dokhturishvili, G. Papava, N. Gelashvili, Z. Molodinashvili, M. Gurgenshvili, I. Chitrekashvili/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 113-116. – eng.; abs.: geo., eng.

Card-type secondary diols are synthesized by means of oxyalkylation of bisphenols. Linear homogeneous polyurethanes are obtained through interaction of diols and diisocyanates. Their physical and chemical properties, thermal and heat-resistance as well as resistance in respect of radiation emanation of polymeric compositions obtained on their basis are studied.

Auth.

10.B2.6. N-lactosylation of amino benzoic acids. /R. Kublashvili, M. Labartkava, K. Giorgadze, N. Karkashadze/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 117-120. – eng.; abs.: geo., eng.

The N-lactosylation of isomeric amino benzoic acids by D-lactose is studied. N-m- Carboxyphenyl- α -D-lactosyl amine and N-p-Carboxyphenyl- α -D-lactosyl amine are synthesized and characterized.

Auth.

10.B2.7. Study of poly[Oxy-1-Carboxy-2-(3,4-Dihydroxyphenyl) Ethylene] from *symphytum asperum*, *S. caucasicum*, *S. officinale*, *Anchusa italica* by circular dichroism. /V. Barbakadze, M. Merlani, L. Amiranashvili, L. Gogilashvili, K. Mulkijanyan/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 143-146. – eng.; abs.: geo., eng.

A comparative study of chirality of two carbon atoms C1 and C2 of poly[oxy-1-carboxy-2-(3,4-dihydroxyphenyl) ethylene] (POCDPE) preparations from different species of Boraginaceae family - *Symphytum asperum*, *S. caucasicum*, *S. officinale*, *Anchusa italica* revealed that they have one and the same absolute configuration in all preparations. It has been established that chiral atoms of POCDPE have either (1R,2R) or (1S,2S) configurations but not (1R,2S) and (1S,2R) configurations and consequently the denomination of the polymer is poly[oxy-(1R)-1-carboxy-(2R)-2-(3,4-dihydroxyphenyl) ethylene] or poly[oxy-(1S)-1-carboxy-(2S)-2-(3,4-dihydroxyphenyl)ethylene].

Auth.

10.B2.8. Internal friction in β -rhombohedral boron, doped with cobalt. /M. Darchiashvili/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 71-73. – eng.; abs.: geo., eng.

In β -rhombohedral boron, doped with cobalt, relaxation and nonrelaxation maxima of the internal friction caused by motion of twinnings boundaries and stacking faults in planes of {100} system were revealed. Regularities of changing activation characteristics of relaxation internal friction of β -rhombohedral boron under the influence of doping with cobalt were established.

Auth.

10.B2.9. Mathematical-chemical investigation of some straight-chained alkanes. /G. Lekishvili, M. Gverdtsiteli, N. Tsetsadze/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 74-75. – eng.; abs.: geo., eng.

A mathematical-chemical investigation of some straight-chained alkanes was carried out within the scope of the quasi-ANB-matrices method. Two correlation equations of "structure-properties" type were constructed. The correlations are satisfactory.

Auth.

10.B2.10. Thermodynamic analysis of carbothermal reduction of the mixture of Cr_2O_3 and MnO oxides. /Z. Tsikaridze, I. Janelidze, R. Razmadze, J. Bagdavadze/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 77-78. – eng.; abs.: geo., eng.

Complete thermodynamic analysis of the system Cr-Mn-O-C has been carried out for the following compositions: $\text{Cr}_2\text{O}_3 + \text{MnO} + 4 \text{C}$ (1), $\text{Cr}_2\text{O}_3 + \text{MnO} + 5 \text{C}$ (2) and $\text{Cr}_2\text{O}_3 + \text{MnO} + 6 \text{C}$ (3). The basic results for all compositions are presented as diagrams (dependence of the contents of components on temperature within the range of 800-2000 K).

Auth.

10.B2.11. Synthesis of some caffeic and 2,3-dihydroxy-3-(3,4-dihydroxyphenyl)-propanoic acid amides. /M. Merlani, V. Barbakadze, L. Amiranashvili, L. Gogilashvili, K. Mulkijanyan/. Bulletin of Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 107-111. – eng.; abs.: geo., eng.

Synthesis of some new amides of caffeic acid and 2,3-dihydroxy-3-(3,4-dihydroxyphenyl)-propanoic acid with potential antioxidant activity has been carried out. The structures of synthesized compounds were established by NMR and IR spectroscopy.

Auth.

10.B2.12. Synthesis and anomeric composition of n-glycosides of aminobenzoic acid esters. /R. Kublashvili, M. Labartkava, I. Abdushelishvili, K. Giorgadze, N. Karkashadze, K. Ebralidze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 20-24. – rus. abs.: geo., eng.

N-glycosides of amino benzoic acid esters are synthesized on the basis of aminobenzoic acid esters (2-aminobenzoic acid methyl ester, 4-aminobenzoic acid butyl ester) and aldoses (D-glucose, D-galactose, D-mannose, L-rhamnose, D-xylose, L-arabinose). The anomeric and isomeric composition of synthesized products are identified by method of ^{13}C -NMR.

Auth.

10.B2.13. Analysis of growth and properties of epitaxial lead selenide layers in the connection of realization of high "negative" pressure. /A. Pashaev, O. Davarashvili, M. Erukashvili, R. Gulyaev, M. Dza-

gania/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 31-35. – rus. abs.: geo., eng.

For the realization of high "negative" pressure in the thin epitaxial lead selenide layers is considered role of layers' thicknesses, dispersion and texture, density of dislocations in the substrates. Influence of the dispersion is valued over critical thickness of crystallites, but texture - by displacement of X-ray diffractograms for the layers with different thickness.

Auth.

10.B2.14. The instimation the probability of reduction of the silica by carbon. /K. Ukleba, A. Nadiradze, N. Nadiradze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 36-40. – rus. abs.: geo., eng.

The thermodynamic analysis of processes expected is carried out at restoration silica by carbon on which bases the opinion that the most perspective can be considered a two-stage restoration by carbon: the first stage – incomplete restoration of SiO_2 on reaction: $\text{SiO}_{2(s)} + \text{C}_{(s)} = \text{SiO}_{(g)} + \text{CO}_{(g)}$, the second – reaction in a gas phase: $\text{SiO}_{(g)} + \text{CO}_{(g)} = \text{Si}_{(s)} + \text{CO}_{2(g)}$.

Auth.

10.B2.15. Thermodynamic analysis of the system AL-TI-O-C. /J. Bagdavadze, Z. Tsikaridze, K. Ukleba/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 41-45. – rus. abs.: geo., eng.

Complete thermodynamic analysis of the system Al-Ti-O-C has been carried out for the following structures: 1. Al-64 mass %; TiO_2 -22 mass %; C -14 mass %; 2. Al-76 mass %; TiO_2 -19 mass %; C -5 mass %; 3. Al-32 mass %; TiO_2 -59 mass %; C -9 mass %. The basic results for all structures are presented in the form of diagrams (dependence of the contents of components at the temperature range 800-2000 K).

Auth.

10.B2.16. Quantum-chemical study of substitutes effect on the tautomeric transformation of derivatives of acetophenone. /T. Kuchukhidze, J. Kereselidze, M. Kvaraia, Z. Pachulia/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 46-48. – rus. abs.: geo., eng.

The energetic and kinetic characteristics of the tautomeric transformation of acetophenone derivatives by means of quantum-chemical DFT (Density Function Theory) method are calculated. It is shown that the electron donor substitutes promote and electron acceptor substitutes hinder the tautomeric transformation.

Auth.

10.B2.17. Physical aspects of production of some diamond composite materials. /N. Loladze, V. Poliakov, M. Tserodze, S. Zaslavski/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 49-53. – rus. abs.: geo., eng.

The work refers to the field of physics and chemistry of production of diamond composite materials under conditions of high pressure and temperature. The experimental data on kinetics of hard phase interaction in diamond-titanium and graphite-titanium systems at pressures $(2.55-7.7) \cdot 10^9$ Pa and in vacuum are presented. On the basis of the obtained results the mechanism of carbon atoms migration and the role of high pressure on this process are determined.

Auth.

10.B2.18. Ultradisperse composite powder on graphite basis for absorbtion of electromagnetic waves. /Z. Okrostsvardze, T. Baysikadze, I. Kakhniashvili, L. Chkhikvadze, N. Vacheishvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 92-96. – rus. abs.: geo., eng.

The work describes the process of adsorption of electromagnetic waves by nickel-plated carbon powder. Nickel plating of carbon powder has been realized by hydrometallurgical method. The nanocrystal structure with crystal size in the 800-1200Å range of nickel plated layer has been determined by (transmission) electron microscopy on transparency. The nanocrystal structure of the plated layer causes an increase in the concentration of vacancies up to concentration of vacancies - $C \geq 10^{-4}$ before the melting of metal. A scheme of crosscut of plated layer has been drawn based on the research. According to this scheme, partial absorption of electromagnetic waves is realized. Structural defects – vacancies are involved in these effects. The final absorption of electromagnetic waves in the centimeter range takes place on 30° glided planes of disoriented graphite powder.

Auth.

10.B2.19. Adsorbents prepared on the basis of volcanic slag of Georgian origin. /T. Kvernadze, N. Osipova, I. Karalashvili, N. Klarjeishvili, M. Burjanadze, S. Urotadze, V. Tsitsishvili/. Proceedings of the

Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 97-100. – rus. abs.: geo., eng.

On the basis of the volcanic slag of the Georgian origin, methods of preparation of adsorbents have been developed; as a result of the investigation, it can be supposed that the obtained adsorbents might be used as chromatographic column packing material for controlling the degree of contamination of Freon oils (used in refrigerating equipments). Inexpensiveness of the obtained adsorbents results from the low price of their main component, mineral material – volcanic slag, which abound in Georgia.

Auth.

10.B2.20. The effect of latent curing agent on the physical-mechanical properties of stiro-butadien rubbers. /M. Shalamberidze, N. Lomtadze, M. Grdzeldze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 110-112. – rus. abs.: geo., eng.

The article deals with the results of the effect of latent curing agent on the physical-mechanical properties of stiro-butadien rubbers SKS-30, APK and APKM-15. It is experimentally proved that the latent hardener LO-2 essentially influences the physical-mechanical property of rubbers which is the optimum value of 5.3 parts by weight hardener per 100 parts by weight polymer.

Auth.

10.B2.21. The effect of biosurfactants on the synthesis and stability of cellulases. /L. Kutateladze, T. Urushadze, R. Khvedelidze, T. Aleksidze/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 16-19. – eng.; abs.: geo., eng.

The cellulase producer thermophilic strain – *Aspergillus versicolor* J1-5 was selected from the collection of micromycetes of Durmishidze Institute of Biochemistry and Biotechnology. The temperature and pH optimums of cellulolytic preparation of *Aspergillus versicolor* J1-5 were established. The effect of biosurfactants (ramnolipid – S1, biocomplex – S2, trehalolipid – S3) on the synthesis of microbial cellulases, their enzymatic activity, thermostability was studied. Enrichment of nutrient medium with 0.01% of biosurfactant (S2) caused enhancement of cellulolytic activity by 60%. Supplying of incubation medium with surfactants did not cause significant change in enzyme activity. After adding the biosurfactants stability of enzyme increased by 28%. Influence of biosurfactants on enzyme ability to deep hydrolysis of cellulose containing substrate (filter paper) forming low molecular reducing sugars, including glucose, has been investigated.

Auth.

10.B2.22. Investigation of desorption of a porous hybrid amide polymer saturated with light oil fractions. /K. Papava, N. Gelashvili, Z. Molodinashvili, N. Khetsuriani, N. Dokhturishvili, N. Maisuradze, V. Sherozia/. Georgian Engineering News. – 2012. – #3. – pp. 95-96. – eng.; abs.: rus.

Based on amide-type oligomers and modified natural mineral sorbents, porous hybrid polymers of a new type were obtained. The obtained polymers are characterized by high sorption ability and by the capability of floating with adsorbed substances on the water surface. They can be removed together with adsorbed oil products from the water surface mechanically. The porous hybrid polymers of a new type are characterized by high selectivity, refractoriness and the ability of changing their properties in a wide range depending on the structure and proportion of initial substances. The sorbents obtained after desorption are characterized by the ability of regeneration, which provides for their reusability.

Auth.

10.B2.23. Physicochemical properties of the $\text{FeFe}_2\text{O}_4\&\text{Ag}^0$ nanocomposites formed on the steel surface contacting with AgNO_3 water solutions in open-air system. /O. Lavrynenko/. Nano Studies. – 2012. – #5. – pp. 27-40. – eng.

The process of forming simple core & shell composites including iron oxide core and argentum shell on the steel surface contacting with AgNO_3 water solution in open-air system is shown. The phase and chemical composition of $\text{FeFe}_2\text{O}_4\&\text{Ag}^0$ structures, their particle size, aggregative and sedimentation stability, magnetic properties, etc. are defined by the pH values and initial argentum concentration in the dispersion medium. The mechanism of the core and shell composites formation is realized through the electrochemical process on the steel surface, collection of ferric and ferrous cations, hydroxyl and carbonates in the steel-water-air interface, formation of strong reducing phases (in particular, Green Rust) and their interaction with argentum from solution. The core and shell composites due to their antioxidant activity, magnetic and optical properties are useful for medical-biological application.

Auth.

10.B2.24. Regular gratings and threads of metal nanoparticles in zeolite channels. /A. Kapanadze, G. Rtveliashvili, G. Tabatadze/. Nano Studies. – 2012. – #5. – pp. 55-56. – rus.

Based on experiments, it is shown that introducing the liquid metals into zeolite (NaX, NaA and NaM) channels under the pressure becomes it possible to obtain regular gratings composed of 10 – 20 atoms and single-atomic “threads”.

Auth.

10.B2.25. Optical and surface properties of boron nitride compounds obtained in an optical furnace without catalysts. /L. Sartinska, A. Frolov, A. Andreeva, Y. Voynich, A. Kasumov, G. Frolov, V. Tinkov, V. Stonis/. Nano Studies. – 2012. – #5. – pp. 89-102. – rus.

A process which takes place during heating in the focal zone of the high power optical furnace in a steady flow of nitrogen was investigated. It was shown that the transformation of graphite-like h-BN nanotubes initiates formation of whiskers (threads) around the crater and the drops on the surface of the sample. Whiskers (threads) have increased nitrogen content in central part of their length. The drops and whiskers at the beginning and the end of their length have high content of boron and oxygen. It was confirmed that the movement of oxygen is the main driving force which promotes the formation of thread-like structures. It was demonstrated that the powder material deposited on the surface which is removed from the crater have an increased boron content, consists of thread-like structures – nanotubes and whiskers (threads), equiaxed nanosized crystallites, some crystals of h-BN and tetragonal phases B₂₅N and B₅₁N₂, and amorphous boron nitride. For this material it was identified band gaps: 3.5, 3.8 and 4.8 eV, which correspond to the phases of tetragonal B₅₁N₂ and B₂₅N, and hexagonal BN, respectively. The method of Auger electron spectroscopy can be used for preliminary evaluation of powder material, because it shows the difference in the electronic structures of pure elements and their compounds.

Auth.

10.B2.26. Electrophysical properties of dysprosium monoantimonide. /Z. Jabua, I. Kupreishvili, A. Giginishvili, G. Iluridze, I. Tabatadze/. Nano Studies. – 2012. – #5. – pp. 117-120. – eng.

Rare earth monoantimonides are of interest since they are able to provide super low temperatures through adiabatic demagnetization. Besides, monoantimonides of the rare earth elements represent unique compounds, which along with high melting temperature enabling their use at a wide temperature interval show a number of effects characteristic only for this class of alloys. For the first time, a technology for preparation the DySb thin films, powders, ceramics and single-crystals has been developed. The X-ray and electronographical analyses of the obtained samples were carried out. For DySb thin films and single-crystals, the temperature-dependence of the resistivity and Hall constant were measured in the temperature range from 95 to 700 K. On the basis of these measurements, the basic electro-physical parameters, like carriers' mobility and concentration, were assessed in a single-band approximation.

Auth.

10.B2.27. Synthesis of gold and silver nanoparticles by some microorganisms. /T. Kalabegishvili, I. Murusidze, E. Kirkesali, A. Rcheulishvili, E. Ginturi, E. Gelagutashvili, N. Kuchava, N. Bagdavadze, D. Pataraiia, M. Gurielidze, G. Tsertsvadze, V. Gabunia/. Nano Studies. – 2012. – #6. – pp. 5-14. – eng.

Several bacterial strains of actinomycetes as well as blue-green algae *Spirulina platensis* were used in the studies aimed at developing of biotechnology of microbial synthesis of gold and silver nanoparticles. The nanoparticle formation time and concentration conditions were studied for all the examined strains of bacteria. A complex of analytical and spectral methods – UV-visible spectrometry, X-ray diffraction (XRD), transmission electron microscopy (TEM), scanning electron microscopy (SEM) with energy-dispersive analysis of X-ray (EDAX), equilibrium dialysis, neutron activation analysis (NAA), and atomic absorption spectrometry (AAS) – has been applied for examining of the obtained nanoparticles. A single peak observed in the all UV absorption spectra evidences for the spherical shape of the produced gold and silver nanoparticles, which is confirmed by TEM images. In all the TEM images the diffraction patterns correspond to the face centered cubic (FCC) structure of gold and silver nanoparticles. The histograms of particle sizes for studied samples show that the sizes of gold and silver nanoparticles are in the range of 5 to 80 nm, with the average at 20 – 25 nm. The data obtained by NAA and AAS illustrates that the total concentrations of gold and silver in the samples at first increase rapidly (in adsorption processes on the cell walls) and then does not change significantly. The results of the performed investigations show that the examined microorganisms exposed to relevant compounds are capable of producing gold and silver nanoparticles of spherical shape extracellularly.

Auth.

10.B2.28. Short dictionary (glossary) on nanochemistry and nanotechnology terms. Part II. /Ts. Rami-shvili/. Nano Studies. – 2012. – #6. – pp. 15-54. – eng.

The second part of the short dictionary contains over 100 terms in Georgian focused on general issues and topics of nanochemistry and nanotechnology, as well on the synthesis of nanosystems. The table lists some of such terms in English, German, and Russian taken from dictionaries and scientific periodicals in chemistry and the corresponding terms in Georgian with appropriate definitions.

Auth.

10.B2.29. Correlation between surface specific area and particles average size: hexagonal boron nitride nano-powders. /L. Chkhartishvili/. Nano Studies. – 2012. – #6. – pp. 65-76. – eng.

A morphology model for nano-powdered hexagonal boron nitride h-BN that can serve as an effective solid-additive to liquid lubricant materials is suggested. The model allows estimating of the surface specific area, the hard-to-measure morphology parameter according to the average size of powder particles.

Auth.

10.B2.30. X-ray study of γ -Mo₂N nanostructured coatings synthesized by vacuum-arc method. /V. Shulayev, Z. Kolupaeva/. Nano Studies. – 2012. – #6. – pp. 77-84. – rus.

There is performed the X-ray diffraction analysis of nanocrystalline states in γ -Mo₂N coatings synthesized by the low-energy influence on the coating deposition front. Constant negative bias potential applied to the substrate was 30V. Nanostructured coatings have an amorphous-crystalline structure. The average size of coherent scattering was about 6nm. The hardness of these coatings was over 60GPa. In the coatings, high residual compressive macro-stresses are formed. During the molybdenum nitride coatings synthesis by using constant negative potential bias, the suppression of macro-particles' capture was detected.

Auth.

10.B2.31. Preparation of silver nanoparticles from silver nitrate using hydroquinone. /T. Pavliashvili, T. Kalabegishvili, E. Ginturi, L. Lomidze, G. Tsertsvadze, G. Abramishvili/. Nano Studies. – 2012. – #6. – pp. 101-104. – geo.

Silver nanoparticles were obtained from an aqueous solution of a nitrate. Hydroquinone was used as a reducing agent. The synthesized nanoparticles were subjected to microwave treatment. The process of the silver nanoparticles formation was studied by the method of electron microscopy. The obtained nanoparticles were of a spherical shape and a narrow range of size distribution.

Auth.

10.B2.32. Pyrolytic growth of one-dimensional oxide and nitride nanomaterials. /D. Jishiashvili, L. Kiria, Z. Shiolashvili, N. Makhatadze, E. Miminoshvili, A. Jishiashvili, D. Sukhanov/. Nano Studies. – 2012. – #6. – pp. 115-120. – eng.

The purpose of the work was to grow the 1D nanomaterials at relatively low temperatures, not exceeding 580 °C using the pyrolysis of hydrazine.

Auth.

10.B2.33. Separation of D-mannose-specific lectin from aloe leaves and investigation of their physical-chemical properties. /N. Mghebrishvili, M. Vakhania, G. Aleksidze, N. Aleksidze/. Mecniereba da technologiebi. – 2011. – #4-6. – pp. 78-82. – geo.; abs.: eng., rus.

Biologically active D-mannose-specific lectin (AML) was separated from juvenile and aged areas of aloe leaves and their physical-chemical and biochemical properties were studied.

Auth.

10.B2.34. The chestnut-tree (*Castanea sativa* Mill) yield in Batsari preserve depending on age. /T. Khokhobashvili/. Mecniereba da technologiebi. – 2011. – #4-6. – pp. 83-84. – geo.; abs.: eng., rus.

The article deals with chestnut yield dependence on the age. The study was carried out in the Batsari preserve (Akhmeta district). Rather interesting results about the yearly yield were obtained. According to these data, the yearly chestnut yield exceeds 1000 tons.

Auth.

10.B2.35. Bio-ecological peculiarities of introduced ornamental plants in Batumi Botanical Garden. /E. Machutadze/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 147-150. – eng.; abs.: geo., eng.

The view of green infrastructure of the Black Sea coast in Georgia depends much on ornamental plantations. A lot of evergreens and deciduous ornamental plants were brought to Ajara for decorative greenery of resorts and populated areas. Being situated in the subtropical zone of Georgia - on the Black Sea shore - Ajara has favorable climatic conditions for most subtropical plants. Nevertheless, natural conditions cause some problems to the introduction of ornamental plants and their adaptation to the environment. The questions of selection, reproduction, implantation and bio-ecology of ornamental plants are studied.

Auth.

10.B2.36. The results of introduction of some Red List Georgian species in the National Botanical Garden of Georgia (Tbilisi). /L. Asieshvili, N. Eradze, M. Siradze, N. Lachashvili/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 88-94. – eng.; abs.: geo., eng.

The paper discusses the results of introduction of some Georgian Red List species in the National Botanical Garden of Georgia (NBGG) viz.: *Pterocarya pterocarpa* (Michx) Kunth ex I. Iljinsk, *Acer ibericum* Bieb., *Juniperus foetidissima* Willd., *Berberis iberica* Stev. & Fisch. ex DC., *Salvia garedji* Troitzk., *Pistacia mutica* Fisch. & C.A. Mey. and *Pyrus sachokiana* Kuthateladze. The paper covers information on the principal phonological phases for each species, their natural distribution ranges and habitats. All considered species are distinguished by high adaptive capability. The principal phonological indices observed in nature and the National Botanical Garden of Georgia are almost identical. This is mostly due to more or less similar physico-geographical conditions of their natural ranges and the NBGG. At the same time, the studied plants were provided with niches which are similar to their natural habitats in the NBGG.

Auth.

10.B2.37. Isolation, purification and biochemical characterization of N-Acetyl-D-glucosamine specific lectin from the root of aloe (*A. aristata*). /M. Vakhania, G. Aleksidze, N. Aleksidze/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 112-115. – eng.; abs.: geo., eng.

N-acetyl-D-glucosamine specific lectin was isolated from the root and bulb of *Aloe aristata*. Its extraction conditions were established. Lectin characteristics were studied on the rabbit's trypsinized as well as non-trypsinized erythrocytes. The effect of temperature on lectin activity of the aloe root was investigated.

Auth.

10.B2.38. Inhibitory effect of proanthocyanidin preparation from tea leaves on tea leaf phenoloxidase activity. /N. Mchedlishvili, N. Omiadze, K. Akhvlediani, M. Abutidze, L. Gulua, N. Pruidze/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 1-5. – eng.; abs.: geo., eng.

The effect of the preparation of proanthocyanidins isolated from leaves of green tea (*Camellia sinensis* L.) on the activity of tea leaf phenoloxidase has been studied. The preparation of proanthocyanidins from tea leaves has been shown to be effective natural inhibitor of tea leaf phenoloxidase. At about 0.025mg/ml concentration of the inhibitor 50% inhibition was observed. The addition of the natural inhibitor caused deviation of the kinetics of the enzyme from classical kinetics. The natural inhibitor decreased Vmax of phenoloxidase 2.5-fold. The enzyme showed positive cooperativity. The Hill coefficient nH was found to be 0.63. The inhibition of tea leaf phenoloxidase by the natural inhibitor from tea leaves was non-competitive.

Auth.

10.B2.39. Study of physical properties of smitin isolated from smooth muscle and comparative analysis with the same properties of titin. /R. Kupatadze, K. Kuridze, M. Devdariani, N. Gachechiladze, L. Sulamanidze, I. Ioramashvili, J. Gogorishvili, M. Zaalishvili/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 6-11. – eng.; abs.: geo., eng.

The aim of the work was the obtaining and purification of native form of smitin (ctitin) from smooth muscle. Its physical parameters - molecular weight, characteristic viscosity and sedimentation coefficient, were determined. A comparative analysis with corresponding parameters of titin obtained from chicken striated muscles was carried out.

Auth.

10.B2.40. Study of topinambur (*Helianthus tuberosus* L.) for producing a functional food additive. /N. Aroshidze, N. Omiadze, N. Mchedlishvili, M. Abutidze, G. Kvesitadze/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 12-15. – eng.; abs.: geo., eng.

The topinambour plant (earth apple) introduced to Georgia was investigated to produce a functional food additive. Tubers of topinambour were found to contain 92.0% extractive substances including 17.0% inulin. The leaves of this plant were found to contain quite large amount of phenolic compounds (12.0%) and pectic substances (9.0%). Both tubers and leaves of topinambour contained sugars 7.0 and 13.0% respectively. The regimes of extraction of inulin from topinambour tubers and phenolic compounds from topinambour leaves were determined. It was shown that topinambour tubers and leaves gathered in different regions of Georgia may be successfully used as raw materials for producing a functional biologically active food additive.

Auth.

10.B2.41. Morphological relationships between wild and cultivated pears in Georgia. /Z. Asanidze, M. Akhalkatsi/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 20-27. – eng.; abs.: geo., eng.

214 individuals of 26 local, 9 introduced pear cultivars and 3 wild progenitor species of cultivated pear: *Pyrus caucasica* Fed.; *P. balansae* Decne. and *P. pyraeaster* (L.) Burgsd. have been evaluated by 27 morphological characters. 6 quantitative and 6 qualitative leaf and young shoot and 14 qualitative fruit descriptors have been used in multivariate statistical analysis. Leaf blade form has been analyzed using Fourier's outline shape analysis method measuring 20 harmonics per leaf and 10 leaves per individual. 6 Principal Components have been used in Hierarchical Cluster Analysis and revealed close Euclidean similarity

distances between 15 Georgian aboriginal pear cultivars and two wild species: *P. caucasica* (endemic of the Caucasus) and *P. balansae* (wild species native for Georgia). European wild pear - *P. pyraster*, was clustered with 9 introduced and 11 Georgian pear cultivars. The results of this study have shown that some local pear cultivars of Georgia are directly domesticated from the native wild pear species - *P. caucasica* and *P. balansae*. The other local cultivars might be obtained due to selective works by breeding of local landraces with introduced cultivars from different countries in historically different periods.

Auth.

10.B2.42. Natural feather grass steppes (*Stipetum pennatae*) on the territory of the National Botanical Garden of Georgia. /N. Lachashvili, M. Khachidze, N. Eradze, L. Khetsuriani/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 28-36. – eng.; abs.: geo., eng.

The structure of feather grass community (*Stipetum pennatae*) spread widely in the National Botanical Garden of Georgia (Tbilisi) has been studied. Its phytocoenological floristic characteristics are given. This considered community has not been grazed for a long time that has reflected on its structure. Particularly great amount of litter is accumulated and as a result, an ephemeral sinuzia is developed weakly. Accordingly, portion and coenetic role of an annual plant is much reduced, floristic composition is also lowered. According to the floristic analysis it is established that the studied community, in which creation the role of Caucasian species are important, is in florogenetic relationship, on one hand with Southwest Asia and on the other hand with Eurasian steppes. A Mediterranean influence occurs also.

Auth.

10.B2.43. The effect of temperature on seed germination of *Arbutus andrachne* L. /N. Shakarishvili, L. Asieshvili, N. Eradze, M. Siradze/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 37-42. – eng.; abs.: geo., eng.

Greek strawberry tree – *Arbutus andrachne* L. (*Ericaceae*) is species native to the Mediterranean region, The Middle East and south-western Asia. A few populations of *A. andrachne* naturally occur in coastal rocky limestones of Abkhazia and Ajara. As a tertiary relict species *A. andrachne* is included in the Georgia Red List and needs to be protected. Small number of trees and weak natural regeneration of these populations indicate that seed germination and seedling establishment are insufficient. Seeds of *A. andrachne* possess a physiological dormancy that prevents synchronized and rapid germination. The objective of this research was to assess germination ability of seeds subjected to different temperature regimes of incubation and to determine if seed dormancy is present in non-harvested ripe fruits. Mean germination time (MGT), germination rate (GR), coefficient of variation of the germination (CVt), germination percentage (G), uncertainty (U) and synchrony (Z) were estimated for seeds incubated at 18° and 25°C. The seeds of *A. andrachne* show higher germination percentage $G=56\pm 3.16\%$ at 18°C, as compared with $G=21.72\pm 4.32\%$ at 25°C. The differences between other parameters were statistically insignificant ($p>0.05$): $MGT=13.64\pm 0.17$ day, $CVt=22.69\pm 2.16\%$, $GR = 0.07\pm 0.01$ day⁻¹, $U=1.52\pm 0.26$ bit and $Z= 0.44\pm 0.05$ at 18°C compared to $MGT=13.63\pm 0.23$ day, $CVt =21.09\pm 2.69 \%$, $GR=0.07\pm 0.03$ day⁻¹, $U=1.42\pm 0.37$ bit and $Z=0.36\pm 0.08$ at 25°C. Our data show that the effect of temperature is stronger for the germination ability of seeds, whereas time, rate, coefficient of variation, uncertainty and synchronicity appear to be strictly genetically determined parameters less influenced by the temperature effects. Seeds from the unharvested ripe fruits revealed the ability to overcome dormancy. The MGT time took about 13 days and no pretreatment was necessary for seed germination. The results of the present study indicate that seeds of *A. andrachne* possess non-deep type of physiological dormancy.

Auth.

10.B2.44. The abundance and diversity of *Vibrio* species not pathogenic to humans in the Georgian aquatic environment. /N. Mitaishvili, A. Tskhvediani, T. Elbakidze, T. Kokashvili, G. Natroshvili, G. Kajaia, M. Tediashvili/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 43-49. – eng.; abs.: geo., eng.

The diversity, quantitative abundance and seasonal distribution of *Vibrio* species not pathogenic to humans in the Georgian aquatic environment have been studied. The samples were collected in 2006-2009 in the Black Sea coastal zone and freshwater reservoirs nearby Tbilisi. The isolated presumptive *Vibrio spp.* were identified based on biochemical profiles. Non-clinical *Vibrio spp.* isolates were divided into 3 similarity groups according to their salt requirements. Seven non-pathogenic *Vibrio* species were identified: *V. orientalis*, *V. marinus*, *V. natriegens*, *V. pelagius*, *V. campbellii*, *V. splendidus* and *V. nereis*.

Auth.

10.B2.45. Use of encyrtid (*Hymenoptera: Chalcidoidea, Encyrtidae*) fauna to estimate the possible number of scale (*Hemiptera: Coccoidea*) fauna in Gölcük Natural Park, Turkey. /G. Japoshvili, C. Toyganozu/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 50-53. – eng.; abs.: geo., eng.

Encyrtid species collected by malaise trapping in Gölcük Natural Park, Turkey, together with previous records of encyrtids from the surrounding regions (Isparta Province), were used to estimate the number of scale species likely present in the Park. From these data we found 51 species of encyrtids known to be parasitoids of scales in Isparta province. These parasitoids are associated with in total 168 scale species as hosts worldwide; however, only 60 of those scales have been recorded from Turkey. The use of chi-square statistics predicts that the list of scales in Turkey is very incomplete and the probability of finding more scale species in the area is very high, which is proved by various parasitoids recorded here.

Auth.

10.B2.46. A preliminary study of the carabid diversity and composition in Borjomi-Kharagauli National Park, Georgia. /G. Japoshvili, G. Chaladze/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 54-64. – eng.; abs.: geo., eng.

Carabid diversity was investigated at Borjomi-Kharagauli National Park (BKNP), Georgia. The study area was divided into five sampling sites with different plant associations representing all main habitat types of BKNP: The mesophilic valley in Baniskhevi; Kvabiskhevi, in this dry valley habitat the influence of the western humid climate is minor; Likani 1, coniferous forest; Likani 2, mixed forest and Bairagebis seri, sub-alpine meadow. Twenty seven species were recorded during the survey. Carabids were most abundant at a site Bairagebis seri, featuring with high diversity of herbs. Forty seven percent of all sampled individuals were found there. The study revealed that this site provided special micro-habitats for Carabidae fauna. Nineteen species were recorded only at one site. *Carabus armeniacus*, *C. ibericus*, *C. puschkini*, *C. septemcarinatus* and *Cychnus aeneus* were identified as indicator species. The abundance of carabid species differed significantly among some studied habitats.

Auth.

10.B2.47. The flora and vegetation of Eastern Georgia in the Sarmatian. /I. Shatilova, I. Kokolashvili/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 65-70. – eng.; abs.: geo., eng.

The full sections of Sarmatian deposits of Eastern Georgia were studied by palynological method. The landscape-phytocenological analysis of material reflects the changes of ecological-systematical composition of flora and allows follow the evolution of vegetation in Kartli and Kakheti depending on climatic fluctuations.

Auth.

10.B2.48. Dynamics of diversity of Neogenic vertebrates in Kakheti (Eastern Georgia) and adjacent areas. /A. Vekua, D. Lortkipanidze/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 71-84. – eng.; abs.: geo., eng.

Fauna of fossil vertebrates plays a decisive role in the matter of establishing geological age of continental sediments and comparison of sediments of corresponding age of adjacent regions. Paleontological material gives us indisputable opportunity to follow evolution of paleogeographic picture of past and separate corresponding stages of environment changes. It is also clear, that number of theoretical and practical issues of evolution is clarified on the ground of paleontological investigations. Unfortunately, Georgia, namely territory of Kakheti does not gratify us with abundance of the sites of vertebrate fauna. Therefore, it is clear, that discovery of a new paleontological sample is always in the focus of paleontologists and geologists.

Auth.

10.B2.49. Determination of the cytotoxicity of chitinbinding mistletoe (*Viscum album* L.) fruit lectin (MChbl) on human peripheral blood lymphocytes. /N. Gachechiladze, E. Khurtsidze, M. Gaidamashvili/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 85-88. – eng.; abs.: geo., eng.

The *in vitro* effects of chitin-binding mistletoe lectin MChbL on human peripheral blood cells have been investigated. MChbL inhibited proliferation of PBL cells at concentration of 500 µg/ml and showed cytotoxic effects. Low concentrations of MChbL were less cytotoxic to peripheral blood cells and exhibit similar results as ConA at the concentration of 1 µg/ml. Application of mistletoe lectin as natural biopesticide at dose-dependent manner is discussed.

Auth.

10.B2.50. Fruit trees of Svaneti (North-Western Georgia). /E. Baiashvili/. Proceedings of the Georgian Academy of Sciences. Biological Series B. – 2011. – vol. 9. – #1-4. – pp. 89-91. – eng.; abs.: geo., eng.

The article demonstrates material on fruit tree diversity described during field expeditions in Svaneti. The list and distribution of aboriginal cultivars are presented. The role of folk selection works in development of local populations is described. The domestication of native wild progenitor species is discussed.

Auth.

10.B2.51. *Galanthus caucasicus* – the source of cytotoxic alkaloids. /M. Jokhadze, J. Kuchukhidze, D. Chincharadze, T. Murtazashvili, D. Berashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 127-129. – eng.; abs.: geo.

The MTT test was initially performed with the alkaloids for the determination of the IC₅₀ (a concentration which allows the death of 50% of the treated cells), establishing the starting point for the next experiments, this procedure had to be adopted because there are no previous studies with these substances. The bulbs of dried *Galanthus caucasicus* were extracted with 95% EtOH. The advantages of this extractive method are a more complete extraction of all classes of metabolites including acidic and basic compounds and a better fractionation of metabolites that are obtained partially separated in three early fractions. All compounds were first assayed and only the active extracts were submitted to further fractionation. All the fractions from each step of the purification procedure were assayed for brine shrimp lethality and the active ones were further fractionated and purified using different methods to obtain pure active compounds. Lycorine (IC₅₀ 4.5±0.05 mg/ml), haemantaimene (IC₅₀ 9.5±0.08 mg/ml), pluvine (IC₅₀ 11.3±0.1 mg/ml) and narwedine (IC₅₀ 15.7±0.12 mg/ml) were found to be responsible for the activity.

Auth.

B3. Geology. Geodesy

10.B3.1. “Arkosic sandstones” new interpretation of the Kakheti segment of the Great Caucasus Southern Slope. /A. Okrostsvardze, D. Bluashvili, N. Gagnidze, G. Boichenko/. Mining Journal. – 2012. – #1(28). – pp. 16-23. – geo.; abs.: rus., eng.

The field-geological, petrographical, petrochemical, geochemical and mineralogical researches carried out by us in Kakheti segment of the southern slope of the Great Caucasus showed that so called coarse-grained “Arkosic sandstones” of Stori suite which have been singled out here actually represent frontal, fractionated quartz-feldspathic felsitic formations of powerful plutonic activity, which in the form of hypabyssal melts and hydrotherms were intruded into thick series of intensively tectonized liassic clay-shales and in the form of hypabyssal dikes along the fault zones and fractures caused partial assimilation of inclosing rocks, intensive hydrothermal alteration, silicification and ore mineralization. The results obtained by us fundamentally change the existing scheme of geological structure of Kakheti segment of the Southern slope of the Great Caucasus, and makes it necessary to develop a new model of its petrogenic and metallogenic evolution, by means of which in the future mineral resource new prospecting criteria will be determined in the region.

Auth.

10.B3.2. Ramp structure of Tsivgombori (Kakheti) range and its parakinematic relation to Alazan Depression. /L. Bacheleishvili, M. Kumelashvili, T. Razmadze/. Mining Journal. – 2012. – #1(28). – pp. 23-26. – geo.; abs.: rus., eng.

When deciphered the structural plan of the Tsivgombori range, its ramp-like structure was outlined. In our case, growing of ramp anticline took place at the expense of thrusting along the sub horizontal over thrust in the crystalline basement where on the fracture section of the detachment overgrowth of anticline is observed. This event, to our mind, is tightly connected with the formation of the Alazani superimposed basin. Both these structures represent a parakinematic unit. Their formation in time is closely interrelated.

Auth.

10.B3.3. The Georgian oil and gas reserves by new classification. /G. Tabatadze, K. Koiava, N. Maisuradze, N. Kbiladze/. Mining Journal. – 2012. – #1(28). – pp. 26-29. – geo.; abs.: rus., eng.

The modern classification of oil and gas reserves has considerably changed existing in Georgia structure of reserves and resources evaluation. According to the new classification, part of the old industrial reserves has removed into the proved reserves category, at the same times the reserves have been reduced. The category of proved reserves better reflects the reliability of estimation, corroborates feasibility of possible oil and gas recovery and economic background of hydrocarbon production. In view of this, all the available Georgian oil and gas reserves must be transferred into the category of proved reserves. The creation of methods of calculation of reserves and resources on the basis of international practice and the subsequent development of methodological guidelines will considerably expedite, simplify and regulate the distribution of the reserves and resources categories.

Auth.

10.B3.4. On the expedience of increasing extraction and reproduction intensity of Paravani perlite deposits. /V. Lortkipanidze, G. Kapanadze, G. Tkheldze/. Mining Journal. – 2012. – #1(28). – pp. 30-33. – geo.; abs.: rus., eng.

Basic components of perlite, as well as useful qualities of foamed perlite allowing its successful application in various fields of industry and agriculture are given. A process of producing the foamed perlite and the factors affecting the process are described. A brief geological characteristic of the Paravani perlite deposit in

Georgia, physical-mechanical qualities and stocks of the resources of these useful mineral, as well as profitable conditions for its exploitation are presented. The necessity of increasing the Paravani perlite extraction and reproduction intensity and widening the area of its application in the country's economy is stressed.

Auth.

10.B3.5. Tectonic and metallogenic features of the Mediterranean-Himalayan folded system. /V. Nadi-radze/. Mining Journal. – 2012. – #1(28). – pp. 34-39. – geo.; abs.: rus., eng.

The tectonic development of the Caucasus, one of the segments of the Mediterranean-Himalayan folded system is associated with the intersection of two global lineament zones, along which the rift and rift-like structures were later formed. The process was laterally inverted and directed from the north to the south. Within the folded system, the northwest development of structures is more observed, due to a periodic change in the rate of rotation of the Earth. The main part of the endogenous mineralization is associated with the northwest lineament zones.

Auth.

10.B3.6. Petrology and physical-mechanical properties of Vertkvichala and Chalvani gabbroid bodies. /T. Gorgidze/. Mining Journal. – 2012. – #1(28). – pp. 40-42. – geo.; abs.: rus., eng.

The article considers the mineral composition, petrology and physical-mechanical properties of Dziruli crystalline core-area (mass), Vertkvichala and Chalvani gabbroid bodies. The gabbroid body of the village Vertkvichala is represented by normal gabbro and bojite (hornblende gabbro), whereas Chalvani intrusive body is represented by bojite (hornblende gabbro). According to the study of physical-mechanical properties and based on the obtained results, gabbro intrusive bodies can be used as a good facing material.

Auth.

10.B3.7. Mining and specifications of development of disturbed coal seams of Tkibuli-Shaori deposit by mechanized systems. /Z. Gordeziani, N. Kukuladze, T. Pirtskhalava, M. Basiladze/. Mining Journal. – 2012. – #1(28). – pp. 43-46. – geo.; abs.: rus., eng.

It is shown that in order to improve the operational efficiency of mechanized systems in the development of disturbed strata attention should be focused on prediction of individual tectonic discontinuities in order to avoid a surprise breakdown. It was established that all the indicators related to the tectonics of the Tkibuli-Shaori deposit, which determine the technical and economic characteristics of the mechanized systems, confirm the appropriateness of their use on Tkibuli mines.

Auth.

10.B3.8. Complications observed during drilling into unstable formations. /G. Varshalomidze, A. Chichinadze/. Mining Journal. – 2012. – #1(28). – pp. 77-81. – geo.; abs.: rus., eng.

The main complications accompanying the process of drilling oil and gas producing wells located within such complicated areas as mostly observed in the Eastern Georgia are described in the report. The complications often observed within the Manavi area are reviewed as an example, and the measures and equipment which can be used to significantly minimize the mentioned complications and even to avoid them in some cases are provided as well.

Auth.

10.B3.9. Paleobiogeographic zoning of the Caucasus Early Jurassic (Bajocian) sea basins by ammonites. /M. Topchishvili, T. Lominadze/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 103-108. – eng.; abs.: geo., eng.

On the basis of study of the ecology and evolution of Early Jurassic-Bajocian ammonites of the Caucasus, the routes of migration of these organisms and areas of their dispersal were established. The paleobiogeographic boundaries were specified and the existence of 4 palaeobiogeographic regions on the territory of the Caucasus in the Early Jurassic-Aalenian time was verified: 1. The Lesser Caucasian, in its southern part; 2. The Southern Caucasus intermountain area including the Dzirula massif; 3. The Southern slope of the Greater Caucasus including the territories of Georgia and Azerbaijan; 4. The Northern Caucasus. At the end of the Bajocian age considerable differentiation of ammonite fauna took place. It led to the appearance of new families and genera. Ranking of the earlier distinguished palaeobiogeographic areas to the subprovinces and also the existence of the Nakhichevan subprovince are justified.

Auth.

10.B3.10. Echo of the 2011 great Japan earthquake in Georgia: dynamic triggering of local earthquakes. /T. Chelidze, T. Macharashvili, N. Zhukova/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 67-70. – eng.; abs.: geo., eng.

Introduction of new sensitive broadband seismographs, new dense seismic networks and new methods of signal processing has led to the breakthrough in triggering and synchronization studies and formation of a

new important domain of earthquake seismology related to dynamic triggering of local seismicity by wave trains from remote strong earthquakes. Considered in the paper are the peculiarities of triggered seismicity in Georgia by the example of the 2011 Great Tohoku earthquake in Japan (M=9) and moderate earthquake in East Greece (09. 03. 2011).

Auth.

10.B3.11. Some features of engineering-geological (formative) zoning of a folded mountain region by the example of Western Abkhazia. /D. Rogava/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 19-26. – geo.; abs.: geo., eng., rus.

Spatial variabilities of geological formation and geological and genetic complexes in the explored region and general characteristics of geodynamic processes related to them, makes it possible to divide the territory of Western Abkhazia into engineering and geological zones; it is part of the alpine folded system and its current structure has been mainly formed at different stages of the Alpine tectogenesis. Several pre-Alpine consolidated areas are detected within its boundaries, which determine clear geotectonic zoning of this region [1]. Apart from this, more vertical, than horizontal changes are typical for zoning factors of engineering and geological conditions. These changes are linked to orogen features of the Caucasus, the mechanism of which clearly reveals this zoning of the relief, first of all, the reduction of intensity of folding from north to south. It is obvious, that consideration of two variants of genetic and morphological zoning (regional and mixed types), makes it possible to estimate the unique natural heterogeneity of this region and the difficulty of its ecological protection. The link between formations and tectonic structures reveals regularity of creation of geological bodies. Four engineering and geological zones are separated within the boundaries of the researched territory corresponding to the main tectonic units: Upper Mzimta-Bzipi engineering and geological zone - to the Main Slope of the Caucasus (anticlinorium) zone, Lashipse-Gribza engineering and geological zone – to the Southern Slope of the Caucasus, Psou-Gega-Bashkatsara engineering and geological zone – to the hills of the Caucasus, and finally, Bichvinta-Pskhu-Kelasuri engineering and geological zone – to the Abkhazian zone of the Georgian stratum. Subsequent lower taxonomic units such as district, corresponds to a particular type of relief, and region is equivalent to geological and genetic complex.

Auth.

10.B3.12. Results of carrying out of oil and gas exploration on the West (Kolkhida) submergence zone of Transcaucasian intermountain district and future recommendations. /N. Jikia/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 27-31. – geo.; abs.: geo., eng., rus.

Increased demand for fuel and energy resources in Georgia necessitates the carrying out of a detailed exploration for discovering new oil and gas deposits. Prospects of oil and gas are strengthened by deposits available in Mesozoic-Cenozoic sedimentary cover, numerous oil and gas manifestations during drilling. The first results of appropriate prospecting and exploration works will undoubtedly stimulate discover of new oil and gas accumulations in Western Georgia. According to first-priority prospecting objects, the promising oil resource in the sedimentary cover of the examined territory (basically in Jurassic deposits) account for 220-250 million tons, while that of gas - 25-30 milliard m³.

Auth.

10.B3.13. Mathematical model of variation of distribution of silver-bearing barytes mineralization of Bolnisi David-Gareji. /N. Kajaia, D. Bluashvili, N. Japaridze, T. Lipartia/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 32-37. – geo.; abs.: geo., eng., rus.

The nature and intensity of variability in the distribution of useful mineralization of the David-Gareji deposit are considered. Using the probabilistic-statistical technique of mathematical modeling, the amount of mineralization variation intensity and high inaccuracy of the arithmetical mean value between the content of barytes and silver and mathematical expectation are determined. The correction factors are singled out and the earlier calculated reserves of these useful components have been recalculated.

Auth.

10.B3.14. Petrology of some intrusive rocks of Dzirula crystal massif. /T. Gorgidze/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 37-41. – geo.; abs.: geo., eng., rus.

The massif of Dzirula is the protrusion of Pre-Mesozoic crystalline basement. The massif is built by the rocks of metamorphic complexes, intrusive, effusive and vein bodies. The magmatic rocks are represented by quartz diorites, granitoids and gabbros. The latter is very important constituent of the massif structure. In the Gezrula, Dumala, Lomisi, Vashleura and Tskhetisjari river gorges there are outcropped intrusive bodies of various dimensions. We have studied Shrosha and Tskhetisjvari intrusive bodies represented by gabbros, gabbro-diorites, gabbro-diabases and hornblende-bearing peridotites. The gabbro-like rocks are crossed by granites and its derivatives-aplites and pegmatites - pointing to the elder age of the basic rocks in comparison with that of granites.

Auth.

10.B3.15. Relative characterization of barite-bearing fields of Okriba ore junction. /M. Japaridze/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 42-45. – geo.; abs.: geo., eng., rus.

A comparative assessment of the Okriba ore junction barite-bearing fields is given. In particular, presented are their location in the stratigraphic section, their interrelation with the major ore-controlling breakdown and the fold axis, mineral composition and zoning, the mineralization depth and the maximum vertical extent of veins.

Auth.

10.B3.16. Determination of microelements concentrations in soils of Western Georgia and their comparative analysis. /G. Gordadze, A. Gordadze, P. Imnadze, Ts. Kvirikashvili, G. Kiknadze, N. Lobzhanidze/. Nano Studies. – 2012. – #5. – pp. 5-10. – geo.

The location by depth of micro-concentrations of 29 different elements in soils of some Western Georgia regions are investigated by the method of instrumental neutron-activation analysis.

Auth.

10.B3.17. Investigation of acoustic emission accompanying stick-slip movement of rock samples at different stiffnesses of spring-block system. /T. Matcharashvili, T. Chelidze, N. Zhukova, A. Sborshchikovi/. Nano Studies. – 2012. – #5. – pp. 57-72. – eng.

Nanotechnology is the study of manipulating matter on an atomic and molecular scale. Generally, nanotechnology deals with developing materials, devices, or other structures possessing at least one dimension sized from 1 to 100 nm. Scientists debate on the future implications of nanotechnology. Nanotechnology can create new materials and devices to be applied in medicine, electronics, biomaterials and seismology. It is very important to understand the frictional process, especially, transition from stable to stick-slip motion, in mechanical engineering and seismology. It seems that analysis of acoustic emission accompanying the friction process can be a sensitive tool for revealing fine details of the friction process. Acoustic emission accompanying the stick-slip movement of basalt samples has been investigated in laboratory slider-spring device using the statistical and dynamic data analysis methods. It was found that statistical and dynamic changes in acoustic emission of stick-slip movement depend on the stiffness of spring in the spring-block system. The obtained results show that dynamics of stick-slip process undergoes both the qualitative and quantitative changes on transition from the stick-slip to the stable sliding friction caused by an increased stiffness of the frictional system. The extent of regularity in the stick-slip process assessed by analysis of acoustic emission temporal distribution characteristics increases together with an increase in spring stiffness.

Auth.

B4. Geography. Cartography. Astronomy

10.B4.1. Complex characterization of the Tskaltubo Cave system surroundings. /N. Archvadze, K. Tsikarishvili, J. Machavariani, E. Salukvadze, T. Chaladze/. Mecniereba da technologiebi. – 2011. – #4-6. – pp. 42-48. – geo.; abs.: eng., rus.

The article deals with an analysis and large-scale mapping of the natural-territorial complexes of Tskaltubo cave system surroundings. The role of natural components and man-made factors in the formation and differentiation of modern landscapes are established. In the cave system, the Didghele, Melouri and Bghe-ristskali caves, especially the Tskaltubo (Kumistavi), Ghliana and Opicho caves, as well as water-absorbing and discharge areas of the “fractured-siphon” underground waters are found to be the catchment area.

Auth.

10.B4.2. Electropolarimetric study of Jupiter’s Galilean satellites. /R. Chigladze/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 96-98. – eng.; abs.: geo., eng.

The polarization properties of light reflected from Jupiter’s satellites are studied. Maximum difference is noticeable between polarization degrees of light, reflected from the satellites’ front and rear hemispheres. For the satellites located relatively close to Jupiter (Io, Europe, Ganymede), the magnitude of polarization degree of light, reflected from the front hemisphere, is comparatively less than the magnitude of polarization degree of light, reflected from the rear hemisphere, and vice versa for satellite Callisto. A hypothesis is presented in order to explain the mentioned differences.

Auth.

10.B4.3. A new photometer-polarimeter coupled with CCD and spectropolarimetric maps of the lunar surface. /O. Kvaratskhelia, V. Kakhiani/. Bulletin of the Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 63-66. – eng.; abs.: geo., eng.

Description of a new photometer-polarimeter coupled with CCD, applied for observations of extended celestial objects, is presented. The results of observations of four regions of the Moon surface made using this device are presented.

Auth.

C. TECHNICAL AND APPLIED SCIENCES. SECTORS OF ECONOMY

C1. Power Industry

10.C1.1. The reasons of small oil extraction in Georgia and ways of changing this situation. /Z. Mgeladze, Y. Bakhtadze/. Mining Journal. – 2012. – #1(28). – pp. 4-7. – geo.; abs.: rus., eng.

The condition of oil industry of Georgia is analyzed; the reasons of low efficiency of oil prospecting and production are reviewed. In Georgia, despite its high oil-and-gas bearing potential, now, even with foreign investments, the amount of extracted oil is rather insignificant. The reason is both the objective and subjective factors. As a result of analysis, ways of intensive development of the sector on the basis of innovation technologies aimed at advancing the country's economy are recommended.

Auth.

10.C1.2. Results of a hydraulic calculation examination of the Baku-Tbilisi-Ceyhan pipeline section going through the territory of Georgia. /L. Makharadze, N. Khundadze, V. Gelashvili, S. Steryakova/. Mining Journal. – 2012. – #1(28). – pp. 55-62. – geo.; abs.: rus., eng.

The hydraulic calculation examination results of the Baku-Tbilisi-Ceyhan pipeline section within the Georgian territory are reviewed. The examination is carried out according to the standards worked out by the former Soviet Union (now the Russian Federation) and the American Society of Civil Engineers. Despite significant differences between the calculation parameters, the design parameters ensure safe exploitation of the above-mentioned pipeline section under the normal stationary regime; in order to attain a guarantee of full-value safety operation of the pipeline under extreme conditions (e.g., hydraulic shocks), recommendations to be taken into account during the whole period of operation are given.

Auth.

10.C1.3. Coal industry in the fuel and energy complex of Georgia. /D. Chomakhidze, M. Basiladze, Z. Sadunishvili/. Mining Journal. – 2012. – #1(28). – pp. 64-68. – geo.; abs.: rus., eng.

The rate and scale of coal mining in Georgia, as well as share of coal in the fuel and energy balance in 2000-2011 are considered; the figures of export and import of coal are provided; the reasons of recession of the industry and intensification of mining in recent years are noted; for the first time in the years of the state independence of Georgia, the cumulative balance sheet, which is made up on the basis of expert estimation, is presented, and recommendations for improving the current state of the industry are developed.

Auth.

10.C1.4. Activities for reaching the designed capacity of the first Tkibuli-Shaori coal-fired thermal power plant. /S. Makharadze/. Mining Journal. – 2012. – #1(28). – pp. 69-72. – geo.; abs.: rus., eng.

Activities that are to be carried out in order to reach the designed capacity of Tkibuli-Shaori coal-fired thermal power plant are discussed. Deviation of some parameters was caused by coal moisture content, coal burning process, formation of slag in the boiler, coal characteristics, and changes in the content of the exhaust, which were slightly different from the planned design parameters. The designed capacity and planned self-cost per 1kWt/h were met by improving the above-mentioned deviations. This experience can be applied successfully for TPPs of bigger output to be built in the near future.

Auth.

10.C1.5. Observation of suffusion processes on Enguri arch dam according to water chemical analysis. /B. Zautashvili, N. Zautashvili, T. Pitava/. Mining Journal. – 2012. – #1(28). – pp. 81-87. – geo.; abs.: rus., eng.

Questions of Enguri arch dam suffusion processes, their character and required investigations for preventing the adverse effects of this process are described. The chemical analysis of water samples taken from grouting, drainage and pass galleries makes it clear that they are characterized by high leaching aggression (HCO_3^- content less than 1.5 mg-eq/l), which can be reason of development of suffusion processes in the dam. In this respect waters of IV, V and VI horizons are noted for particular aggressiveness (less than 1 mg-eq/l HCO_3^- content). In order to establish and prevent the progress of suffusion processes at Enguri arch dam it is necessary that a monitoring study of the chemical composition of the water, its leaching (HCO_3^- content) and dynamics of the suffusion processes is carried out.

Auth.

10.C1.6. The causes, results and analysis of the Chernobyl NPP technogenic accident. /Th. Sanadze/. Metsniereba da teknologiebi. – 2011. – #4-6. – pp. 12-17. – geo.; abs.: eng., rus.

The publication by G. Medvedev on the Chernobyl disaster ("Novy Mir", 6, 1986, pp. 3–108) is analyzed. Based on the presented facts it is described how the reactor core became uncontrollable. As against the official version, it is mentioned that in the course of a poorly designed experiment one of the pipes of channels inside the reactor exploded causing the spread of the deformational pulse through the graphite core in all directions and deformation of all the reactor channels. All this made the stopping of the reactor impossible.

Auth.

10.C1.7. On the impact of Chernobyl disaster on the Caucasus Region. /M. Tsitskishvili/. Metsniereba da teknologiebi. – 2011. – #4-6. – pp. 25-31. – geo.; abs.: eng., rus.

The work deals with technogenic (man-made) radionuclides which have gotten into the environment as a result of human activity and which are sharply different by ecological properties from natural radioactive elements. The total quantity of biologically hazardous radionuclides Caesium-137 and Strontium-90 injected into the air as a result of nuclear accidents is given. It is concluded that for development and practical realization of operative prognostic-diagnostic schemes of distribution of various toxic impurities in the natural environment, a uniform operative network based on powerful computers connected to high-speed Internet needs to be created. This will enable to create on the same base "geoinformation systems" in the future.

Auth.

10.C1.8. The late outcomes of the Chernobyl NPP accident. /M. Dondoladze/. Metsniereba da teknologiebi. – 2011. – #4-6. – pp. 36-38. – geo.; abs.: eng., rus.

The presented research data evidence how heavy are the late outcomes exposure to radiation on the organism, which found its expression in pathological changes observed in the liquidators working within the Chernobyl NPP zone during the accident and their descendants born with congenital pathologies.

Auth.

10.C1.9. Biodosimetric assessment of the Chernobyl disaster liquidators and the method development. prospects /A. Kapanadze, A. Zedginidze/. Metsniereba da teknologiebi. – 2011. – #4-6. – pp. 39-41. – geo.; abs.: eng., rus.

The method of dosimetry enables to measure the absorbed radiation doses, while the biodosimetry methods are based on detection of direct biological effects caused by ionizing radiation. Results of the biodosimetric estimation of the state of health of the 30 liquidators working within 30 km zone of the Chernobyl NPP for 2-6 month are given.

Auth.

10.C1.10. System solutions of equations for the uniform arcC13h dams. /Z. Gedenidze, T. Kvitsiani, S. Avaliani/. Collected Papers of the Institute of Water Management. – 2011. – #3. – pp. 20-28. – geo.; abs.: geo., eng., rus.

This paper deals with issues related to the design of arbitrarily-shaped uniform dams with regard to the material resistance to the compression and tension force. Conditions of the uniform arch dams can be achieved in various ways, including the selection of thicknesses for a given geometry of the middle surface. Taking into account that it is difficult to solve this problem analytically, the authors used the method of finite differences. The grid spacing in the vertical direction is taken as a constant; while in the horizontal direction the contour of the region to pass through the mesh points is allowed. In the contact region, the internal forces and moments are determined by the method of finite elements with regard to the "dam-foundation".

Auth.

10.C1.11. Investigation of clay soils on the areas adjacent to the construction site of the earthdam of the Mtkvari HPP. /T. Tevzadze, S. Bakhturidze, D. Potshveriya, L. Bilanishvili/. Collected Papers of the Institute of Water Management. – 2011. – #3. – pp. 62-67. – rus.; abs.: geo., eng., rus.

The paper presents the materials of geotechnical investigations of clay soils intended to be used for the placement into the body of antifer elements in the earthen dam of the Mtkvari HPP.

Auth.

10.C1.12. Determination of maximum density and optimum thickness for the alluvial gravel by their experimental dumping for the construction of the catchment dam of the Mtkvari HPP. /T. Tevzadze, S. Bakhturidze, S. Kandelaki, D. Potshveriya, G. Omsarashvili, L. Bilanishvili/. Collected Papers of the Institute of Water Management. – 2011. – #3. – pp. 68-72. – rus.; abs.: geo., eng., rus.

The paper presents the experimental materials of gravel dumping from the alluvial terrace of the River Mtkvari. Experiments were carried out under field conditions during the dumping of retaining prisms for the water-retaining dam of the Mtkvari HPP.

Auth.

10.C1.13. Considerations on promotion of social-economic development of the north mountain region of Georgia with development of small hydro power resources (on example of Kazbegi Region). /I. Lomidze, G. Khelidze, B. Barkalaia, L. Shatakishvili/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 70-75. – geo.; abs.: geo., eng., rus.

The North Mountain Region of Georgia situated along the Caucasus Ridge is scarcely populated and is noted for very low economic activity; able-bodied population intensively migrates from these places. The solution of the problem is seen in the development of small hydro power stations, by the example of Kazbegi region where hydro power potential is very high. The orientation on the development of small hydro stations is dictated by practically insignificant impact on the environment, a short period of their realization and considerably small capital investments.

Auth.

10.C1.14. Loads developed on blades of a wind generator. /M. Shvangiradze/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 108-110. – geo.; abs.: geo., eng., rus.

In designing and manufacture of wind generators it is important to know the load acting on the rotor blades. The article proposes a calculation method, based on parameters of the rotor blades and wind speed to measure the forces acting on the blade and the power developed by the rotor.

Auth.

10.C1.15. On the necessity of utilization of the power budget of the River Enguri and the related social and environmental problems. /T. Magrakvelidze, V. Chichinadze, Kh. Lomidze, I. Archuadze, M. Janikashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 105-111. – geo.; abs.: geo., eng., rus.

The current level of development of the Georgian power industry is reviewed. It is shown that in terms of power generation Georgia is far behind from the leading countries, and is among holds one of the last positions among the former Soviet countries. It is mentioned that the future power industry development Georgia should be generally carried out at the expense of water power resources. The existing scheme of utilizing the water power budget of the river Enguri and the problems related to its implementation are discussed.

Auth.

C2. Electrical Engineering. Electronics. Radio Engineering. Communications

10.C2.1. The general principles of construction of the inductive three-coordinate primary converter. /O. Labadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 99-104. – geo.; abs.: geo., eng., rus.

The general principles and features of construction of an inductive three-coordinate hemispherical primary converter with odd quantity of sections of measuring windings are considered. It was established that by means of selection of the form of topology of measuring windings and replacement of odd quantity of sections on hemisphere an increase in the threshold of sensitivity and level of a target signal can be achieved.

Auth.

10.C2.2. Engine and generator management issues. /T. Trokashvili, G. Urushadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 121-123. – geo.; abs.: geo., eng., rus.

A hydraulic unit's frequency control circuit is considered. The circuit includes symister-commutated ballast. In the symister control circuit includes an optoresistor, the resistance of which is controllable by the frequency error.

Auth.

10.C2.3. Definition of the first- and second-order derivatives of low-frequency signal. /T. Trokashvili, D. Tsintsadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 124-127. – geo.; abs.: geo., eng., rus.

The scheme of obtaining the derivative of the low-frequency signals using a comparator and integrator is considered in the article. The block diagram for line voltage frequency, it errors and derivative is shown.

Auth.

10.C2.4. Development of a hydrojet pump. /D. Purtskvanidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 133-135. – geo.; abs.: geo., eng., rus.

The article is dedicated to the development of a new type of pump. The principle of hydrojet pump operation is based on the pressure forces that appear during electric discharge in water. On the electric discharge the waves similar to the shock waves produced by explosions are created that transmit pressure in all the

directions. The main part of the pump is a cylinder with two valves. Water flows into the pump through one valve and comes out through the other one. On discharge the arising pressure pushes water from the pump after which the first valve is closed and the second valve lets the water into the pump. With the help of the hydrojet pump it is possible to develop high pressure and, accordingly, pump water at high altitudes.

Auth.

C3. Automation & Telemetry. Computer Engineering

10.C3.1. Development of artificial microclimate control systems using modern circuit facilities. /N. Kavlashvili, O. Labadze, L. Gvaramadze, G. Kiknadze, T. Saanishvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 75-78. – geo.; abs.: geo., eng., rus.

The features of construction of artificial microclimate control systems are considered. The possibilities of using Arduino platform in the design of technical control systems are presented. Based on such circuit solutions the implementation of a relevant control system is proposed, which, on the basis of information obtained from 2-5 discrete points (temperature, humidity), allows perform up to 8 control actions on the object.

Auth.

10.C3.2. Identification of inter-inductive converter and its establishment as a model of automatic control system's unit. /O. Labadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 89-92. – geo.; abs.: geo., eng., rus.

Questions of identification of an inter-inductive converter are considered. Due to the fact that on change of the period of harmonic oscillations the constant component of the output signal remains constant, it is described by the homogeneous differential equation of no more than second order. It is established that the model of considered inter-inductive converter belongs to the simple Hammerstein models.

Auth.

10.C3.3. Physical basics and features of construction of inter-inductive transmit-receive antennas and application areas. /O. Labadze, T. Makharashvili, G. Maghlakelidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 93-98. – geo.; abs.: geo., eng., rus.

The physical principles and features of construction of combined inter-inductive antennas are considered. The results are based on the researches of different circuits of symmetrical form located in space. The established physical and structural features provide for the use of a combined antenna not only for measurement, reception and transmission of information (including moving objects), but also for building a system of dynamic control.

Auth.

10.C3.4. Adaptive system of controlling flexible rocker "trunk". /D. Purtshvanidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 136-139. – geo.; abs.: geo., eng., rus.

The paper discusses the adaptive system of controlling ultrasonic feedback sensors. The necessity for using adaptive management system is analyzed. The realization of the object model in the object itself constitutes the specificity of the designed control system. Ultrasonic sensors are controlled by the same signals that control the trunk, but it is not affected by disturbances. At the command coming from the program control memory the movement of both the gripper trunk in real working volume and of the ultrasonic receivers along OX, OY and OZ axes are implemented respectively. After the movement is implemented, the correspondence between the real coordinates and the coordinates provided by the program is checked. In case difference is noticed, the corresponding correction signal is sent to the control unit.

Auth.

10.C3.5. Automated device for studying metallurgical properties of raw material. /N. Gdzlishvili, K. Tsereteli, N. Mirianashvili, V. Khatashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 140-142. – geo.; abs.: geo., eng., rus.

The paper considers the problem of automation of the process of measuring the physical parameters of the metallurgical charge at various temperatures of the furnace. The functional layout of the automated device is given and the principle of its operation is described.

Auth.

10.C3.6. Cloud computing, the concept and nature. /T. Bakhtadze, I. Margalitadze, M. Gegechkori, T. Kaishauri/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 203-206. – geo.; abs.: geo., eng., rus.

Cloud services are getting more and more popular and they are predicted to have a great future by computer experts. Almost everything can be done by means of cloud technologies. All we need is a web browser and access to the internet. The cloud concept, cloud calculations/computations and their benefits are considered.

C4. Mining. Metallurgy. Chemical Industry

10.C4.1. SHS metallurgy: science and practice. /V. Yukhvid/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 13-24. – rus.; abs.: geo., eng., rus.

Self-propagating high-temperature synthesis of cast refractory inorganic materials, items, and protective coatings (SHS metallurgy) is one of most promising directions of SHS research and development. SHS metallurgy is based on the combined use of metal-thermal (thermit) reactions and conventional SHS from the elements. High combustion temperatures (3000–4000°C) and intense melt splashing during combustion generate a need for carrying out the synthesis under gas pressure or in centrifugal machines in order to control the processes of combustion, structure formation, and product properties. The most important results obtained for over the past three decades can be summarized as follows. (1) Experimental and theoretical studies on high-temperature liquid-phase reactions in thermit-type multicomponent mixtures shed light on the mechanism of liquid-phase dynamics in these systems and on the effects of gravity, microgravity, and centrifugal forces on their combustion. (2) A number of means for regulating the composition and structure of cast materials have been elaborated, such as direct and inverse phase segregation to fabricate layered or functionally graded materials, the size composite constituents and controlling their composition, and preparation of amorphous nano-grained materials. (3) Liquid-phase SHS processes have been utilized to fabricate (i) a number of new hard and heat-resistant alloys and items made thereof (including lined tubes for transportation of abrasive / aggressive media and high-temperature melts); (ii) oxide materials for use in abrasive tools and cast molding equipment; and (iii) protective coatings of machine parts operating in conditions of intense wear and elevated temperature. The presentation will be addressed to the most important contributions to the development of SHS metallurgy made by the researchers and engineers from Russia, USA, Japan, China, Georgia, Armenia, Kazakhstan, Italy, France, etc.

Auth.

10.C4.2. Some new methods for quantitative determination of rates of fast reactions in condensed systems. /A. Steinberg/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 25-38. – eng.; abs.: geo., eng., rus.

Some experimental and theoretical data on kinetics of fast high-temperature decomposition of some homogeneous and heterogeneous energetic materials are given. Sometimes kinetic constants of fast reactions dominating at high temperatures were shown to significantly differ from those of low-temperature reactions. A new non-isothermal kinetics method – electrothermal analysis (ETA) used for the study of fast high-temperature reactions occurring under conditions similar to SHS, combustion and explosion is discussed. This method and a new TA-instrument ETA-100 were used to study mechanism of gasless combustion and explosion in the Ni–Al, Ti–C, Ta–C and Ti–B and some other systems.

Auth.

10.C4.3. Electron-beam technologies and perspectives of their applications. /M. Okrosashvili/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 39-50. – rus.; abs.: geo., eng., rus.

The results of studying the microstructure and phase composition of Ti–Cu transitional layer forming by condensation and reactive diffusion of titanium steam components are presented. The influence of surface structure of the matrix on phase composition of the condensate as well as on its adhesion with the matrix is investigated. The possibility of production of X-raying amorphous powders by electron-beam technology is demonstrated.

Auth.

10.C4.4. Synthesis of single-phase intermetallics. /G. Oniashvili, G. Tavadze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 58-65. – rus.; abs.: geo., eng., rus.

The work describes the possibilities to obtain single-phase compounds in Ti–Al system in Self-propagating High-temperature Synthesis (SHS) – Thermal Explosion (TE) mode. The technology is elaborated and technological parameters are established for obtaining single-phase materials. Besides, theoretical and practical bases are presented for fabrication nanostructure materials in Ti–Al system. Physical and mechanical properties and microstructure of materials are studied. It is established that the properties of single phase nanostructured materials, obtained by SHS–TE method are better than their industrial analogues.

Auth.

10.C4.5. Production of cast composite materials on the basis of carbides and borides of titanium and chromium with SHS metallurgy method. /V. Gorshkov, V. Yukhvid/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 66-73. – rus.; abs.: geo., eng., rus.

The carbides and borides of titanium and chromium have high hardness and stability to aggressive medium at high temperatures. The results of investigations appeared in the report are such as regularities of SHS, properties of cast composite materials (CCM) on the basis of titanium and chromium carbides and borides with a nickel-aluminum intermetallic bond, and also the directions of their practical application. The synthesis was carried out in SHS reactor at initial nitrogen pressure 4 MPa. The analysis of synthesis products showed that the combustion products have the cast layered structures and are separated easily from each other with mechanical way.

Auth.

10.C4.6. Electro-stimulation of 7 steel-aluminium diffusion connections under thermoplastic processing in the solid phase. /D. Macharadze, T. Namicheishvili, D. Nozadze, M. Okrosashvili/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 74-83. – rus.; abs.: geo., eng., rus.

A combined method of electric contact heating and diffusion connection of steel with aluminum, which makes an essential effect on solid phase shaping conditions, provides better physical contact and contact surface cleaning, formation and conservation of solid setting units is proposed. Activation of contact surfaces is achieved more effectively and quickly than at mechanical and vacuum treatment. Formation of physical contact and setting corresponds to contemporary conceptions of solid body model and kinetics of development on connection strength by the data of the carried out tests. The mechanical testing in static and dynamic modes is carried out. The structure and phase composition in steel-aluminum connections are determined.

Auth.

10.C4.7. Large refractory metal single crystals grown by plasma-induction zone melting. /V. Shapovalov/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 84-90. – rus.; abs.: geo., eng., rus.

In the article, a new method of production of large refractory metal single crystals is described. Tungsten and molybdenum single crystals of dimensions 20x (140–160) x170 mm were grown. Single crystals are oriented, the maximum angle of disorientation of structure fragments does not exceed of 5°.

Auth.

10.C4.8. Generalized gradient model of post critical behavior of polycrystal materials. /A. Nadareishvili, V. Petushkov, G. Sakhvadze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 91-100. – rus.; abs.: geo., eng., rus.

The experimentally observably phenomena of post-critical deformation of solids are described. A generalized physical-mechanical model for finite deformations of damaged material based on the thermodynamics laws is presented. Regulators for well-posed boundary problem as a viscosity, second-order gradients of internal variables of system and characteristic length scale of structure are used. The model includes also micro-structural nucleation and growth of damages.

Auth.

10.C4.9. Hot explosive consolidation of novel nanostructured Cu–W composites. /A. Peikrishvili, E. Chagelishvili, B. Godibadze, M. Tsiklauri, A. Dgebuadze, G. Mamniashvili, F. Akopov, N. Arabajian, T. Gegechkori, L. Sharabidze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 101-115. – eng.; abs.: geo., eng., rus.

Copper–20 wt.% tungsten (Cu–20%W) powder mixtures were consolidated into cylindrical rods using both hot shock wave consolidation (HSC) and hot vacuum compaction (HVC) processes. Two types of Cu–W precursor compositions, one with a nanometer-scale W and another with coarser grain sizes of $> 1 \mu\text{m}$ W were, consolidated to near theoretical density at 800 and 1000°C. The shock wave loading intensity was about 10 GPa; the loading intensity during static compression was 33.9 MPa (346 kg/cm²). The investigations showed that the combination of high temperatures (above 800°C) and the use of a two-stage shock wave processing method were found to be beneficial to the consolidation of the Cu–20%W composites and resulting in high densities, good integrity, and good electrical properties. The structure and property of the samples depended on the distribution and size of the precursor W particles. It was established that for the Cu–W composites, the use of the nanoscale W precursor gave better results than that with the $> 1 \mu\text{m}$ grain size. Specifically, the coefficient of relaxation is lower, 4.3-8.6 versus 8.0-10 for the Cu–W composition made with the larger, micrometer W grain size. It was further established that the electrical properties of the consolidated composites with nanoscale W are characterized with higher resistance and weaken dependence of the susceptibility

applied external magnetic field. It was demonstrated that HSC undoubtedly has advantages compared to other technologies (e.g., HVC) allowing the fabrication of novel Cu–W composites with improved electrical properties, sometimes even better than those of pure Cu.

Auth.

10.C4.10. Bi–Pb–Sr–Ca–Cu–O compositions fabricated by Shock Wave Consolidation (SWC) technology. /J. Chigvinadze, S. Ashimov, T. Machaidze, O. Magradze, G. Donadze, G. Dvali, A. Peikrishvili, E. Chagelishvili, V. Peikrishvili/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 116-124. – eng.; abs.: geo., eng., rus.

High-temperature superconductors of Bi–Pb–Sr–Ca–Cu–O system were synthesized using micropowders and Shock Wave Consolidation (SWC) technology. The superconductive micropowder was synthesized from oxide micro-powders using the solid state reaction and subjected to treatment by SWC. Finally the consolidated superconductive composites of Bi–Pb–Sr–Ca–Cu–O system are produced. The application of SWC technology showed that with increase of pressure up to $P \gg 12$ GPa the critical temperature of superconductive transition of Bi/Pb (2223) composite is increased from $T_c = 107$ K for starting material up to $T_c = 138$ K (i.e. by 31 K) for the consolidated sample fabricated at pressure $P \gg 12$ GPa. It is foreseen the synthesis with application of technology similar to used one for micropowders of oxide nano-powders and the investigation of fabricated HTSC samples. These make it possible to increase considerably the critical temperature of superconductive transition T_c and also the current carrying ability in samples synthesized from oxide nano-powders.

Auth.

10.C4.11. Direct reduction of ammonium paramolybdate to Mo and Mo₂C powders by SHS. /S. Aydinyan, A. Baghdasaryan, O. Niazyan, Kh. Manukyan, S. Kharatyan/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 125-135. – eng.; abs.: geo., eng., rus.

An alternative way for the production of molybdenum and molybdenum carbide via direct reduction of AMT by applying SHS method was suggested. Taking into account that AMT+Mg reaction is characterized by high exothermic effect ($T_{ad} = 2800^\circ\text{C}$), it is supposed to perform controllable combustion synthesis due to coupling with low AMT+C or AMT+Zn reactions and obtain fine powders of molybdenum and molybdenum carbide (Mo₂C). According to DTA/ DTG analyses performed, the reduction process of AMT starts with weaker reducer (Zn, C) at relatively lower temperatures and then continues with stronger one (Mg).

Auth.

10.C4.12. SHS-compaction of hetero-phase metal-ceramic composites. /O. Okrostsvardize, Y. Milman, G. Tavadze, T. Badzoshvili, A. Byakova/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 136-148. – rus.; abs.: geo., eng., rus.

Practically non-porous high-modulus composites of compositions TiB–Ti, Cu–TiB₂, Fe–TiB₂/TiB–Ti, etc. consolidated by SHS-compaction of nano-charge were obtained. They possess enhanced mechanical strength and crack growth resistance. By the methods of X-ray diffraction analysis and metallography the phase composition of transition layer of TiB–Ti+B₄C coating on the TiAl and TiB–Ti substrates was studied. As a result of high diffusion mobility of Al atoms, a transition layer is formed on the TiAl substrate. Mechanical properties and structure of the compacted by SHS technology nano material obtained in the form of three-layer composite was investigated. The investigation of temperature dependence of HV hardness of TiB–Ti+7%B₄C coating on the substrates TiB–Ti and TiAl in the temperature range 20–800°C was carried out. Actually, the values of micro-hardness of TiB–Ti+7%B₄C coating (irrespective of what substrate is coated) in the temperature range 20–600°C are lowered equally. When the TiB–Ti is coated, hardness at 800°C remains high $HV \approx 5.5$ GPa.

Auth.

10.C4.13. Cermet based on nanostructured abrasive carbides. /A. Mikeladze, A. Gachechiladze, B. Margiev, O. Tsagareishvili/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 149-160. – rus.; abs.: geo., eng., rus.

The abrasive nanocrystalline carbides (TiC, WC and B₄C)-based metal-ceramic material was obtained. The method of producing consists in the spraying of liquid solutions of salts of components and high-molecular hydrocarbons in reducing and carbide-forming environments at temperatures of 500–950°C. After the selective recovery and carbidization processes, one can obtain composite superfine (< 100 nm) powder with a uniform distributed particles of carbides (TiC, WC and B₄C) and the cementing metals or alloys (Ni, Co, CuMn and CuTi). The WCl₆·6H₂O, TiH₂, B₂O₃, CoCl₂·6H₂O, NiCl₂·6H₂O, CuCl₂·2H₂O, MnCl₂·4H₂O and polyvinyl alcohol PVOH were used as precursors in the synthesis of these metal-ceramic materials. X-ray analysis showed the presence of metal-carbide abrasive systems and corresponding cementing metals and alloys. Applying the spark-plasma synthesis method, metal-ceramic composite systems were compacted

maintaining their nanocrystalline structure. The obtained metal-ceramic materials have been used for making the pilot samples of goods.

Auth.

10.C4.14. Obtaining powder composite materials. /Z. Mirijanashvili, V. Garibashvili, A. Kandelaki/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 161-176. – rus.; abs.: geo., eng., rus.

The developed technology can be considered as a possible condition for the solution of the problem for producing powder composite materials with improved properties. Commercial interest in the technology is determined by: 1) the obtaining high-quality and cheap source of charge components – metal chlorides (WCl_6 , $CrCl_3$, $CoCl_2$, $NiFeCl_4$, etc) on the basis of non-deficient material (metal-containing waste products) which are intermediates for a wide range of powder materials (CrB , CrB_2 , $(TiCr)B_2$, Cr_3C_2 , $NiCr-Cr_3C_2$, $NiCr-TiC$, $(TiCr)B_2-Al_2O_3$, $(TiCr)B_2-Ni-Cu-Al_2O_3$, $TiC-WC-Co-Ni$, $WC-Co$, $TiC-WC-Co-Ni$, $WC-FeNi$, etc.); 2) the production of ultra-dispersed or nano-crystalline powders with improved properties via metal- or hydrogen-thermal reduction of the chloride-oxide charge; 3) the possibility of providing processes in auto-thermal mode; the simplicity of the technological cycle; 4) the provision of wasteless technology and meeting of environmental issues.

Auth.

10.C4.15. Synthesis process in the metal-carbon at high pressures and neutron irradiation for artificial diamonds. /I. Chkhartishvili, J. Sharashenidze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 203-207. – rus.; abs.: geo., eng., rus.

The technology of artificial diamonds using high pressures and neutron irradiation is described. First stage is the loading of metal-carbon by weak shock waves. Graphite is transferred to the activated state. Further irradiation with fast neutrons is produced in the low-temperature regime.

Auth.

10.C4.16. Construction of poly-component diagrams systems by the method of the image of partial systems. /O. Shuradze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 208-227. – rus.; abs.: geo., eng., rus.

For alloys with the total concentration of carbon and nitrogen ≤ 0.005 % by methods of light microscopy, X-ray diffraction, X-ray micro-spectral, durometric and ferrite metric analyses, and also by definition specific electrical resistant, there are constructed isothermal cuts of a corner of system Fe-Cr-Mn rich with iron at temperatures 700 and 1200°C. It is established that the border of limiting solubility of chrome in γ -solid solution is located below that in known structural diagrams of this system. Diagrams of multicomponent quasi systems of solid solution γ (Fe70:Cr5:Mn25) and alloying elements Si, Mo and W are studied. At temperatures 700 and 11000C constructed phase diagrams of: quasi binary systems γ -(Fe70:Cr5:Mn25)-Si, γ -(Fe70:Cr5:Mn25)-Mo and γ -(Fe70:Cr5:Mn25)-W; quasi ternary systems γ -(Fe70:Cr5:Mn25)-Si-Mo, γ -(Fe70:Cr5:Mn25)-Si-W, γ -(Fe70:Cr5:Mn25)-Mo-W and quasi quaternary system γ -(Fe70:Cr5:Mn25)-Si-Mo-W.

Auth.

10.C4.17. Development of special steels and their deoxidizing technology with use of multi-component ferroalloys. /A. Oakley, O. Shuradze, M. Ratishvili, B. Margiev/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 228-238. – rus.; abs.: geo., eng., rus.

In the paper, the results of research performed in the F. Tavadze Institute of Metallurgy and Materials Science on development of special steels (cryogenic, wear resistant and nonmagnetic) are presented. This research is an example of further development in scientific and technological fields of fine steel manufacture by use of multicomponent deoxidizers and modification materials.

Auth.

10.C4.18. Efficiency of low-grade manganese ore in the production of ferrosilicon manganese. /J. Mosia, M. Mindeli, V. Mgeladze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 239-242. – rus.; abs.: geo., eng., rus.

The paper attempts to solve the problem of formation of manganese-containing mixture of optimal composition, providing the process of obtaining of ferrosilicon manganese with satisfactory technical and economic performance, while simultaneous using of low-grade manganese ores from Terjola and high-quality imports of manganese ore and agglomerates.

Auth.

10.C4.19. Low-cost nickel–chromium austenitic acid proof steels. /L. Tavadze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 243-248. – rus.; abs.: geo., eng., rus.

There are given data about low cost austenitic acid proof steels of type 0,3C₁Ni₂₀Cr₁₈Si₃ Mo₃Cu₃Nb (EP667) developed in F. Tavadze Institute of Metallurgy of Georgian Academy of Sciences in 1967–1999's, which can be used instead of alloy EI943 (0.6C₁Ni₂₈ Cr₂₃Mo₃Cu₃Ti) in an environment, where they have equivalent corrosion resistance, and also as an independent constructional material for the equipment of the chemical, petrochemical, medical, food and pharmaceutical industry working at raised temperatures and under pressure. For the technological environment of production of anhydrous hydrogen fluoride it was developed low cost austenitic steel 0.03C₂₀Cr₁₈Ni₂Mo₂Cu. The increase of resistance against intercrystalline corrosion by complex doping of acid proof nickel–chromium steels with calcium, boron and yttrium has been established. For the smelting austenitic and duplex steels with high nitrogen content, in the F. Tavadze Institute of Metallurgy and Materials Science there are working on setting up of special equipment for steel production under the pressure of nitrogen.

Auth.

10.C4.20. The theory and technology of development of hi-tech steels and alloys. /M. Ratishvili/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 249-257. – rus.; abs.: geo., eng., rus.

The paper presents the survey information about development of the most effective low alloyed, high-strength cryogenic, heat- and corrosion-resisting and other steels and alloys, on the basis of researches of a structure of multicomponent diagrammed conditions of the metal systems at the Georgian Institute of Metallurgy under the leadership of F.N. Tavadze. Results of research on created of new generation hi-tech corrosion- and wear-resistance steels during 2002–2010 as logic continuation of development of scientific basis and materials technology are also presented.

Auth.

10.C4.21. Heat treatment and strength tests of the new model complex-alloyed structural steels. /S. Papidze, B. Zivzivadze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 258-264. – rus.; abs.: geo., eng., rus.

The melting methodology of the new model complex-alloyed structural steels, their snapshot of mechanical properties in dependence on chemical composition and tempering temperature are considered.

Auth.

10.C4.22. Analysis of impurity inhibition of moving grain boundaries in low alloy steels and the development of methods for TMT. /N. Luarsabishvili, V. Badzoshvili/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 265-273. – rus.; abs.: geo., eng., rus.

It should be noted that the analysis of impurity inhibition of moving grain boundaries in low alloy steels gives a fairly accurate numerical values for the rate of re-crystallization of deformed austenite, on the basis of which the possibility of a special mode thermo-mechanical treatment is found. This treatment provides the obtaining of fine, nanosized austenite and phase components after the tempering, and guarantees high mechanical properties of steel.

Auth.

10.C4.23. Perfection of a continuous steel-casting technology. /I. Zhordania, G. Kevkhashvili, J. Loria/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 274-285. – rus.; abs.: geo., eng., rus.

The machine of continuous casting of ferroalloys was designed, constructed and tested. A correlation between the structural and technological parameters of free rolling was established. The design is developed and used in metal VCRM.

Auth.

10.C4.24. Investigation of corrosion resistance and electrochemical characteristics of nanocrystalline coatings of Ti–8Ni–Cr system alloys. /M. Mikaberidze, D. Ramazashvili, L. Akhvlediani/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 286-294. – eng.; abs.: geo., eng., rus.

Nanocrystalline coatings were received by electro spark alloying of the commercial titanium alloys samples surface with application the cast and compact Ti-8Ni-(1-3%) Cr alloy electrodes. Compacting of powders was prepared by mechanical alloying, with subsequent cold pressing and high-temperature baking. The nanocrystalline coatings increase hardness, wear and corrosion resistance of the commercial titanium alloys surface and can be re-commended for coatings of medical tools of multiply usage.

Auth.

10.C4.25. Investigation of structure, mechanical properties, corrosion resistance of Ti–Ni–Si system alloys and thermodynamic calculation of their phase diagram. /M. Mikaberidze, G. Gordeziani, D. Ramazashvili, L. Akhvlediani, E. Gozalishvili/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 295-302. – eng.; abs.: geo., eng., rus.

New corrosion resistant Ti–8Ni–(0–5)%Si alloys with increased hardness and strength are developed. After quenching from 9500C alloys have three phase structure and they consist of a-titanium solid solution and compounds – Ti₂Ni and Ti₅Si₃. Silicon increases the tensile strength (1000 MPa) and hardness (42 HRC) of alloys, but decreases their plastic properties. Polythermal section of the phase diagram of ternary Ti–Ni–Si system alloys was constructed on base of thermodynamic calculations. Corrosion testing in blood, physiological solution, gastric juice and tissue liquid and also according to the following regime: cleaning+disinfection + sterilization, revealed good corrosion resistance of Ti–8Ni–1%Si alloy. This alloy Ti–8Ni–1%Si can be recommended for manufacturing of high-strength medical tools and coating with the purpose of hardening their working parts. Ti–8Ni–Si system alloys with increased hardness and strength are not only suitable for medical tools but also are improvements on currently used materials.

Auth.

10.C4.26. Technologies of rendering harmless and regenerating solid and liquid inorganic industrial wastes. /G. Jandieri, G. Jishkariani, D. Sakhvadze, G. Tavadze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 303-317. – eng.; abs.: geo., eng., rus.

The actual state of possibilities of regenerating and recycling of solid and liquid inorganic industrial wastes occurring as a result of metallurgical industry and avoidance of malicious anthropogenic impact they may have on mankind are discussed. The innovative solid-phase recovery, high power pyro- and SHS-metallurgy methods to regenerate and recuperate precious metals from the metal-containing dispersive dust and sludge are suggested. The power-efficient and eco-safe technologies, such are phyto-remediation and microbiological bucking of metals are suggested. The results of the laboratory studies, the proved economic and ecological feasibility for putting those results into practice are provided.

Auth.

10.C4.27. Composite materials reinforced by basalt and carbon hybrid fibers. /N. Chikhradze, L. Japaridze, G. Abashidze, G. Pkhaladze/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 323-337. – eng.; abs.: geo., eng., rus.

The results of a research work performed for the development of a technology for fabrication of a matrix resin-based hybrid composites reinforced with carbon, basalt fibers are presented. The problem consists in a partial or total substitution of expensive carbon fibers in the material. An application of hybrid reinforcing fibers will permit a considerable reduction of the item cost without significant loss of physical-mechanical properties of the materials.

Auth.

10.C4.28. On determining the design capacity of a mine. /T. Pirtskhalava/. Mining Journal. – 2012. – #1(28). – pp. 46-49. – geo.; abs.: rus., eng.

It is shown that when the mining-geological and technological information are of the probabilistic nature, the production capacity of a mine must be substantiated using the method of mathematical modeling. A mathematical model with which the volume of coal may be formed at the time of optimizing the design option of the mine (t) and the whole optimization period (T) with the development process and time is given.

Auth.

10.C4.29. Perlit's filtering powder - the valuable product of Paravani perlite. /R. Sturua, G. Samkharadze/. Mining Journal. – 2012. – #1(28). – pp. 49-51. – geo.; abs.: rus., eng.

The "know-how" of a filtering powder from Paravani perlite of the company "Paravanperlit" is developed and introduced. By optimum selection of parameters of intumescing furnaces, mills, classifier and cyclones, the highly waterproof filtering powders have been received. After industrial check they have successfully been introduced at oil factories of "Batoil" (fraction 0-630 micrometers) and wine products "Kindzmaraulis Marani" (0-300 micrometers).

Auth.

10.C4.30. Accounting of losses and dilution of ores of the Chiatura manganese deposit and definition of their standard indicators. /A. Kikabidze, G. Shatberasvili, I. Erkomaishvili/. Mining Journal. – 2012. – #1(28). – pp. 51-54. – geo.; abs.: rus., eng.

The work shows the dependences between completeness of extraction of stocks and expenses of their extraction. On the basis of these dependences a technique of determination of the norms of losses and dilution of the manganese ores, in the foundation of which lays the definition of quantity of lost ore in the

case when the expenses are equal to taken value of balance stocks lays has been developed. The limit, beyond which the expenses for extraction will not be compensated by value of mined ore in this time is practically defined. The fact that depending on the mining and geological conditions the standard losses of not beaten off ore in a roof or soil of a developed layer varies in range of 1.5-7.5% is established. The resulting losses of drilling and blasting works average 2.8%, and of incompleteness scraping of face space average 2.7% from balance stocks.

Auth.

10.C4.31. Comparison of thermal behavior of manganese ores. /J. Mosia, M. Chumbadze, G. Nikolaishvili/. Mecniereba da technologiebi. – 2011. – #4-6. – pp. 85-88. – geo.; abs.: eng., rus.

The article presents thermal analysis of manganese ores used in the manufacture of ferrosilicomanganese. Conclusions about the optimal composition of the mixture of this alloy while using them are drawn.

Auth.

10.C4.32. Dependence of stretching force on the crystallizer obliquity /I. Zhordania, G. Kevkhashvili, J. Loria/. Bulletin of Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 83-88. – eng.; abs.: geo., eng.

At continuous casting, the quality of billet and stability of the process depend on the quality of contact between the walls of the crystallizer and the billet. The obliquity of crystallizer is one of the effective methods to provide permanent contact between the crystallizer and the billet along the whole length of the crystallizer. In the paper, the influence of obliquity of the crystallizer on the stretching force of the billet is shown by the example of a round billet. The results obtained are generalized to rectangular billets.

Auth.

10.C4.33. The role of NaCl and TiO₂ in increasing the adhesive strength between boronless and fluorineless ground enamels and steel. /I. Zedgenidze, A. Sarukhanishvili, M. Kapanadze, M. Mshvildadze/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 68-73. – rus.; abs.: geo., eng., rus.

The influence of NaCl and TiO₂ on the adhesive strength between production of technogenic materials, boronless and fluorineless enamels and steel is discussed. It is supposed that TiO₂ serves as both the fusible and adhesive component. NaCl, together with TiO₂, contributes to the formation of mobile silicate structure units, which supply definite intermediate layer forming ions (CO²⁺, Ni²⁺, Ca²⁺, Ti⁴⁺) to the “steel-enamel” interface.

Auth.

10.C4.34. Investigation of direct martensitic transformation in metastable titanium alloys. /N. Gapiashvili, K. Gorgadze, T. Berberashvili, T. Khechiashvili, Sh. Khizanishvili, V. Khutsishvili/. Nano Studies. – 2012. – # 6. – pp. 105-114. – geo.

The possibility of direct martensite transformation in Ti – Ta and Ti – Nb β_{meta} metastable alloys is investigated. It is shown that in some β_{meta} metastable alloys cooled below room temperature, the $\beta \rightarrow \alpha$ transition is only partial. During the “heating-cooling” cycles, the formation of high-moduled state in some β_{meta} metastable alloys was found.

Auth.

C5. Mechanical Engineering. Instrument-making

10.C5.1. Dynamics of a potato planter aggregate with variable mass. /R. Makharoblidze, G. Chitaia, Z. Zhorzholiani, G. Dalakishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 382–386. – rus.; abs.: geo., eng., rus.

By the example of a potato planter aggregate the dynamics of transient processes with taking into account a gradual decrease of the mass of root and tuber crops in bunker of a planting machine is studied. The design formula for speed change upon movement of the aggregate is derived and dependence of the speed on the parameters of engine, tractor and technological machine in relation to a gradual decrease of agricultural materials in the bunker is determined.

Auth.

10.C5.2. More efficient use of plows. /J. Katsitadze, I. Kapanadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 387–389. – geo.; abs.: geo., eng., rus.

Recommendations on the improvement of the efficiency of use of plows are presented; at the level of invention, a plow with variable widths is developed and the principally new scheme of coupling the tractor with the mounted plow id justified.

Auth.

10.C5.3. Indicators of serviceability of cultivators during operation under mountain conditions. /N. Sarjeladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 390–392. – geo.; abs.: geo., eng., rus.

The article surveys the results of theoretical and experimental studies of the serviceability of cultivators during operation under mountain conditions in Samtskhe-Javakheti region. The statistical data and complex indicators of serviceability are established.

Auth.

10.C5.4. Justification of geometric parameters of a thinner blade of tillage combined machines. /M. Kvartshkava/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 393–395. – geo.; abs.: geo., eng., rus.

The interaction of an opener plant with soil and the forces affecting the plant's operation during the combined machine's being out of balance are considered. The geometric parameters of thinner blades are justified.

Auth.

10.C5.5. Results of an experimental study of a combined tillage machine. /M. Kvartskhava/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 396–400. – geo.; abs.: geo., eng., rus.

A study of the operation process of a combined tiller is given. Using the mathematical theory of experiment planning, the input factors and output parameters had been determined, according to which a planning matrix and the actual experiment conduct plan were drawn up. The regression equation was received and tested for significance and adequacy. The optimal values of the input factors at which the output parameter achieves the optimum value were established.

Auth.

10.C5.6. Determination of technological, operational and economic indicators of a combined tillage machine. /D. Natroshvili, M. Kvartskhava/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 401–405. – geo.; abs.: geo., eng., rus.

The article shows a way of determining technological, operational and economic indicators of a combined tillage machine. Using a modern technique, the expected economic benefit and other operational indicators, such as specific working costs, specific industrial expenses, absolute profit, the sum of non-productive payments, net profit and term of return of capital investments have been determined.

Auth.

10.C5.7. Theoretical and experimental study of a pneumatic-transport system of nut-harvesting aggregate. /F. Varshanidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 406–411. – geo.; abs.: geo., eng., rus.

The article deals with the aerodynamic research of a nut-harvesting aggregate pneumatic-transport system on the basis of reference data and characteristic features of nuts. The analytical equation of the balance of power developed and used by a ventilator is derived.

Auth.

10.C5.8. Forecasting the number of tractors required for mechanized plant production. /O. Karchava, D. Natroshvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 412–416. – geo.; abs.: geo., eng., rus.

The methods of forecasting the number of farm tractors necessary for the country's agricultural sector are given. These methods provide for the specifics of different regions, production technologies for annual and perennial agricultural crops, the areas being currently under crops, the power intensity of each mechanized farming operation, and the required tractor capacities. The methods have been tested for the whole country and the number of tractors according to their power required for carrying out planned mechanized operations has been determined.

Auth.

10.C5.9. Direct-flow hurricane ventilator. /R. Ghazhomia, R. Margalitadze, F. Varshanidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 417–420. – geo.; abs.: geo., eng., rus.

The paper concerns a direct-flow hurricane ventilator function, the principles of aerodynamic operation and the possibility of their usage in small-scale mechanization facilities. The operational principle of the aerodynamic scheme is discussed and its key parameters are theoretically proved.

Auth.

10.C5.10. Analysis of the shape and size of the rectilinearly moving cutting segment of a cutter. /F. Abuselidze, M. Mamuladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. –

pp. 421-425. – geo.; abs.: geo., eng., rus.

The geometric sizes and shapes of a cutting segment of the rectilinearly moving segmental cutter are presented, on which the quality and effectiveness of the mowing process in a mowing machine depend. The methods of studying the cutting segment of a pre-production model and the optimum alternative received as a result of the segment's operation are tested on a test bench. Namely, 4 segments were found to demonstrate good operation, which shall facilitate the effective conduct of the mowing process under small-contour plot and mountain conditions. The test bench tests produced statistical series of the number of cut stems. As a result, their theoretical and empirical distribution was carried out according to the Kolmogorov convergence criterion $P(\lambda) = 98\%$, which is quite acceptable for the production process of mowing.

Auth.

10.C5.11. Analysis of the interaction of a rectilinearly moving segment of a segmental cutter with the stem. /M. Mamuladze, F. Abuselidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 426-429. – geo.; abs.: geo., eng., rus.

Analysis of the interaction of a rectilinearly moving segment of a segmental cutter with stems is given, considering, in particular, the cutting speed, the angle of the segment, the segment's height and width, as well as the physical and mechanical properties of the stem and the forces acting on them during cutting. The stem is distributed along the OX axis in three parts, in the form of ellipse; the cutter's movement on the L1 L2 L3 section the PL1 PL2 PL3 forces acting on the blade are calculated per each section, and finally the cutting resistance values A_{cut} in accordance with 17-19 m/s speed of the blade, which significantly determine the performance of the cutter and meeting the following criteria: reliability, power intensity, high quality and fast mowing process.

Auth.

10.C5.12. The economic rationale of using means of mechanization in sericulture. /I. Korchilava/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 430-433. – geo.; abs.: geo., eng., rus.

The paper presents the economic rationale of using means of mechanization in sericulture under conditions of farms; in particular, the methods enabling a comparative analysis of economic indicators technical facilities used in sericulture and the economic efficiency of such use have been developed.

Auth.

10.C5.13. Modern state of scanning electron microscopy. /A. Berner/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 51-57. – eng.; abs.: geo., eng., rus.

Two main tendencies in modern SEM design were considered. The first is the development of SEM optics operating successfully at low energies of the electron probe down to 200 eV in order to achieve simultaneously high resolution and a strong image contrast. The second is the development of a detector system allowing high resolution imaging in different signals exhibiting different types of contrast: topographic, orientation, Z-contrast and phase contrast.

Auth.

10.C5.14. Design of radial forging machines and scope of their application. /S. Mebonia, T. Natriashvili, M. Mikautadze, D. Demetradze/. Metsniereba da teknologiebi. – 2011. – #4-6. – pp. 89-96. – geo.; abs.: eng., rus.

The article deals with the existing design of radial forging machines. Based on analysis of mechanisms and units of these machines their main advantages and disadvantages are identified. In respect of manufacturing economy, the most efficient type of radial forging machines – the lever forging machines - is established It belongs to the wedge-lever machines developed by the Chair of Metal Forming of the Georgian Technical University. These machines have operated for a long time and successfully in the mill drawing shop at the Rustavi Metallurgical Plant.

Auth.

10.C5.15. Stress-strain condition of contour tools in the treatment of cylindrical surfaces. /O. Kikvidze, N. Sakhanberidze/. Metsniereba da teknologiebi. – 2011. – #4-6. – pp. 97-102. – geo.; abs.: eng., rus.

The article considers differential equations of two dimensional nonstationary thermoelasticity problems for calculating a cutting tool. The initial and boundary conditions are identified.

Auth.

10.C5.16. Optimization of parameters of polymeric balloons reinforced by basaltic thread. /M. Shvangiradze/. Transactions of the Georgian Technical University. – 2012. – #1(483). – pp. 103-107. – rus.; abs.: geo., eng., rus.

Demand for industrial metal materials increases every day. But their reserves are limited. One of the ways of problem settlement is the development of production technologies of composites made in the aggregate of fibrous materials with polymer resins. One of the cheapest and interesting materials is basalt fiber-thread. As such an example can be considered polymeric balloon of high pressure reinforced with fibrous thread, for example, basalt. The sizes of balloon are known to change on a rather wide scale, to have different purposes and differ by the developed pressure. Such conditions set a task of development of a method for optimization of the balloon parameters. The article offers the method that creates a possibility to identify its major technological parameters prior to its manufacture. Out of these parameters, the pressure developed in the balloon, the liner sizes and the total length of the fiber necessary for strengthening are of particular importance.

Auth.

C6. Light Industry

10.C6.1. Improvement of methods of molding parts of clothes using polyester-isocyanate composites. /M. Datuasvili/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 101-103. – rus. abs.: geo., eng.

The article discusses the molding of parts of ready-made garments from polyester-isocyanate composites. Based on the organoleptic evaluation of manufactured pre-production models it was established that damages of molded part's surface result from the reaction going between isocyanate and the mould's surface lubricant, while the heterogeneity of pores and air bubbles is conditioned by the processes of pouring the mixed mass in the mould. Based on the experimental data the temperature conditions for setting the parts formed from the polyester-isocyanate composites were established.

Auth.

10.C6.2. Structural transformation of artificial fur in the process of formation of ultrasonic welded seams. /N. Dolidze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 107-109. – rus. abs.: geo., eng.

The work deals with the questions of physical and chemical transformation of artificial fur in the course of formation of welded seams during ultrasonic welding. Study of structural changes in the artificial fur in the process of ultrasonic welding was carried out by differential-thermal and thermogravimetric analysis of the initial material (artificial fur), the artificial fur's welded seam and the polyacrylonite fiber. As a result it can be concluded that the thermal behavior of the artificial fur's welded seam depends on the properties of its fringe (polyacrylonite fiber). Both the welded seam and the polyacrylonite fiber are characterized by one exothermal peak. A dramatic loss of weight in the artificial fur's welded seam begins at 260°C and makes 35%, which is indicative of a destructive process in the artificial fur caused by ultrasound action.

Auth.

C7. Food Industry

10.C7.1. Technological process of making natural bread conditioners from red-grape variety. /N. Baghaturia, N. Begiashvili, L. Kotorashvili, M. Ormotsadze, B. Baghaturia/. Agrarian-economic Science and Technologies. – 2012. – #3. – pp. 30-38. – geo.; abs.: eng.

Phenolic substances of grapes occupy a special place among other biologically active food substances. A technological process of making natural bread conditioners from a red-grape variety is given.

Auth.

10.C7.2. Investigation of proteolytic enzymes in grapes and wines. /N. Baghaturia, T. Nanitashvili, N. Begiashvili, C. Shilakadze, B. Baghaturia/. Agrarian-economic Science and Technologies. – 2012. – #3. – pp. 39-44. – geo.; abs.: eng.

The article discusses significant changes in the activity of proteolytic enzymes depending on a variety of grapes. A comparison between white-grape and red-grape varieties in terms of their activity is presented. The role of proteolytic enzymes in the process of winemaking (fermentation, ripening, treatment, etc.) is discussed.

Auth.

10.C7.3. Developing a new range of functional bakery products by using grape pectin. /N. Baghaturia, Sh. Muladze, I. Kupatadze, M. Kereselidze, N. Gilauri, L. Kotorashvili, Z. Alania/. Agrarian-economic Science and Technologies. – 2012. – #3. – pp. 45-51. – geo.; abs.: eng.

For raising the quality of functional bakery products different conditioners are used. Surfactants are widely used as key conditioners, which enables to intensify bakery production and improve the product quality. Nowadays, grape pectin and the substances extracted from it are widely used as surfactants in bakery

production. The article focuses on the properties of pectin that ensure improvement of the quality of bakery products.

Auth.

10.C7.4. Study of pectin substances of widely spread in Georgia citruses for producing preventive care products. /N. Baghaturia, N. Begiashvili, I. Kupatadze, Sh. Muladze, A. Alania/. Agrarian-economic Science and Technologies. – 2012. – #3. – pp. 52-57. – geo.; abs.: eng.

The work aims at maximum using of raw materials and searching for new resources in food industry. In order to meet the population's demand for quality food products, the processing of a wider range of products based on local raw material should be enhanced.

Auth.

10.C7.5. New types of food products and study of their action during iron-deficiency anemia. /A. Khotivari, G. Grigorashvili, I. Kupatadze, N. Iluridze, M. Demeniuk/. Agrarian-economic Science and Technologies. – 2012. – #3. – pp. 58-66. – geo.; abs.: eng.

For the purpose of raising the nutritive value of food products different blends of wild growing berry and fruit juices were used. Chemical analysis of a number of fruits and berries showed that grapes and hips are characterized for high content of iron and ascorbic acid as compared with other fruits and berries, which served as the main criterion for their use as blends in the manufacture of different food products. The article discusses different doses of blends in the process of preparation of such products and the favourable action of such products on the health of patients, mainly children.

Auth.

10.C7.6. Dried citrus marc as a food additive and semi-product in the production of pectine and vitamin P. /N. Alkhanashvili/. Agrarian-economic Science and Technologies. – 2012. – #2. – pp. 39-42. – geo.; abs.: eng.

The article is dedicated to the utilization of waste originated during processing of citrus juices. The marc formed as a result of citrus processing contains sugars, pectin, vitamins, but because of its high humidity is a perishable product and needs to be dried immediately. The dried citrus marc production technology has been worked out in the Institute of Food Industry Research. The technology includes a preparatory stage for raw material drying process, drying, inspection and chopping of the dried marc. The heat- and mass exchange processes at the marc drying stage in dryers of various design and optimal regimes of drying have been studied and established. The processing of dried marc occurs in two fractions: 1) pure fraction – 100% going through sieve #25 to be in confectionery industry as a flavor additive; 2) crude fraction – non-chopped, 100% left on the sieve #25, and used in the production of vitamin P and pectin.

Auth.

10.C7.7. Lemon balm cultivation prospects in Georgia and scope of usage of dried lemon balm. /N. Alkhanashvili/. Agrarian-economic Science and Technologies. – 2012. – #2. – pp. 43-47. – geo.; abs.: eng.

Lemon balm is an aromatic perennial plant growing wild in Georgia. Containing biologically active elements, lemon balm positively affects the functioning of nervous and cardiovascular systems. The work carried out in the Food Industry Research Institute showed that soil and climate conditions of Georgia are excellent for cultivating lemon balm. The plant does not require special land treatment and yields 3-4 harvest annually. Following harvest, the enzyme processes continue in lemon balm raw material and may, under conditions of high initial humidity (80-88%), result in the decomposition of biologically active elements. Therefore, lemon balm raw material should be immediately dried. The Research Institute of Food Industry has developed a production technology that can successfully cope with this problem.

Auth.

10.C7.8. Researching new species of products enriched with pectin. /N. Baghaturia, I. Kupatadze, Sh. Muladze, L. Kotorashvili, Z. Alania/. Agrarian-economic Science and Technologies. – 2012. – #2. – pp. 48-54. – geo.; abs.: eng.

Wild plum plant is widely spread in Georgia, occupying 21-22% of the total area of orchards and 10% of the area under stone fruits. Wild plum plants are mainly spread in the West Georgian regions, where they account for 20% of the total orchard area. New technologies for making preventive cure products from the pectin-rich wild plums have been studied.

Auth.

10.C7.9. The use of citrus processing waste in confectionery industry. /N. Baghaturia, N. Begiashvili, L. Kotorashvili, M. Ormotsadze, Sh. Muladze, B. Baghaturia/. Agrarian-economic Science and Technologies. – 2012. – #2. – pp. 55-59. – geo.; abs.: eng.

The Georgian Research Institute of Food Industry has developed a waste-free citrus processing technology. Hydrothermal processing of citrus peels yields essential oil. Study of the chemical composition of production

waste demonstrated that its liquid phase contains up to 20% solid, water soluble pectin and reducing sugar. It can be used as semis in the production of nonalcoholic drinks. Thermal treatment of citrus fruits does not cause the destruction of vitamin P. The solid contains 30% total sugar, 79.9% total pectin, 100% vitamin P. The dried and ground peel can be used as vitamin-added flour in confectionery industry.

Auth.

10.C7.10. The effect of high-voltage electric field on the keeping property of apples. /E. Uturashvili, M. Kereselidze, N. Illauri, M. Ichkitidze/. Agrarian-economic Science and Technologies. – 2012. – #2. – pp. 65-69. – geo.; abs.: eng.

The article considers the development of a fruit and vegetable keeping technique providing preliminary processing of apples by high-voltage electric field with the subsequent keeping in plastic sacks with air selective membranes. The preliminary processing in the electric field hinders the development of microflora on the fruit surface and helps to reduce the loss caused by infectious diseases. As a result of it the standard production of experimental apple products are 1.5 – 3.0% more than the appropriate indicator of test samples. The optimal regimes of apple processing in the high voltage electric field have been chosen, which provide to extend their keeping period for 270 calendar days. The method, on the whole, provides the reduction of infectious diseases, increasing the vitality of products and maintaining their commodity or food values for a long term.

Auth.

10.C7.11. Development of a technology for extracting polyphenols from the grape processing waste /A. Khotivari, G. Grigorashvili, I. Kupatadze, N. Iluridze/. Agrarian-economic Science and Technologies. – 2012. – #2. – pp. 75-81. – geo.; abs.: eng.

The article considers biochemical indicators of the secondary products of grape processing (stones, husks) and their changes in the processing. The methods and the rational practice for producing bioactive extracts are discussed. As a result of research, optimum technological process parameters are established. The physical-chemical indicators of the extract are determined.

Auth.

10.C7.12. Biochemical characteristics of sea-buckthorn fruit and perspectives of its use. /V. Nakopia, N. Baghaturia, E. Uturashvili, I. Kupatadze, Z. Alania/. Agrarian-economic Science and Technologies. – 2012. – #2. – pp. 82-88. – geo.; abs.: eng.

The work present the results of a biochemical research of wild-growing shrub plant – sea buckthorn (*Hippophae rhamnoides*) under conditions of Georgia. As a consequence of the research of morphological characteristics of the sea-buckthorn berry-like fruit gathered in different regions of East Georgia, it was revealed that in Kartli-Kakheti region sea-buckthorn is spread in the form of various breed, plants of which differ from each other by form, size, colour and other technical characteristics. Its samples were subjected to a biochemical resaerch. On the basis of the research results it was found that the fruit of the plant has a high vitamin C content about 15 times greater than oranges placing sea-buckthorn fruit among the most enriched plant sources of vitamin C. The fruit also contains dense contents of carotenoids, vitamin E, amino acids, dietary minerals, β -sitosterol and polyphenols. They contain necessary and important for normal vital activity of human body substances. Their vitamin activity is high. Sea-buckthorn fruit can be used to make pies, jams, lotions and liquors. The juice or pulp has other potential applications in foods or beverages.

Auth.

10.C7.13. Lactose separation from waste water of milk production (whey), its concentration and receiving of technological water by the help of membrane unit. /G. Bibileishvili/. Metsniereba da tehnologiebi. – 2011. – #4-6. – pp. 110-113. – geo.; abs.: eng., rus.

The carried out experimental work aimed at receiving a lactose solution concentrate by reverse osmosis, as well as selection of a special type of membranes for the laboratory unit and the establishment of optimal parameters with the help of laboratory experiments.

Auth.

10.C7.14. Safe food production - the essential condition of ecological development of a country. /M. Garuchava/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 85-87. – geo.; abs.: geo., eng., rus.

The article deals with the basic issues of the policy and strategy of food safety in the country. The influence of the country's ecological condition on production of safe food is discussed. A food safety assessing technology is proposed.

Auth.

10.C7.15. Determining percentage of ashes in savory (*Satureia laxiflora* C. Koch) spread in Georgia /N. Gelovani, T. Tsintsadze, KH. Tsikarishvili, I. Metreveli, L. Targamadze/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 64-68. – geo.; abs.: geo., eng., rus.

The content of active substances in a medicinal plant stock is generally low. Results of analysis of different samples of the same plant taken at the same time depend on soil, the correlation of leaves and stems, and many other factors. 3 samples of savory were analyzed for their content of ashes: 2 wild samples were taken on the bank of the Kvirila River, in Western Georgia, and 1 sample of cultivated savory (for the sake of comparison) – in Mtskheta district, Eastern Georgia. All the samples were analyzed for their content of total ash and the ash insoluble in 10% HC1, which remains after processing the total ash and is generally composed of silicates.

Auth.

10.C7.16. Changes in flavonoids and antioxidant activity of Kakhetian- and Imeretian-type wines. /T. Shonia, M. Bezhuashvili, T. Buachidze/. Georgian Engineering News. – 2012. – #3. – pp. 104-107. – eng.; abs.: rus.

The IR spectra of unidentified products of transformation of quercetin and dihydroquercetin during alcoholic fermentation are discussed. The antioxidant activity of these products was determined. It is shown that the antioxidant activity of Kakhetian- and Imeretian-type wines depends on phenolic compounds. A significant decrease in the antioxidant activity in the oxidized wines was revealed.

Auth.

C8. Construction. Architecture

10.C8.1. Experimental study of basalt fiber reinforced concrete. /D. Nozadze, P. Ejibia/. Modern Technologies and Methods of Inorganic Materials Science. Proceedings of International Conference. – 2012. – pp. 318-322. – eng.; abs.: geo., eng., rus.

Fiber reinforced composite materials consist of high strength fiber embedded in a matrix. In this form, both fibers and matrix retain their physical and chemical identities, yet they produce a combination of properties that cannot be achieved with either of the components acting alone. In general fibers are the principal load carrying members, while the surrounding matrix keeps them in the desired locations and orientation, acting as a load transfer medium and protects them from environmental damage. BFRC is a composite material that uses fine sand, cement, water, other admixtures and basalt fibers.

Auth.

10.C8.2. Prospects of complex use of local volcanic rocks in production of glass and construction materials. /E. Shapakidze, G. Nadareishvili, R. Kvatashidze, V. Maisuradze, M. Nadirashvili, I. Gejadze, M. Tkemaladze/. Mining Journal. – 2012. – #1(28). – pp. 12-16. – geo.; abs.: rus., eng.

A series of acid volcanic rocks of southeast Georgia is explored and studied; possibility and efficiency of their complex use in productions of a container glass, structural clay products, cement, concrete aggregates and facing stones is established. Utilization of these magmatic rocks in cement production can be regarded as one of the most promising directions. Two more options become available in this context. First: partial replacement of clay component in cement raw mix with volcanic rocks; and second: use of these rocks as active mineral additive while grinding cement. The question resolution commercially will give the chance to solve a problem of economic development of region, and the country to provide with scarce and strategic products.

Auth.

10.C8.3. Use of building stones and facing stones and technical requirements to them. /N. Bochorishvili, D. Danelia, A. Bezhanishvili, I. Bochorishvili, S. Gigauri/. Mining Journal. – 2012. – #1(28). – pp. 93-97. – geo.; abs.: rus., eng.

The article considers principal problems of using facing stones in civil engineering and architecture. Depending on the sphere of application, facing stones can be divided into three groups: the first group includes the stones free from considerable mechanical loads. Slabs made from these stones may be used for facing internal and external surfaces of a building. The stones used for facing external surfaces must be steadfast to the environment and strong. The second group includes the stones that can stand considerable mechanical loads, are distinguished by their physical and mechanical properties, and considerable resistance to environment changes. The group includes the stones applied for erecting monuments and large decorative-architectural details.

Auth.

10.C8.4. Principal properties and types of building and facing stones. /N. Bochorishvili, D. Danelia, A. Neverov, I. Bochorishvili, S. Gigauri/. Mining Journal. – 2012. – #1(28). – pp. 98-100. – geo.; abs.: rus., eng.

The article deals with the durability of building and facing stones and their decorative cost. The data on durability of different types of facing stones are given; it is established that idiochromatic colour and color durability are of great practical importance. The physico-mechanical properties of facing stones are also affected by porosity, which determines to a great extent their moisture capacity, water and air permeability.

Auth.

10.C8.5. Calculation of a pile-supported low raft. /T. Kikava/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 27-33. – eng.; abs.: geo., eng., rus.

The calculation method of a piling is proposed. A system of linear equations for determining the unknown forces originating in the nodes of plate strips intersection is formulated. After that each strip with applied forces is considered and calculated separately as the beam lying on the linearly-deformed base. The concrete engineering task is considered. Calculation formulas are given.

Auth.

10.C8.6. Modeling a pavement microprofile. /S. Esadze, G. Shilakadze, R. Dzneladze/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 13-18. – rus.; abs.: geo., eng., rus.

The article describes the asphalt-concrete pavement modeling method. The standard assessment of the pavement is deemed to comply with a “good” condition. The probabilistic characteristics of the modeled pavement have been obtained. By means of these characteristics it is possible to determine the dynamic load on pavement if the pavement microprofile is considered as the dynamic disturbance.

Auth.

10.C8.7. Analysis and examination of ecologically-oriented town-building investment projects. /G. Salukvadze, T. Tatarashvili, M. Tavkheldze/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 77-80. – geo.; abs.: geo., eng., rus.

The methods of analysis and examination of a construction project that can be successfully applied in assessing and adjusting town-building projects are considered.

Auth.

10.C8.8. Architectural and planning structure, composition and aesthetics of small towns of the Republic of Azerbaijan. /N. Nagiyev/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 81-85. – rus.; abs.: geo., eng., rus.

The article deals with the problem of transforming a network of historically established settlements of Azerbaijan into a single integrated system, based on the interaction of qualitatively new forms of settling (a group system of settlements), which is among the most important socio-economic and planning problems and which can be solved by the regional pattern of settlement of Azerbaijan.

Auth.

10.C8.9. Strategy for the stable development of Azerbaijan modern cities. /E. Huseynov/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 85-90. – rus.; abs.: geo., eng., rus.

The research of urban planning practice of the Azerbaijan Republic currently implemented in cities and regions of the country has indicated that attempts to develop the mechanism of influence on the development of settlement system are conducted in many directions: 1) in the field of ground relations, 2) in search of creative judgment ways of structural changes of city formations, 3) in the development of new methodological data, 4) in the creation of a regional normative and legislative base, 5) in the refusal of the centralized and scheduled designing and construction, 6) in search of new forms of designing and refusal of traditionally accepted town-planning projects, etc. Therefore, the necessity of comprehensive planning and a system approach to the solution of strategic tasks of stable development of Azerbaijan modern cities has ripened.

Auth.

10.C8.10. Destruction of coastal infrastructure and cultural objects of Baku as a result of change of the Caspian Sea level. /Sh. Kahramanova/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 91-94. – rus.; abs.: geo., eng., rus.

The coastal infrastructure and historical landscapes of Baku are vulnerable to rise of the Caspian Sea level connected with climate change. Therefore, it is necessary to develop mechanisms of adaptation to the sea level and the future climate changes; also necessary is to take measures for preserving the cultural heritage.

Auth.

10.C8.11. Rehabilitation of the architectural environment of Baku City. /N. Abdullayeva/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 95-98. – rus.; abs.: geo., eng., rus.

The necessity of rehabilitation of the urban environment is one of the most topical subjects of architecture. The problem is less investigated in its pure form and requires collaboration with experts of related professions. The means of architectural rehabilitation of the downtown are given by the example of environmental fragment analysis.

Auth.

C9. Agriculture and Forestry. Fishery

10.C9.1. The effect of heteroauxin on the rooting of imported sweet cherry rootstocks F12/1 (Mazzard) and Colt. /L. Aleksidze-Dzamashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 15-17. – geo.; abs.: geo., eng., rus.

Heteroauxin is a traditional and highly effective growth promoting hormone widely used for rooting and growth of different plants. In 1997, sweet cherry rootstocks F12/1, Gisela and Colt were brought to Georgia from Germany and planted in the Skra experimental station. Under the effect of a heteroauxin 0.25% solution, the rooting of sweet cherry rootstocks Colt (70%) and F12/1 (22%) was successfully carried out.

Auth.

10.C9.2. Modern sweet cherry dwarfing rootstocks and prospects of their use. /L. Aleksidze-Dzamashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 18–20. – geo.; abs.: geo., eng., rus.

The article deals with the problem of rejuvenation of extensive and intensive orchards in Georgia and improvement the quality of their yield, which can be implemented through introduction of, but frankly speaking, the most of orchards are old enough and there-produced products are of low quality and non-competitive. The intensive orchards require young plants grafted to undersized rootstocks; therefore, study of dwarfing rootstocks is rather important.

Auth.

10.C9.3. Materials on diatoms (*Bacillariophyta*) from the Algeti National Park. /L. Kukhaleishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 21–23. – geo.; abs.: geo., eng., rus.

Twenty six representatives of classes *Coscinodiscophyceae* and *Fragilariophyceae* (division *Bacillariophyta*) were identified in ponds of the Algeti National Park. 2 out of them belong to the class *Coscinodiscophyceae*, others – to *Fragilariophyceae*. Especially mentioned should be the species: *Synedra ulna*, *Diatoma moniliforme* and *Fragilaria vaucheriae*, noted for wide and quantitative distribution. Rather widely distributed are also *Diatoma hiemala* and *Meridion circulare*. Other species are met rarely and in a small amount, or even as single specimens. 25 out of 26 species of diatoms found in the ponds of Algeti National Park from classes *Coscinodiscophyceae* and *Fragilariophyceae* are mentioned for the first time for this region.

Auth.

10.C9.4. Seed-growing of onion variety “Tsiteli-54”. /E. Motiashvili, Z. Sapatov, N. Kakabadze, M. Barisashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 24–25. – geo.; abs.: geo., eng., rus.

The process of selection and seed-growing of a new onion variety “Tsiteli-54”, which is resistant to pests and diseases, is unicellular, flat-shaped, moderately bitter, and noted for best storage capacity is discussed. The economic and qualitative properties of the variety seeds are studied.

Auth.

10.C9.5. Studying simple and complex hybrids of water-melon and melon. /Z. Sapatov, E. Motiashvili, N. Kakabadze, M. Barisashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 26–28. – geo.; abs.: geo., eng., rus.

The study of simple and complex water melon and melon hybrids have established that the hybrid vigor (heterosis) is revealed to a greater extent in the hybrid combinations, in which local varieties are taken as a maternal form, while the geographically remote varieties – as paternal. In simple water melon hybrids productivity increased in comparison with the best parental form by 10-30 c/h, while in complex hybrids – by 10-20 c/h. The content of total sugars in simple hybrids as compared with local varieties increased from 1.15% to 1.6%, while in complex hybrids – from 1.0% to 1.3%. By the total sugar content the complex hybrids and best parental forms are close to each other and there is no sharp difference between them.

Auth.

10.C9.6. The use of common laurel cherry (*Laurocerasus officinalis* M.) plantings for recreational and

medicinal purposes. /A. Bajelidze, N. Alasania, N. Lomtadze, N. Nakashidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 29-32. – geo.; abs.: geo., eng., rus.

Laurel cherry is widely spread in the forests of Georgia, especially, in the Western Georgia, Adjara. The laurel leaf (*Folium Laurocerasi*) is considered to be the medicinal raw material. The cherry-laurel fruit are also considered to have medicinal properties by folk medicine. The research was conducted in the forest area of Gonio. Namely, the cutting out of plants was carried out in 10m-wide stripes. The weight of leaves (kg) and productivity on 1 ha were determined. The productivity of leaves of different shape was determined for purposes of making medicinal raw materials. The cherry-laurel plantings can be successfully used for creating recreational zones in the littoral subtropical zone, namely in health resort places.

Auth.

10.C9.7. Peculiarities of stevia (*Stevia rebaudiana*) propagation by seed. /Ts. Kashakashvili, N. Oragvelidze, I. Mamulaishvili, T. Sarjveladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 33-35. – geo.; abs.: geo., eng., rus.

Development of stevia (sweetleaf) seed takes place in a normal sexual way and is formed with full swelling ability. Since stevia is a tropical plant, low temperatures adversely affect its growth and development. Hence its seed viability greatly depends on climatic conditions, namely on temperature.

Auth.

10.C9.8. The effect of physical-geographical factors of a locality on wine materials (by the example of some grape varieties). /G. Gagua, V. Gogitidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 36-40. – geo.; abs.: geo., eng., rus.

The article deals with the effect of Kakheti and Racha-Lechkhumi conditions on some grape varieties - Manavis Mtsvane, Kindzmarauli and Khvanchkara. The climatic and soil conditions are the most important among the physical-geographical factors that together with the grape variety provide the wine specificity.

Auth.

10.C9.9. The prospects of utilization of local aluminum silicates in ensuring wine quality. /Sh. Japaridze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 41-44. – geo.; abs.: geo., eng., rus.

The article reviews the effects on stabilization and clarification of different types of table wine, both white and red, processed by local, natural and modified aluminum silicates. It shows a perspective for local, modified bentonitic clays for this purpose.

Auth.

10.C9.10. On the issue of double cropping fig in Kvemo (Lower) Kartli. /V. Gogitidze, G. Gagua/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 45-47. – geo.; abs.: geo., eng., rus.

The study deals with feasibility of permanent provision of users with fresh-picked fig during four months by technique of natural (geographical) conveyer.

Auth.

10.C9.11. On the issue of restoration and expansion of apple production in Georgia. /G. Gagua, V. Gogitidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 48-52. – geo.; abs.: geo., eng., rus.

The article provides recommendations on restoration and expansion of apple production in mountain areas of Georgia, including selection of frost-resistant varieties, arrangement of windbreaks, etc.

Auth.

10.C9.12. Biomorphological peculiarities of Japanese quince (*Chaenomeles japonica* Lindl) under conditions of Batumi Botanical Garden. /E. Machutadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 53-56. – geo.; abs.: geo., eng., rus.

The vast distribution of the Japanese quince in the world botanical gardens was preconditioned by not only the aesthetic qualities but the chemical composition of the fruit as well. The fruit of *Chaenomeles* represents a store of vitamins and biologically active substances, owing to which it can replace expensive lemons. The various decorative shapes with multi-colored flowers have gained special popularity. The Japanese quince is easily reproduced with grafts and seeds. In the late autumn seeds are taken out of fruits and sowed in soil during winter to pass natural stratification. In spring the whole growth can be received. In vegetative reproduction the *Chaenomeles* is reproduced with grafts (in summer) or bending and shrub division (early spring or autumn). In spring sowing period it is necessary to make 3-month stratification of *Chaenomeles* seeds. The speed of seed and seedling growth is high, the seed-germination ability is 45-50%, graft rooting – 100%. Plants reproduced with seeds begin blooming on the 3rd and 4th year. The medicinal qualities of Japanese quince are preconditioned by the composition of C vitamin and phenol compounds. In particular, they

are used in medicine against inflammation, capillary hardening and sclerotic cases. Owing to the consistency of pectin the Japanese quince fruit is useful for people living in the zones contaminated with radionuclide as well as people working at health hazardous factories. The flower potion is used against coughing, bronchitis, trachyte, and the seeds are used against burnings. The Japanese quince is widely used in greenery to create hedges, curbs and rocky gardens. The shrubs are used in groups as well as singles in lawns and rock gardens.

Auth.

10.C9.13. Leaf-mining sawflies (*Hymenoptera: Pamphilidae; Tenthredinidae; Argidae; Cimbicidae*) in forests of Georgia. /A. Supatashvili, N. Goginashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 57–65. – geo.; abs.: geo., eng., rus.

In the article 63 species of leaf-mining sawflies of foliage forest in Georgia are given, they belong to 4 families: *Pamphilidae* – 2 species, *Tenthredinidae* - 47 species, *Cimbicidae* - 4 species, and *Argidae* - 10 species. Out of them 33 species are identified for the first time for the fauna of Georgia. Enumeration of all these species is given.

Auth.

10.C9.14. The impact of livestock grazing on natural restoration of beech groves in Adjara. /A. Dzirkvadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 66–69. – geo.; abs.: geo., eng., rus.

The article considers the adverse effect of livestock grazing of various frequencies on natural restoration of beech groves in Adjara. The data are taken from beech groves of different densities growing at various altitudes above sea level. Relevant recommendations are given.

Auth.

10.C9.15. The peculiarities of formation of the upper parts of shoots of dark coniferous species. /A. Dzirkvadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 70-72. – geo.; abs.: geo., eng., rus.

The increase in size and growth in height of the upper parts of offshoots of spruce and silver fir the optimal zone of spruce and silver fir forests of Adjara is discussed.

Auth.

10.C9.16. Typological classification of Adjarian fir-tree and silver-tree forests. /R. Vasadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 73-79. – geo.; abs.: geo., eng., rus.

The article deals with a typological classification of Adjarian fir- and silver-tree forests. In ecological groups are incorporated biologically similar basic and secondary forest types, which are considered according to their location (ecotype) at different altitudes above sea level. Each forest type is characterized according to forest evaluation data, such as: composition, growth class, density, average height and diameter of the planting, also altitude above sea level, layout, sloping, soil depth, genetic origin, etc. Respective forest improvement measures for each forest type are set up.

Auth.

10.C9.17. The peculiarities of formation of a root system of saplings of dark coniferous species in various soil types (by the example of Adjara and Artvin). /A. Dzirkvadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 80-83. – geo.; abs.: geo., eng., rus.

The peculiarities of formation of a root system of saplings of dark coniferous species in various soil types by the example of Adjara and Artvin are discussed. To study the said peculiarities, the data were collected on brown forest soils in the optimal spreading zone of spruce and silver fir and the mountain-forest soils on the upper zone of distribution. According to the study results, formation of the root system of saplings of spruce and silver fir developed better on the brown forest soils in the optimal zone of their distribution.

Auth.

10.C9.18. Tea diseases. /L. Beradze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 87-90. – geo.; abs.: geo., eng., rus.

50 kinds of different fungi were revealed by researches carried out by in 2006-2010, of which 18 kinds for the first time. Particularly noted for harmfulness and spread are: gray spot diseases, brown spot diseases, *Cladosporium*, *Alternaria alternata*, and *Cercospora theae*.

Auth.

10.C9.19. Nut microbiota. /L. Beradze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 91-93. – geo.; abs.: geo., eng., rus.

51 different kinds of fungi were revealed on nut plant in the humid subtropical zone of West Georgia. Out of them particularly harmful are: *Piggotia coryli*, *Botritis cinerea*, *Alternaria alternata*, *Pestalotiopsis gypini*, *Trichothecium roseum*, *Fusarium sambucinum*, *Fusarium gibbosum*, *Phyllactinia gutata*.

Auth.

10.C9.20. Safe method for biological control of locust. /K. Pavliashvili, E. Abashidze, M. Machavariani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 94-97. – geo.; abs.: geo., eng., rus.

The results of a search for safe locust control methods are presented. Tested concentrations of a local strain of the entomopathogenic fungus *Beauveria bassiana* isolated from a locust have been found to be effective and causing mortality of the locust. The optimal concentration of sporocidal suspension of the local strain has been identified, which can be considered as a potent and ecologically safe method of biological control of locust pests in Georgia.

Auth.

10.C9.21. Effectiveness of modern insecticides and their combined mixtures against fruit moths. /E. Orjonikidze, N. Berianidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 98-101. – geo.; abs.: geo., eng., rus.

The article considers the results of effectiveness study of modern insecticides and their mixtures used to control moths spread in orchards. The character of a combined action of different pesticides on the mentioned pests is established. The synergic effect of combined mixtures is found. The toxicological characteristics of the tested insecticides are given.

Auth.

10.C9.22. The species composition of stevia pests in West Georgia. /A. Nikolaishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 102-105. – geo.; abs.: geo., eng., rus.

The article enumerates the following pests that damage the stevia plant West Georgia: *Trialeurodes vaporariorum* (Westwood); *Coccus hesperidum* L.; *Tanymecus dilaticolus* Gyll.; *Boarmia salenaria* Schiff.; *Philaenus spumarius* L.; *Cicadella viridis* L.; *Ricania japonica* Mclch.; *Cercopis vilnerato* L.; *Heliothrips haemorrhoidalis* B.; *Tetranychus telarius* L.; *Tetramerium caespitum* L.; *Forficula euricularia* L (Agretanum); Mollusca; Arachnoidae; Tortricidae; *Microtus arvalis*. The above-mentioned pests are polyphagous insects having migrated to stevia from neighboring plants.

Auth.

10.C9.23. The efficiency of modern pesticides against San Jose scale (*Quadraspidiotus perniciosus* Comst). /T. Gogishvili, I. Bujashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 106-107. – geo.; abs.: geo., eng., rus.

The authors present some aspects of spread of San Jose scale (*Quadraspidiotus perniciosus* Comst) in fruit orchard and their pernicious effects. The study presents the results of testing of eight modern pesticides: Actellik, Safagor, Karate, Detsis -Extra, Valsamba, Fury, Confidor and Sultan. In all the cases the high efficiency was achieved.

Auth.

10.C9.24. Distribution of wheat yellow blotch in Georgia. /L. Gorgiladze, G. Meparishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 108-111. – rus.; abs.: geo., eng., rus.

Commercial and private wheat fields' observation was conducted in 2008-2010 in different geographic zones of Georgia. Yellow leaf blotch of wheat has been identified as dominant disease among wheat foliar diseases. The causal agent of *Pyrenophora tritici repentis* has been isolated from diseased samples in pure culture.

Auth.

10.C9.25. Occurrence of barley powdery mildew in Georgia. /Ts. Tsetskladze, G. Meparishvili, M.Gaba-idze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 112-115. – geo.; abs.: geo., eng., rus.

The results of barley fields' survey conducted in 2008-2010 in different geographic zones of Georgia are given. Barley powdery mildew was spread in all the investigated zones and varieties. Incidence and severity of powdery mildew varied between 30%-90% and 20%-40%, respectively.

Auth.

10.C9.26. Screening sources of resistance to barley powdery mildew. /Ts. Tsetskladze, G. Meparishvili, M.Gaba-idze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 116-119. – geo.; abs.: geo., eng., rus.

Evaluation of local and introduced breeding material of barley was conducted against the background of artificial infection with powdery mildew under field conditions in 2009-2011. As a result of field tests, the sources of resistance to *Blumeria (Erisiphe) graminis* f.sp. *hordei* were revealed, which can be used in breeding programs to improve existing varieties.

Auth.

10.C9.27. Genetic structure of virulence of wheat stem rust. /L. Mgeladze, Z. Sikharulidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 120-122. – geo.; abs.: geo., eng., rus. The virulence of 133 single aecial and 372 uredial isolates was studied on an international set of differential hosts including the host resistance genes: Sr11, Sr12, Sr13, Sr14, Sr22, Sr24, Sr25, Sr26, Sr27, Sr31, Sr32, Sr33, Sr35 were resistant to all of the isolates. Isolates virulent to genes Sr6, Sr7, Sr7a, Sr8, Sr8a, Sr8b, Sr9b, Sr21, Sr23, Sr29 and Sr36 were rare (0.5-8.8%). High percentage (50.3-97.8%) of isolates virulent to Sr1, Sr9g, and Sr15 was recorded. Virulence to lines Sr11, 12,13, 22, 24, 25, 26, 27, 31, 32, 33, 35,37 was not found in the population. 81 pathotypes were described in the stem rust population.

Auth.

10.C9.28. Virulence structure of wheat powdery mildew in Georgia in 2009-2010. /M. Gabaidze, Z. Sikharulidze, Ts. Tsetskladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 123-126. – geo.; abs.: geo., eng., rus.

The causal agent of wheat powdery mildew occurs annually throughout the wheat growing regions of Georgia. The results of virulence surveys of *Blumeria (Erysiphe) graminis* f.sp.tr in 2009-2010 showed that in the Georgian population of wheat powdery mildew is highly virulent and consists of eight virulence genes (91.3-100%). Twenty pathotypes were identified in the population. The frequency of prevalent pathotype was 78.63%.

Auth.

10.C9.29. Spread of wheat powdery mildew in Georgia. /M. Gabaidze, L. Beradze, Ts. Tsetskladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 127-129. – geo.; abs.: geo., eng., rus. The results of surveys of wheat fields in different regions showed that optimal conditions for powdery mildew spread exist in Georgia. Incidence of powdery mildew varied between 5-80%, depending on a region.

Auth.

10.C9.30. Crossing of Georgian soft wheat varieties with endemic and other varieties; vital capacity and inheritance of characters of the first generation hybrids. /M. Naskidashvili, P. Naskidashvili, N. Merabishvili, I. Naskidashvili, T. Loladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 130-135. – geo.; abs.: geo., eng., rus.

The work demonstrates the crossing ability of Georgian soft wheat indigenous populations and breeding varieties with tetraploid and hexaploid varieties of Georgian wheat, the capacity of growing, winter resistance and of preserving the first generation plants, also the inheritance peculiarities of features and properties characteristic of the initial forms.

Auth.

10.C9.31. Peculiarities of inheritance of the features and characteristics in the second generation hybrids received by crossing the Georgian soft wheat varieties with indigenous and other varieties. /P. Naskidashvili, M. Naskidashvili, I. Naskidashvili, T. Loladze, K. Mchedlishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 136-141. – geo.; abs.: geo., eng., rus.

The work shows that in the second generation plants of hybrid plants produced by crossing Georgian soft wheat varieties with endemic and other varieties being free from lethal genes the inheritance of the morphologic-dominant features of the initial forms is monogenic and the produced splittings match the theoretically expected ratio: 3 (dominant) to 1 (recessive). Other inheritance-related features and peculiarities of Georgian soft wheat crossing are also discussed.

Auth.

10.C9.32. The process of forming in the second and other generations' hybrids – crosses of Georgian soft wheat and hard wheat varieties and selection of interesting forms. /P. Naskidashvili, M. Naskidashvili, T. Loladze, I. Naskidashvili, K. Mchedlishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 142-149. – geo.; abs.: geo., eng., rus.

A wide process of forming taking place in the combinations of crosses of Georgian soft wheat and hard wheat varieties, as well as production of interesting new forms are discussed.

Auth.

10.C9.33. Principles of management of the forming of cereals productivity conditioning elements. /P. Naskidashvili, M. Naskidashvili, N. Merabishvili, I. Naskidashvili, T. Loladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 150-155. – geo.; abs.: geo., eng., rus.

The work demonstrates the possibility of achieving high yield of cereals by regulating the main components conditioning productivity of the crops, also the scales of classification of cereals development phases worked

out by different researchers from different countries of the world.

Auth.

10.C9.34. The results of genetic investigation of nucellar seedlings of some citrus plants during distant hybridization. /N. Kipiani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 156-158. – geo.; abs.: geo., eng., rus.

The paper discusses the results of a genetic investigation of sexual nucellar seedlings obtained through the cross-breeding of the clone of large-leafed mandarin Unshiu with the clone of distant ancestors of new-Georgian lemon (*P. trifoliata* and *C. ichangensis*).

Auth.

10.C9.35. New Georgian maize interline hybrids. /O. Liparteliani, T. Tavadze, F. Begoidze, N. Zhvania, B. Liparteliani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 159-162. – geo.; abs.: geo., eng., rus.

The article gives the economic, biological, physiological and biochemical data of new Georgian maize hybrids *Tsilkani 1* and *Tsilkani 2* selected as a result of long-term research and claiming patentability.

Auth.

10.C9.36. Genetics and selection of Georgian wheat. /P. Naskidashvili, M. Naskidashvili, T. Loladze, I. Naskidashvili, K. Mchedlishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 163-167. – geo.; abs.: geo., eng., rus.

The articles mentions a great diversity of natural wheat (*Triticum*) found in Georgia. Out of 24 cultivated wheat varieties, 14 have been found and recorded in Georgia, 5 (35%) of which are endemic. many new varieties and forms have been selected based on the Georgian endemic wheat varieties. In addition, Georgia is considered to be a homeland of immune and high quality wheat varieties, as well as a country having discovered the hybrid necrosis genes. The great role of the endemic varieties of Georgian wheat in the evolution and world breeding of the genus *Triticum* L. is demonstrated.

Auth.

10.C9.37. The impact of anthropogenic factors on the composition of macro and micro aggregates in trenching layers of vineyard soils. /J. Oniani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 168-172. – geo.; abs.: geo., eng., rus.

The impact of anthropogenic factors on the structure strength (water resistance) of trenching layers of vineyard soils is presented.

Auth.

10.C9.38. The impact of anthropogenic factors on water properties of subtropical podsolc soils. /J. Oninani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 173-176. – geo.; abs.: geo., eng., rus.

The changes in water properties of subtropical podsolc virgin soils under tea plantations and vineyards as a result of 20-27-year use are given.

Auth.

10.C9.39. Features of Cambisols prevalent in East Georgia. /T. Urushadze, T. Kvrivishvili, E. Sanadze, R. Kakhadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 177-182. – geo.; abs.: geo., eng., rus.

Features of Cambisols prevalent in East Georgia have been studied. To the Cambisol soil group belong mountain-meadow soils of a subalpine zone and grey cinnamonic soils of dry subtropical steppes. The basic diagnostic feature of Cambisols is presence of soil weathering – cambium horizon. In subalpine layers a Mollic horizon humic diagnostic criteria are identified. In Cambisols of dry subtropical steppes, chromic and calcareous diagnostic determinants are observed.

Auth.

10.C9.40. On soil features of arid subtropical zone (by the example of East Georgia). /T. Urushadze, L. Machavariani, E. Sanadze, T. Kvrivishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 183-188. – geo.; abs.: geo., eng., rus.

The conformity of grey-cinnamonic soils widespread in the zone of subtropical steppe of East Georgia to the group of chestnut soils of the World Reference Base of Soil Resources is established. Systematization of the studied soils has been carried out on a basis of macro- and micro-morphological features and of the analytical data of the diagnostic horizons. According to the World Reference Base of Soil Resources, grey-cinnamonic soils are classified as chestnut-calcaric chernozem soils.

Auth.

10.C9.41. Land erosion dynamics during a year. /G. Gogichaishvili, O. Ghorjomeladze, N. Turmanidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 189-199. – geo.; abs.: geo., eng., rus.

The results of land erosion in different agricultural regions of Georgia are discussed. Changes in the land erosion, its sustainability and definite predictions are given according to seasons.

Auth.

10.C9.42. On land erosion rates. /O. Ghorjomeladze, N. Turmanidze, G. Gogichaishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 200-207. – geo.; abs.: geo., eng., rus.

The work analyzes soil losses as a result of erosion of different soil types sown to different crops according to continents and countries. The mean values of river solid drifts (floating solids), the ways of land reclamation and relevant views of different scientists are considered.

Auth.

10.C9.43. Some problems of soil erosion in Adjara. /O. Ghorjomeladze, N. Turmanidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 208-213. – rus.; abs.: geo., eng., rus.

The work analyzes some problems of soil erosion under conditions of Adjarian highlands. The factors contributing to water erosion and its damaging mechanisms are considered.

Auth.

10.C9.44. Soil erosion danger prediction on slopes in Adjara. /O. Ghorjomeladze, N. Turmanidze, G. Gogichaishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 214-218. – rus.; abs.: geo., eng., rus.

The work analyzes such issues as soil erosion danger prediction, study and calculation of land erosion mechanism, the impact on land erosion of such factors as relief, plant cover, rain, snow melting, and other parameters, as well as the role of land conservation measures.

Auth.

10.C9.45. Eco-chemical examination in dynamics of nitrate nitrogen in basic vegetable crops cultivated in Georgia. /G. Danelia, A. Tkheldze, T. Palavandishvili, N. Barateli/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 219-224. – geo.; abs.: geo., eng., rus.

As a result of an eco-chemical examination, the content of nitrate nitrogen in basic vegetables was studied in dynamics. As a result of the study, it was found that the fixed content of nitrate nitrogen essentially exceeds the maximum permissible concentration in spring and summer periods. This is caused by excessive application of nitrogen and organic fertilizers and requires the taking of urgent preventive measures for purposes of food safety.

Auth.

10.C9.46. Vegetable red color and its nutritive value. /L. Kutateladze, M. Demeniuk, L. Ejibia/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 225-227. – geo.; abs.: geo., eng., rus.

The work considers the role of food colors in giving a product a consumer appeal. The artificial coloring of food products and its influence on the health of consumers are discussed. The article ends with a recommendation on the use of natural vegetable colors in food production for the purpose.

Auth.

10.C9.47. Application of artificial sweeteners and their importance. /L. Kutateladze, G. Kutateladze, L. Ejibia/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 228-230. – geo.; abs.: geo., eng., rus.

The article deals with the problem of substituting sugar with sweeteners in the manufacture of soft drinks and other food products. The most popular sugar substitutes are enumerated, such as: Saccharin, Sorbitol, Cyclamate, Aspartame (NutraSweet), etc.

Auth.

10.C9.48. Urgent problems of Georgian agriculture restoration and development. /G. Agladze, I. Sarjveladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 231-234. – geo.; abs.: geo., eng., rus.

The article deals with the productive capacity of some key sectors of Georgian agriculture in the last decade, the ongoing changes, the current state of affairs and the prospective activities aimed at meeting the country's population demands for staple foods.

Auth.

10.C9.49. Meat productivity of Holstein cow breed. /J. Javarashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 235-237. – rus.; abs.: geo., eng., rus.

The article outlines an increased interest in the raising of Holstein cows on the part of local farmers due to high meat and milk productivity of this breed. The results of a study carried out for the purpose of identifying the merits and demerits of growing this breed under conditions of West Georgia are considered.

Auth.

10.C9.50. Results of bacterioscopic monitoring of a dairy farm. /N. Peradze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 238-240. – geo.; abs.: geo., eng., rus.

The article considers the bacterioscopic monitoring of microbial contamination in the dairy farm "Margebeli". The farm was set up in 2008, where calves' morbidity and mortality due to the disease with gastrointestinal disorders emerged a few months later. Bacteriological investigations revealed the prevalent presence of escherichiosis. At the same time, the pathogenic forms of *st. aureus* and *e.coli*, which are also dangerous to humans, were detected in the milk. The results of microbial contamination study of 340 samples taken from various objects are discussed and presented.

Auth.

10.C9.51. Serological test for the express diagnosis of brucellosis. /E. Mamisashvili, T. Onashvili, M. Natidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 241-244. – geo.; abs.: geo., eng., rus.

Rapid agglutination test is a fast and specific method to detect brucellosis in animals. A specific diagnosticum is usually used as test antigen. Rapid agglutination test accelerates the detection of specific antibodies in the serum of infected cattle, sheep, goats and pigs. The above-mentioned test detects the infected livestock (cattle, sheep, and goats) in 5-6 minutes. High sensitivity and specificity of the test was also confirmed by the Rose Bengal test (RBT) and cELISA.

Auth.

10.C9.52. Antibiotic sensitivity of some bacterial pathogens isolated from hens. /Ts. Napetvaridze, M. Bokuchava, N. Papiashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 245-247. – geo.; abs.: geo., eng., rus.

The results of a study concerning resistance of some pathogens to antibiotics are presented. For instance, most of *St. aureus* and *St. epidermidis* strains were found to be resistant to Amoxycillin and Tromexin, of *St. epidermidis*-3 to Levomicetin and Sultrim, while the strains of *St. aureus* to Vilflok and Levomicetin. Isolators of staphylococcus are highly sensitive to Enroflox + DAS and Pollodoxin + DAS. The strains of *Pr. vulgaris* are resistant to against Ampicid, Amoxicillin, Sultrim and Tromexin. Pollodoxin + DAS is effective against the above-mentioned strains.

Auth.

10.C9.53. Efficiency of giving tranquilizers in preslaughter period and impact of stress on meat quality of broilers. /D. Kinkladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 248-250. – geo.; abs.: geo., eng., rus.

The article discusses how the giving of a tranquillizer (herbal preparation "DAS") in the preslaughter period relieves the stress that affects the broiler meat quality and composition.

Auth.

10.C9.54. Study of antibiotic stimulatory action of the preparation DAS. /Z. Tigilauri/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 251-254. – geo.; abs.: geo., eng., rus.

The study revealed high antibacterial action of the combinations DAS + Enroflox; DAS+ Polodoxin; DAS + ACC-555 against gram-positive cocci (*St. aureus*, *Str. pyogene*, *Bac. subtilis*, *St. epidermidis*), sporous forms of anthrax vaccinal strains (55; CTI, Ikhtiman, 34 F2), which was expressed in size of their growth inhibition zone (28-45) and degree of lysis (4+). The above-mentioned antibacterial activity of the preparation is much lower toward gram-negative bacteria (*E. coli*, *Pr. vulgaris*, *S. pullorum-gallinorium*, *S. enteritidis*) than to gram-positive ones, but it is enough high (3+, 4+) to be used for practical purposes.

Auth.

10.C9.55. Morphological changes in peripheral blood of during salmonellosis of piglets, on the fifth, seventh day from infection. /Z. Chekurishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 255-258. – geo.; abs.: geo., eng., rus.

The article deals with a study of the clinical and morphological indices in the peripheral blood during salmonellosis - the widespread diseases of piglets: decrease in of hemoglobin and the number of erythrocytes, leukogram, and erythrocyte sedimentation rate (ESR), analysis of these changes and their

application for diagnostic purposes.

Auth.

10.C9.56. Anatomical features of the Caucasian shepherd dog's femoral nerve. /E. Buzariashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 259-263. – geo.; abs.: geo., eng., rus.

The external architectonics of the lumbar plexus, the level of branching on the main branches of nerves, deriving from the plexus and patterns of nerve entry in the muscles and their distribution are studied by the known method of the Academician V. Vorobiov on the material of 10 Caucasian Shepherd corpses. It is established that the plexus is displaced caudally; the femoral nerve emerges from the caudal portion of the plexus, and most often (60%) the ventral branches of the lumbar (IV, V, VI, VII) segmental nerves participate in the creation of the femoral nerve.

Auth.

10.C9.57. Study of virulent strains of *Bac. anthracis*. /T. Onashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 264-267. – geo.; abs.: geo., eng., rus.

The isolated strains *Bac. anthracis* are identified by the cotton limp-like growth in the broth at the bottom of the tube; on the agar, they create R and RO type colonies in the shape of lion's mane, which dilute gelatin, peptonize milk and create a so-called "pearl necklace"; they are penicillin- and phage-sensitive. All strains are virulent for white mice.

Auth.

10.C9.58. Study of antibiotic sensitivity of *Bac. anthracis* strains. /T. Onashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 268-270. – geo.; abs.: geo., eng., rus.

The antibiotic sensitivity of *Bac. Anthracis* strains is studied. The tests identified different sensitivity of 14 virulent strains of *Bac. anthracis* to 21 antibiotics. All the strains were resistant to Polimyxin and Bactrim Forte and highly sensitive to Doxycycline, Tylosin, Enrofloxacin, Ciprofloxacin and Tetracycline. The action of other antibiotics were low.

Auth.

10.C9.59. Results of the use of probiotic GalliPro in poultry breeding. /Ts. Napetvaridze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 271-274. – geo.; abs.: geo., eng., rus.

The biological additive GalliPro considerably increases the live weight and maintenance of chickens, regulates the content of intestinal-obligatory microflora and inhibits the growth and development of pathogenic microorganisms (hemolytic *E. coli*, *Proteus*, etc.). The preparation increases the content of total protein, calcium and phosphorus in poultry blood, activates the effect of non-specific factors of immunity and correspondingly increases the resistance.

Auth.

10.C9.60. Antibiotic sensitivity of some microbes to DAS and its combinations with antibiotics. /D. Bostashvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 275-278. – geo.; abs.: geo., eng., rus.

The article considers the impact on the antimicrobial sensitivity of locally made peptide drug DAS and its combinations with individual antimicrobial drugs (antibiotics, sulfanilamides). The conducted tests have shown high efficiency of the above-mentioned preparations and that their combination with DAS enhances the synergistic action. The combination of DAS with antibiotics from the group of fluoroquinolones and doxycycline is especially effective.

Auth.

10.C9.61. Methods of treatment of cows diseased with endometritis. /G. Butskhrikidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 279-281. – geo.; abs.: geo., eng., rus.

The improvement of animal reproduction includes complex and labour-consuming processes in animal husbandry. The biological abilities of animals enable to get one calf or more from one cow at every farm in a year. It must be noted that nowadays there is a high percentage of sterility and dryness of cows at many farms which is economically damaging to this branch of agriculture and includes expenses on keeping sterile cows. The sterility of cows can result from many reasons, such as inappropriate keeping, inadequate feeding, diseases of genital, and high frequency (23.41%) of post-delivery endometritis. The article proposes some effective methods of endometritis treatment.

Auth.

10.C9.62. The impact of a system of management of broilers on meat productivity. /D. Kinkladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 282-284. – geo.; abs.: geo., eng., rus.

The article considers the impact of cage rearing and floor management of broilers on the growth, development, vitality and meat quality. The research was conducted in the poultry farm "Mukhrani" in 2010-2011. As the experiment the broilers of cross "Ross-308" were used. The live weight of broilers made up 1709 g in cage batteries at 5 weeks of age or by 5% more than on deep litter. The study of vitality and meat quality has shown that in the case of deep litter management of broilers the quality of meat improved and vitality increased by 3.2% against cage rearing.

Auth.

10.C9.63. The influence of stocking density on broiler welfare and meat quality. /D. Kinkladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 15-17. – geo.; abs.: geo., eng., rus. The influence of the stocking density on broiler meat productivity and quality is discussed. The broiler growth dynamics, vitality and meat qualitative indicators have been studied.

Auth.

10.C9.64. The effect of mastitis on chemical and technological properties of milk. /L. Tortladze, T. Gabisonia, I. Antia/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 288-290. – rus.; abs.: geo., eng., rus.

Mastitis in Holstein breed cows has been tested by the so-called "California Test Mastitis" method. 15% out of the examined cows were diseased with mastitis, 6.8% in the clinical form. The minimum percentage of the disease is revealed in cows with bath-shaped udder. Technological properties of milk have a great importance when making cheese. The content of fat, lactose, acidity, dry fatless milk residue was decreased in the diseased cows causing a decrease in technological properties.

Auth.

10.C9.65. Prevention and treatment of toxic dyspepsia of newborn calves. /A. Abdinova/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 291-293. – rus.; abs.: geo., eng., rus.

For treatment of dyspepsia oxitetracyclin at a dose 1ml per 10 kg live weight in a combination with lactic product Ayran and an infusion of chamomile was used with the concurrent intravenous injection of the solution Ringera-Lokka. For preventing toxic dyspepsia the conduct of sanitary preventive measures during management of in-calf cows and newborn calves is a must.

Auth.

10.C9.66. Some peculiarities of the epizootic process by sarcocystosis of domestic animals. /Sh. Potskhveria, D. Khelaia, M. Turmanidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 294-297. – geo.; abs.: geo., eng., rus.

Sarcocystosis is a widespread disease in western Georgia. 22.2% of the investigated cattle carcasses, 24.4% of swine and 69.8% of sheep have been invaded by microsarcocysts. The weak form of intensity of infestation prevails, which has been revealed in 73.9, 71.0 and 68.2% of the investigated cattle, swine and sheep carcasses respectively. The carcasses of cattle of average fatness (93.7%), swine (75.0%) and swine of meat type (100%) also have been invaded mainly by microsarcocysts. The neck and abdominal muscles (41.2 and 43.8% correspondingly) of cattle, abdominal muscles (71.7%) of sheep and neck muscles (63.7%) of swine are often invaded by microsarcocysts. Under conditions of Georgia, the shepherd and hunting dogs are the determining factor of the invasion spread in the epizootic process by sarcocystosis and the indices of extensiveness of the infestation of them make 73.1%.

Auth.

10.C9.67. The influence of Sel-plex on the duration of molt in egg-laying hens. /M. Kvitsiani/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 298-301. – geo.; abs.: geo., eng., rus.

It has been determined that during the molt period and during the use of Sel-plex, the change of flight feathers as well as contour feathers was accelerated. In fowls of the experimented group, the change of flight feathers finished in 85 days, in the control group - in 92 days. Analogically, the fowls of the test group finished the change of contour feathers 5-6 days before.

Auth.

10.C9.68. The effect of preparation M on the blood leucocytes status of cattle during treatment against cattle tick. /M. Dumbadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 302-305. – geo.; abs.: geo., eng., rus.

The effect of the preparation M on the blood leucocytes status of cattle during treatment against cattle tick *Ixodes* is considered.

Auth.

10.C9.69. Spread of cattle brucellosis in Georgia in 2000-2010. /G. Maghlakelidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 306-312. – geo.; abs.: geo., eng., rus.

The article deals with the spread of cattle brucellosis - one of the most severe chronic zoonotic diseases - in

Georgia, specifying its adverse effects on the animal health and possible dangers for humans.

Auth.

10.C9.70. The result of treatment and prevention of bowel infections in swine and poultry. /D. Shalamberidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 313-315. – geo.; abs.: geo., eng., rus.

Bowel infections caused by bacteria are widely spread in swine and poultry farms. Antibiotics are often used against bacterial diseases. Among them, the most efficient is Oxytetracycline (99%) that can be mixed with other drugs. The preparation is produced by 'Davati' plant. As a result of carried out experiments and laboratory tests, the preparation has been found rather efficient against escherichiosis in swine and poultry and less effective in treating swine salmonellosis.

Auth.

10.C9.71. Medical and prophylactic efficacy of Enrofloxacin against bacterial infections. /D. Shalamberidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 316-319. – geo.; abs.: geo., eng., rus.

The medical and preventive properties of an antibacterial preparation Entrofloxacin produced by 'Davlati' company in treating and preventing poultry against salmonellosis, escherichiosis, staphylococci and streptococci are considered.

Auth.

10.C9.72. The efficacy of Tylosin Tartrate against swine salmonellosis. /D. Shalamberidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 319-321. – geo.; abs.: geo., eng., rus.

The medical efficacy of an antibacterial preparation Tylosin Tartrate (powder) has been investigated under laboratory conditions on poultry and swine. The preparation has been found effective in treating swine salmonellosis.

Auth.

10.C9.73. Growth indicators of young Georgian mountain cattle in smallholder farms. /L. Tabatadze, G. Gogoli, R. Barkalaia, K. Natsvaladze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 322-325. – geo.; abs.: geo., eng., rus.

The researches have shown that Georgian mountain cattle calves growing under improved keeping conditions have revealed a relatively high potential of growth and development. It should be noted that by weight gain per kg body weight at birth Georgian mountain cattle breed calves exceed this measure in cultural breeds. At the same time, it should be mentioned that in the temporary Technical Regulations of Appraisal of Dairy and Dairy-Beef Cattle Breed the live weight indicators of Georgian mountain cattle calves do not comply with the actual figures and should be revised.

Auth.

10.C9.74. The result of research of green algae of agrocenoses in the subtropical zone of Adjara. /G. Beridze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 330-333. – geo.; abs.: geo., eng., rus.

More than 100 species of *Chlorophyta algae* of agrocenoses are identified in the subtropical zone of Adjara. Among them, the dominant genera are the following: *Ankistrodesmus*, *Chlorella*, *Closterium*, *Clamydomonas*, *Cosmarium*, *Cosmoastrum*, *Draparnaldia*, *Hormidium*, *Microspora*, *Pediastrum*, *Penium*, *Oocystis*, *Scenedesmus*, *Spirogyra*, *Tetraedron*, *Ulothrix*, *Euastum*.

Auth.

10.C9.75. The result of research of aerophilic algae of agrocenoses in subtropical Adjara. /O. Shainidze, G. Beridze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 334-336. – geo.; abs.: geo., eng., rus.

The algoflora of subtropical plants and tea has been investigated. Over 20 species have been identified, most of them being incorporated in the division of green algae.

Auth.

10.C9.76. The results of research of algoflora of water plants in reservoirs of Adjara. /G. Beridze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 337-340. – geo.; abs.: geo., eng., rus.

The composition of algoflora species spreading over water plants of small reservoirs (canal, pool, holes) has been studied. As a result of the study, 107 species and subspecies of algoflora spreading over the water plants have been identified. Their ecological analysis has been conducted.

Auth.

10.C9.77. The morphodynamics of modern lithodynamic system of the River Chorokhi. /S. Khorava, A. Kikava, G. Russo/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 341-346. – geo.; abs.: geo., eng., rus.

The effects of dams built on the River Chorokhi in the territory of Turkey against the background of Batumi sea front development and the renewal of shore protection on the coastal area under the tested method morphodynamics of the modern lithodynamic system of the River Chorokhi, immediately from the Batumi Cape to the Kalender Cape are considered.

Auth.

10.C9.78. Fauna in the protected areas of Ajara (Mtirala-Kintrishi). /R. Davitadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 347-351. – geo.; abs.: geo., eng., rus.

The fauna of the protected areas in Ajara - Mtirala National Park and Kintrishi protected areas are discussed. The local animals entered in the Red Book are listed. The problems of conservation of the fauna in the protected areas and its importance for attracting tourists are considered.

Auth.

10.C9.79. Diseases of deciduous plants in the protected areas of Ajara. /R. Davitadze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 352-355. – geo.; abs.: geo., eng., rus.

The article deals with such diseases of deciduous trees such as *Cryphonectria parasitica*, *Cameraria ohrdella deschka* and *Tischeria complanella ril*. Their pathology, symptoms of disease, biological symptoms, distribution area and the measures taken against them in the Ajara protected areas (Mtirala National Park and Kintrishi protected area) are discussed.

Auth.

10.C9.80. Agroproducts import and export trends in Georgia. /Sh. Chalaganidze, T. Kunchulia/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 356-362. – geo.; abs.: geo., eng., rus.

The article deals with agroproducts export-import trends in Georgia, the quantitative and structural changes in world exports, and the results of the work done for promoting new commodity groups and widening the export geography. The causes of a decrease in local production are explained and the expediency of production of importable goods is justified. For the first time, the 10-year import and export indicators are systematized according to the harmonized commodity system groups and published, which is to be of great assistance to researchers and experts engaged in this sphere, as well as the interested general public.

Auth.

10.C9.81. Cost-effectiveness of the application of phosphorus fertilizers in tea industry. /N. Kutaladze, T. Gogolishvili/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 367-370. – geo.; abs.: geo., eng., rus.

P 180 kg/hectare is the most effective among the options of annual application of phosphorus fertilizers. In the given option an increase in green tea leaf compared to the background made up 2012 kg/ha; the calculated profit – GEL 1411/ha; profitability – 176%; profit from each spent 1 GEL – 2,8 GEL, and the cost of one kg tea leaf – GEL 0,4.

Auth.

10.C9.82. Priorities of agroengineering research development in Georgia. /Sh. Chalaganidze, R. Makharoblidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 374-381. – geo.; abs.: geo., eng., rus.

The main outcomes of agroengineering research in Georgia considering the world tendencies and local features of agriculture production are analyzed and the main directions of basic and complex applied research in the comprehensive mechanization are outlined. The engineering and mathematical branches, which are most promising for raising the level of agroengineering research are focused and the activities aimed at stabilizing the agricultural sector and its innovative development are set.

Auth.

10.C9.83. The resource and productive potential of food safety, its regulation and management. /O. Keshelashvili/. Agrarian-economic Science and Technologies. 2012. – #3. – pp. 6-16. – geo.; abs.: eng.

The goal of research is to define production-resource and productive potential of food safety and to work out an economic mechanism of regulation and management of its utilization as a system of branch-modified economic-organizational activities. After this a stable development of the agrarian sector, economic growth and improvement of social conditions of population are to be reached. A systemic and purposeful approach will be used while working on the project; interrelation of tasks and mutual stipulation of results of their

solving will be achieved with a focus on the final result – the economic growth of agriculture and provision of food safety.

Auth.

10.C9.84. Kolkhetian and Atlantic sturgeon popularization and breeding strategy (economic and ecological perspectives). /O. Keshelashvili, N. Mikhanashvili/. Agrarian-economic Science and Technologies. 2012. – #2. – pp. 17-26. – geo.; abs.: eng.

In accordance with the Georgia's economic strategy, the country's zonal and micro-zonal natural-economic conditions have to be exploited with the highest effectiveness. In this strategy, one of the directions is Kolkhetian and Atlantic sturgeon breeding and government's support in this matter. The number of sturgeons has so diminished that the fish is to be included in the Red Book. The article's subjects of research and analysis include: the main characteristics of Kolkhetian and Atlantic sturgeon inhabiting Georgian waters; problematic ecological conditions of sturgeon breeding in Georgia; within the scope of ecological projects, the main efforts of local (governmental and nongovernmental) organizations and support from foreign investors; and the main factors interfering with the problem solution.

Auth.

10.C9.85. Identification and introduction of new varieties of aromatic plants. /N. Baghaturia, E. Uturashvili, M. Demeniuk/. Agrarian-economic Science and Technologies. 2012. – #2. – pp. 60-64. – geo.; abs.: eng.

Identification and introduction of new varieties of aromatic plants helps expand the range of locally grown aromatic plants. Aromatic plants and their essential oils are widely used in food industry. The article considers the necessity of introduction in Georgia of a highly productive aromatic plant – lemon wormwood (*Artemisia balchanorum* Krasch), which essential oil is distinguished by high content of citral and linalool and has a specific aroma of lemon, also the outcomes of its planting in tropical (Lagodekhi) and subtropical (Sukhumi) regions of Georgia.

Auth.

10.C9.86. The percentage change of the grape sugar content upon variations in the quantity of grapevine buds. /T. Khokhobashvili/. Metsniereba da teknologiebi. – 2011. – #4-6. – pp. 119-120. – geo.; abs.: eng., rus.

The percentage changes in the grape sugar content are considered upon variations in the quantity of vine buds and use of the rational methods of pruning are considered. Two grapevine varieties *Rkatsiteli* and *Utsiptso* were studied for the purpose. The observations were carried out in five replications, each including six samples. Thee three-year experiments have found the data on grape sugar content most interesting in replications III and IV.

Auth.

10.C9.87. Crossability of endemic species and aboriginal varieties of Georgian wheat and traits in F1. /P. Naskidashvili, I. Naskidashvili, M. Naskidashvili, T. Loladze, K. Mchedlishvili, N. Gakharia/. Bulletin of Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 137-142. – eng.; abs.: geo., eng.

The research shows that Georgia is a primary centre of the origin and diversity of cultivated wheat, distinguished from other countries by a high level of endemism. It is proved that Georgian endemic species of wheat have played an important role in the evolution of the genus *Triticum* and process of wheat selection on a global scale. New species, genera, cultivars and varieties of wheat have been obtained on the basis of wheat species endemic to Georgia. Their genotype bears genes which allow to obtain wheat species of a new type with high immunity and quality features. Issues of crossability of endemic species of Georgian wheat with other species as well as with aboriginal and selection varieties of soft wheat, germination capacity of obtained hybrid grains and viability of plants of the first generation are discussed in the present paper. Peculiarities of inheritance of economically important morphological traits in the first generation of plants are shown.

Auth.

10.C9.88. Typology of East Georgian open juniper woodlands. /P. Togonidze/. Bulletin of Georgian National Academy of Sciences. – 2011. – vol. 5. – #3. – pp. 103-106. – eng.; abs.: geo., eng.

This paper provides new data on East Georgian open juniper woodland types and associations. The typology of open juniper woodlands has been studied on 8 sampling plots. Phytocenosis composition, average height and diameter, age, growth class, natural regeneration rate, status of forest understorey and herbaceous cover were determined.

Auth.

10.C9.89. A new approach to the methodology of economic evaluation for the land resources of Georgia. /M. Vartanov/ Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 53-56. – rus.; abs.: geo., eng., rus.

The dynamics in the use of agricultural lands, including irrigation are discussed and a new approach to the evaluation of different lands in Georgia is assessed. A conclusion on highly effective use of agricultural lands, their environmental safety and sustainable functioning of all the national economy sectors is made.

Auth.

10.C9.90. Prospects for the agricultural sector development in Georgia. /D. Gubeladze/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 80-84. – geo.; abs.: geo., eng., rus.

Georgia has a possibility to solve the problem of food security, greatly increase the production of traditional export products, the food processing industry and rural development and employment with the effective functioning of the reclamation fund. Nowadays, the main task is to realize these possibilities practically.

Auth.

10.C9.91. Increase of efficiency of egg production in poultry breeding. /M. Khutsishvili, O. Maisuradze/. Metsniereba da Tskhovreba. 2012. – #1(5). – pp. 94-97. – rus.; abs.: geo., eng., rus.

The experiments carried out at Savana poultry farm have shown that hens on the 10-12th day of moult lost 20-23% of live weight. The weight of reproductive organs reduced to a minimum (ovaries – 8.5%, oviduct – 15.6%) and from the 20th day after moult it increased rapidly. The hens began to lay eggs after 23 days from the beginning of moult and after 45 days the intensity of egg laying reached 50%.

Auth.

10.C9.92. Copper transformation from soil into the plant (experimental investigation). /U. Zviadadze, M. Mardashova, N. Gachechiladze/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 45-49. – geo.; abs.: geo., eng., rus.

A problem of accumulation in agricultural products, particularly in verdure, of toxic metals from polluted soils is discussed. According to a carried out experiment, plants growing along motor have been found to have different degrees of assimilation of heavy metals from such soils.

Auth.

10.C9.93. Problems of ecologization of agriculture in humid subtropical areas of Georgia. /B. Godziashvili, M. Chebotareva/. Akhali Ekonomisti. – 2012. – #1. – pp. 37-39. – geo.; abs.: eng.

Recently, under the pretext of ecologization an agriculture and obtaining high-quality production, some European publications call for a complete ban of mineral fertilizers and their substitution with organic ones. Even in Georgia, under conditions of humid subtropics, where for almost 16-18 years minerals fertilizers have not been applied, a transfer for a system of alternative farming is being considered, which, in the authors view and given the complicated social conditions, is just untimely. The application of a combination of the strict ecologically tested rates of mineral fertilizers with organic matter and its residues together with agricultural ores containing different biogenic elements can play a significant role in the ecologization and sustainable development of agriculture in humid subtropics of Georgia.

Auth.

10.C9.94. Cooperation – the effective mechanism of agriculture development. /P. Koghuashvili, D. Mamukelashvili/. Business-Engineering. – 2012. – #4. – pp. 61-65. – geo.; abs.: eng.

The work concerns voluntary cooperation of rural population, its integration with processing industries (creation of a uniform system of production, processing and sale of farm products) and on-site regulation of major socio-economic or technical problems. Based on social solidarity, cooperative community members will be in full ownership of the income from sales of the final product and themselves decide on the earmarking of the respective funds for reproduction and/or handling of common social problems. Implementation of the Community Entrepreneurial Mobilization Program will bring forth a substantial growth of incomes of the major portion of the country's population and dynamic improvement of its socio-economic situation.

Auth.

10.C9.95. Some problems facing the agrarian sector. /L. Pitiurishvili, A. Grishikashvili/. Business-Engineering. – 2012. – #4. – pp. 66-68. – geo.; abs.: eng.

Georgia is unable to meet local population's demands for national food products. The food products imports exceed export by more than three times. One of the main reasons of such a situation is small-contour land parcels where the effective use of farm machinery is rather problematic. The said problems can be settled by government interventions in the processes of consolidation of small land plots, supply of farm machinery, conduct of irrigation and reclamation works. The agricultural sector taxation system should also be improved; otherwise, the consolidation of land alone will not bring forth essential results.

Auth.

C10. Water Industry. Melioration

10.C10.1. The results of engineering-geological studies of the Ritseuli HPP diversion canal and nearby structures. /T. Tevzadze, Sh. Birkadze, S. Kandelaki, D. Potskhveria, G. Omsarashvili, L. Bilanishvili/. Metsniereba da Teknologiebi. – 2011. – #4-6. – pp. 61-69. – geo.; abs.: eng., rus.

The article presents the results of engineering-geological studies of area locating Ritseuli HPP headworks, diversion canal, head bay, power conduit as well as the geodynamic processes prediction and the structures' diffusion conditions.

Auth.

10.C10.2. Supply of drinking water to Kutaisi City and health-resort Tskaltubo using the River Rachkha (preliminary research data). /J. Noselidze, O. Shautidze, Sh. Momtsemlidze/. Metsniereba da Teknologiebi. – 2011. – #4-6. – pp. 70-72. – geo.; abs.: eng., rus.

River Rachkha originates at a height of 800 m and flows into the right bank of the River Tskhenistskali. The height difference from the river head to Kutaisi makes 440 m. The water's chemical composition completely meets the drinking water standards, with the exception of manganese, the content of which exceeds the standard (12,2 mg/l versus standard 5,0 mg/l). The water flow varies generally within 4,0–5,0 m³/sec. The large height of fall from the head to Kutaisi may be used for the generation of electricity in small HPPs through an environmentally friendly "Zink" type turbine.

Auth.

10.C10.3. The analysis of operation of bank-protecting structures on the River Chorokhi. /V. Mamaskhlisi, J. Noselidze, Sh. Momtsemlidze/. Metsniereba da Teknologiebi. – 2011. – #4-6. – pp. 73-77. – geo.; abs.: eng., rus.

The results of operation of the bank-protecting concrete structures (levees) on the river Chorokhi are given. With the aim to avoid deformations of the bank-protecting structures recommendations on design of each such structure are worked out.

Auth.

10.C10.4. Determination of the Darcy coefficient at pressure flow of non-Newtonian fluid in the pipe. /O. Natishvili, V. Tevzadze/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 121-124. – eng.; abs.: geo., eng.

The methodology of hydraulic calculation of the pressure losses along the length at the motion of non-Newtonian fluid with flow core in a round pipe is presented.

Auth.

10.C10.5. Application of nonlinear wave dynamics to the problems of statistical analysis of water supply curves. /A. Bagdov, V. Tokmajian, M. Pogosjian/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 9-12. – rus.; abs.: geo., eng., rus.

The application of methods of nonlinear wave dynamics to investigate distribution probabilities of water supply along empirical curves to the town of Goris, Armenia, for 2007-2009 and along the typical curve to Yerevan for 2008 is presented. A small latent region characteristic of small variations of the curve parameters, which is described by the known linear diffusion equation for the process probabilities, is singled out and, according to the chosen system of kinetic equations for two parameters, their solution represents a vibro-exponential trend and after trigger transition to the regions of large variations of parameters its solution is for probabilities is given in the form of a shock wave. A simplified approach to determination of probabilities and nonlinear coefficient for the mentioned regions of large variations of processes is offered based on the equation of shock wave and on inclinations of the empirical curves, which is close to the theoretical shock wave. A single nonlinear coefficient for all the regions of essential variation of parameters is defined, which justifies applicability of the chosen model of shock waves.

Auth.

10.C10.6. Mathematical simulation of flood in case of a possible failure of Lajanuri Dam. /G. Gavardashvili/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 13-19. – eng.; abs.: geo., eng., rus.

For the purpose of mathematical simulation of a flood that might be caused in case the Lajanuri arched reinforced concrete dam fails the algorithm of "Volna-2" software making it possible in such case to calculate the wave velocity, the travelled distance and, most important, the flooded area geometry (to the right and to the left of the river axis), taking into account the time factor was reworked. Fortunately, according to the simulation results, the population living within the nearby area will not be endangered.

Auth.

10.C10.7. Hydrology and hydrography of the River Khadis Khevi. /I. Zakaidze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 57-61. – geo.; abs.: geo., eng., rus.

The article describes hydrology, hydrography and geography of the Khadis Khevi River basin, also the right and left tributaries of the river which are characterized by mudflow processes and need to be thoroughly studied. Also considered are floods and high water of the river and their causing reasons. The article presents the average annual, maximum and minimum discharges of the river. The maximum discharges take place in summer, and the minimum - in winter. Materials of visual observations to clarify some issues are used.

Auth.

10.C10.8. Analysis of precipitation distribution in the river basins of Naryn Region of Kyrgyzstan for the purpose of assessing water resources. /N. Ivanova, N. Ershova/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 73-79. – rus.; abs.: geo., eng., rus.

This paper describes the physiographic characteristics and climate conditions in the Jergital and On-Orcha river basins of the Naryn region of Kyrgyzstan. The plotting of maps (scale 1:50000) for the distribution of precipitations in digital format is considered. An analysis of precipitation change to assess the quantity of water recourses in the mentioned river basins is carried out.

Auth.

10.C10.9. Analysis of potential evaporation and deficit of water availability in the river basins of the Naryn Region of Kyrgyzstan to assess water resources. /N. Ivanova, N. Ershova/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 80-85. – rus.; abs.: geo., eng., rus.

The article describes the computation and analysis of changes in potential evaporation and water availability deficit in the Jergital and On-Archa river basins of the Naryn region of Kyrgyzstan. The plotting of distribution maps for the potential evaporation and water availability deficit in digital format (scale 1:50000) are considered.

Auth.

10.C10.10. Ecological reliability evaluation of the sedimentation processes in mountain reservoirs of Georgia. /I. Iordanishvili, K. Iordanishvili, Z. Charbadze, L. Javakhishvili/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 93-97. – geo.; abs.: geo., eng., rus.

The results of reservoir sedimentation of large mountain reservoirs of Georgia (Tbilisi, Zhinvali, Khrami, Shaori, Algeti and Sioni) are given. The critical stage of the Zhinvali reservoir sedimentation ($V_{full} = 520 \text{ Mm}^3$, $W_n = 63 \text{ Mm}^3$) caused by the lately observed frequent flooding is proved. To ensure safe operation of large reservoirs, the appropriate measures significantly slowing down the process of sedimentation are proposed.

Auth.

10.C10.11. Calculation of minimum flow-rate for the unexplored mountain rivers of Azerbaijan. /F. Imanov, A. Guliyeva/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 86-92. – rus.; abs.: geo., eng., rus.

The paper is devoted to the development and improvement of methods needed for the calculation of the minimum flow by the example of the mountain rivers of Azerbaijan. It is shown that the simultaneous consideration of the impact of the catchment area and its average height on the mean value of minimum flow can improve the accuracy of calculations. It is defined that the method of parameterization in addition to the conversion coefficient method can be used to determine the minimum flow of unexplored rivers.

Auth.

10.C10.12. Methods of probabilistic assessment of the expected threats from river floods. /D. Kereselidze, G. Dokhnadze, V. Trapaidze, I. Zakaidze, H. Salukvadze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 120-123. – geo.; abs.: geo., eng., rus.

According to the Intergovernmental Panel of Climate Change (IPCC), the current climate change will increase the intensity and frequency of the most dangerous phenomena of the elements as floods. It is known that the lands adjacent to rivers are of great interest to different organizations because of different factors (relief, fertile soil, proximity of water sources, relatively well developed infrastructure, etc.). Therefore, development of the methods of probabilistic assessment of expected threats providing an effective and exhaustive description of different situations is of great importance.

Auth.

10.C10.13. Reducing soil filtration using surface active substances (surfactants). /Kh. Kiknadze, K. Dadiani, L. Maisaia, F. Lordkipanidze, M. Navrozashvili/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 124-127. – rus.; abs.: geo., eng., rus.

The paper describes the results of investigations carried out to reduce the permeability of sandy, loamy and sandy loamy soils, which were processed by the aqueous Caprolactam solution. The proposed method is regarded to be rather promising.

Auth.

10.C10.14. Hydraulics of furrow irrigation and computer simulation of a process using the programming language C++. /R. Kiladze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 128-133. – geo.; abs.: geo., eng., rus.

A computer simulation of furrow irrigation using the theoretical framework, numerical methods and programming language C++ is carried out. The results are given in the form of a table, wherein the input data determining the process and the output data determining the quality of irrigation are differentiated. The developed method makes it possible to select a set of inputs that yields the best quality of irrigation.

Auth.

10.C10.15. Hydraulics of strip irrigation and computer simulation of a process using the programming language C++. /R. Kiladze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 134-138. – geo.; abs.: geo., eng., rus.

A computer simulation of strip irrigation using the theoretical framework, numerical methods and programming language C++ is carried out. The results are given in the form of a table, wherein the input data determining process and the output data determining the quality of irrigation are differentiated. The developed method makes it possible to select a set of inputs that yields the best quality of irrigation.

Auth.

10.C10.16. Calculations of recession of groundwater levels caused by vertical drainage boreholes in an arid climate. /R. Litvak/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 139-142. – rus.; abs.: geo., eng., rus.

This paper describes dependencies needed for the calculation of vertical drainage boreholes in case of significant inversion evaporation of groundwaters. The inversion is considered as a constant value in the zone adjacent to the borehole, where the depth of groundwater level (GWL) is below a critical one. In the area, where the GWL is above the critical level, the inversion of evaporation depends linearly on the unknown depths of GWL. We have taken into account the overflow from the underlying aquifer. We have carried out the comparison between the predicted falls of GWL and the falls calculated by traditional methods with purpose to illustrate the importance of a detailed calculation of evaporation inversion under the climatic conditions of Central Asia. The calculations were performed for the climatic and hydrogeological conditions of the northern part of Bishkek. The difference in the predicted depths is more than 1m of GWL. If the depth of groundwater level is shallow (1-2m), this error is unacceptably large indicating that the inability to use the traditional formula for the calculation of vertical drainage in the climatic conditions of Central Asia.

Auth.

10.C10.17. Recommendations for the theoretical determination of the planned configuration of debris threshold. /G. Loginov/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 143-149. – rus.; abs.: geo., eng., rus.

The paper offers the methods needed to provide the theoretical description for the protection of heads against debris flow on mountain river's water intake structures. The type needed to determine the planned configuration of debris thresholds is substantiated.

Auth.

10.C10.18. The role of small reservoirs in the protection against mudflows (by the example of Tajikistan). /D. Mamatkanov, U. Murtazaev, I. Saidov/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 155-158. – rus.; abs.: geo., eng., rus.

The paper describes the significance of reservoirs as a man-caused factor used to minimize the serious consequences of natural disasters (landslides, floods, etc.). The construction of small reservoirs for both debris-interception and debris-storage purposes as one of the main directions in the engineering protection of Tajikistan's lands is proposed.

Auth.

10.C10.19. The impact of irrigation and drainage land-reclamation on the hydrogeological conditions of the Mugan-Salyan steppe of Azerbaijan. /E. Mamedova, S. Aliev/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 159-162. – rus.; abs.: geo., eng., rus.

The impact of irrigation and drainage land-reclamation on the hydrogeological conditions of the Mugan-Salyan steppe of Azerbaijan as well as the hydrogeological conditions before and after the construction of the main Mil-Mugan collector have been studied and a comparative analysis of the groundwater regime performed.

Auth.

10.C10.20. Some problems of effective management and protection of water resources in Armenia. /T. Martirosjan/ Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 163-166. – rus.; abs.: geo., eng., rus.

The article presents the main areas of water use in Armenia, analyses of problems that impede the effective development of management and preservation of water resources, and identifies priorities for the solutions of these problems.

Auth.

10.C10.21. Basic issues of irrigation water supply management. /M. Mkrtumyan, G. Hovhannisyan/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 171-174 – eng.; abs.: geo., eng., rus.

Irrigation water supply has a great role in the development of agriculture of the Republic of Armenia. During the last years there was recorded a 13% increase in the cultivated land and change in the composition of crops - there was 15% increase of the profitable crops occupying areas in the republic. One of the main problems of the system is the mechanical water supply, which seriously increases the cost of irrigation water. The role of a correct tariff policy is of great importance in the sphere of irrigation. 3 closed joint stock companies are engaged in supply of irrigation water. The projects on the restoration of supply mains have been implemented, (about 310 km main canals have been restored with a value of AMD 29 billion). A yearly demand for funds needed for the use of irrigation systems totals AMD 8.4 billion. The basic repair and restoration works of open and closed drainage systems are generally included in the Millennium Challenge project, accounting for up to USD 15.68 million.

Auth.

10.C10.22. Prospects for the improvement of subsoil drip irrigation of mountain and foothill areas. /G. Omsarashvili, A. Sakhvadze, G. Omsarashvili, L. Sakhvadze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 180-184. – geo.; abs.: geo., eng., rus.

A hydraulic circuit of subsoil drip irrigation providing for water movement and transport of moisture in the soil, which depends not only on the gravitational law but also on the surface-molecular forces is proposed. For this purpose proposed and designed is a new automatic plant allowing for optimally partial discharges in the distribution water mains.

Auth.

10.C10.23. Criteria for the filtration stability of soils. /V. Shurgaya, Sh. Kupreishvili, P. Sichinava/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 198-203. – geo.; abs.: geo., eng., rus.

The critical filtration rate for a homogeneous soil has been found by rough approximation to be numerically equal to the coefficient of filtration. The formulas enabling to determine changes in the filtration coefficient within a definite time interval and to calculate the desalting capacity and the amount of soil gypsum are given.

Auth.

10.C10.24. Assessing the risk of floods on the Kura River below the confluence of the Araks River. /N. Hasanova/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 212-215. – rus.; abs.: geo., eng., rus.

Floods and their adverse effects require assessment and analysis in terms of environmental safety. The probability theory is applied to perform flood risk assessment on peak discharge of the Kura River below the confluence of the Araks River. Notwithstanding the construction of Mingechavir and Araz reservoirs on the Mtkvari and Araz respectively the risk of flooding remains to be rather high.

Auth.

10.C10.25. Comparison of hydraulic and chemical transport properties of sandy and silty clay loam soils. /G. Chighladze/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 6-11. – eng.; abs.: geo., eng., rus.

The simultaneous transfer of solute and water was studied in a laboratory experiment using sandy and clay soil debris. The breakthrough curves (BTC) were plotted for both soil types based on the calculated dispersion coefficients and retardation factors, and compared to each other. The model accurately predicted the dispersion process for the sandy soil, while did a poor job for the silty clay loam. This drawback was primarily attributed to the lack of the model to describe the adsorption process. For an accurate estimation of solute transport usage of more comprehensive models was suggested.

Auth.

10.C10.26. Environmental protection of the Black Sea coast from marine abrasive processes through regulation of sedimentary runoff. /R. Diakonidze, G. Chakhaya, L. Tsulukidze/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 12-26. – geo.; abs.: geo., eng., rus.

The paper discusses the feasibility of stabilization of abrasive processes of the Black Sea coast by means of regulating the sedimentary runoff transported by rivers into the sea. The quantity of the deficit of sedimentary runoff volume which will stop or considerably reduce the wash-out and losses of the coastal zone is determined. Empirical calculation dependences of average annual discharge of the predicted values of sedimentary run-off of the rivers into the Black Sea are proposed.

Auth.

10.C10.27. Modeling of corrosion processes of pipelines for reliability prediction of water supply systems. /K. Kamkamidze, I. Berdzenishvili, D. Kiknadze/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 34-39. – rus.; abs.: geo., eng., rus.

The dynamics of corrosion development on pipe walls is considered. The basic factors causing the corrosion are given and corrosion rate of steel pipes in aggressive medium are evaluated. Use of pipes enameled by the latest direct-on technology increases the reliability of water supply systems up to 50 years.

Auth.

10.C10.28. On the problem of consumers continuous supply with drinking water. /I. Klimiashvili, N. Natsvlivshvili, M. Natsvlivshvili/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 40-45. – geo.; abs.: geo., eng., rus.

Pressure values in mains system for providing a continuous supply of drinking water to communities are considered which is conditioned with the necessity of evaluation of the work done by water supply services to eliminate drinking water supply by, the so-called, "schedule". General sequence of pressure values estimation characteristic to water supply system in settlements is proposed with the aim of 24-hour continuous supply of drinking water.

Auth.

10.C10.29. Thermal pumps and their application in heating systems. /M. Grdzelishvili, O. Giorgobiani, A. Kopaliani/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 100-108. – geo.; abs.: geo., eng., rus.

The use of thermal pumps in heating systems is considered. The schemes of their installation and classification according to different features are presented. When using pumps the evaporators and capacitors change place. In capacitor is evaporated working medium which passing through capacitor passes to environment (soil, water, atmosphere) with the help of heat exchanger. Implementation of thermal pumps make heating system more safe, economic and ecologically safe.

Auth.

10.C10.30. Water flow motion on horizontal permeable bottom. /R. Kiladze/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 109-114. – eng.; abs.: geo., eng., rus.

Surface irrigation in the case of horizontal bottom is considered as unsteady motion of water on permeable bottom which is described with the system of Saint Venan's differential equation. For the solution of this system numerical (finite-difference) methods are used which, when using respective boundary conditions, enable a computer simulation of the process. The results of various versions of irrigation are given in the table.

Auth.

10.C10.31. On estimation of drinking water unit discharge in populated areas of Ajara. /L. Klimiashvili, M. Natsvlivshvili, N. Natsvlivshvili/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 115-118. – geo.; abs.: geo., eng., rus.

The major indices of water supply systems of Khulo, Shuakhevi, Keda, Khelvachauri and Kobuleti populated areas are considered and the values of drinking water unit discharge per inhabitant are recommended.

Auth.

10.C10.32. Estimation of Indices of Tbilisi water supply system reliability. /L. Klimiashvili, M. Natsvlivshvili, I. Klimiashvili/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 119-124. – geo.; abs.: geo., eng., rus.

The characteristic values of Tbilisi water supply system reliable functioning worked by the Georgian Water and Power Company are considered. The number of failures in water mains, their causes, the operation conditions, factors and time of their origination, as well as the total time of disconnections during repair and restoration operations are evaluated.

Auth.

10.C10.33. Analysis of contemporary condition of Telavi City potable water supply. /U. Zviadadze, M. Mardashova, N. Kitiashvili/. Transactions of Technical University of Georgia. – 2012. – #1(483). – pp. 49-54. – geo.; abs.: geo., eng., rus.

Telavi is the biggest city of Kakheti region, with 30 000 inhabitants. The present work considers the question of water supply of Telavi both in the past, when the centralized water supply was practiced, and under the present conditions. Both the quantitative and qualitative parameters of potable water and the alternative, more cost-effective options of water supply are analyzed.

Auth.

C11. Foreign and Domestic Trade. Tourism

10.C11.1. Prospects of development of the mountaineering and ski complexes in the Tergi and Aragvi river gorges. /D. Akhvlediani/. Metsniereba da Teknologiebi. – 2011. – #4-6. – pp. 114-118. – geo.; abs.: eng., rus.

The article presents a programme of the development of the mountaineering and ski complexes of Georgia. The programme is based on a research which should determine: the real existence of the objects to attract tourists; ski and alpine zones and their potential, the length of the tourist season; possibilities of different kinds of tourism: mountaineering, alpine, equestrian, hunting and fishing, boating (rafting), cognitive, ethnographical, ecological, geological, etc. As a result of researches and estimations, the received programme conditions the making of an architectural plan target and follow-up implementation of the project.

Auth.

10.C11.2. Agrotourist market requirements in Georgia. /M.Vadachkoria/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 75-80. – geo.; abs.: geo., eng., rus.

Worldwide experience has demonstrated that agro-tourism and agriculture remain to be priorities in the development of country's national economy. Tourism development in rural areas makes it possible to employ local people and increase the local demand for agro-tourism product. Today, when living conditions in rural areas are complicated and incomes of local residents are low, getting a niche in the agro-tourist markets and offering agro-tourist services become the priority direction in poverty reduction.

Auth.

10.C11.3. On the promotion of competitiveness of agro-tourism management. /B. Gechbaia, A. Devadze/. Metsniereba da Tskhovreba. – 2012. – #1(5). – pp. 88-94. – geo.; abs.: geo., eng., rus.

To date the agro-service market has not been formed in Georgia; agro-tourism development lacks science-based and approved methods. In addition to government authorities, municipalities with tourist potential, regional governments and interested organizations should be involved in the initiation and organization of this business. A list of agro-tourism services would contribute to competitiveness of agro-tourism competitive and in case of proper approach it can compete with both local and foreign tourist services. The development of agro-tourism for Georgia, especially for Adjara, may also promote further development of the entire agricultural sector in the country. The agro-tourism management principles should be based on the concepts of further development of the Georgia's agrarian sector and handling the relevant problems.

Auth.

C12. Transport

10.C12.1. Selecting the track cable for a pendulum tramway. /M. Tsereteli, N. Makharashvili, I. Tsereteli/. Mining Journal. – 2012. – #1(28). – pp. 63-64. – geo.; abs.: rus., eng.

The empirical formulas for selecting the track cable for a pendulum tramway are given. The formulas simplify the calculation of the "virtual" value of the difference of level by finite supports, to which the maximum sag of the track cable corresponds, when the latter rests on a support. After the latter is determined, the calculation of the weight of one meter of the cable makes no problem.

Auth.

10.C12.2. Differential equations of motor car's discontinuous-contact additional motion of brake transmission with clearances. /G. Sharashenidze, P. Kurtanidze, T. Dundua, T. Motsonelidze, G. Usanetashvili/. Metsniereba da Teknologiebi. – 2011. – #4-6. – pp. 103-109. – geo.; abs.: eng., rus.

The work considers an issue of forming differential equations of additional discontinuous-contact motion of electric train motor car's brake transmission. The differential equations of motion according to transmission design model are compiled taking into account the generalized coordinates of motion and deterioration of

swivel elements. The design model with the moving frame enables to generate other types of differential equations of additional motions in order to determine the optimum clearance and permissible dynamic loads.

Auth.

10.C12.3. Tendencies of development of a network of filling stations in Georgia. /V. Kharitonishvili/. Transactions of the Technical University of Georgia. – 2012. – #1(483). – pp. 111-115. – geo.; abs.: geo., eng., rus.

An analysis of methodical approaches to the handling of problems concerning the development of a network of filling stations as simulation of the queuing system development is given. The necessity of working out of science-based recommendations on rational arrangement of filling stations and perfection on their basis of corresponding technical regulations is substantiated.

Auth.

10.C12.4. Logistics complexes and interaction of transport means. /R. Velijanashvili, T. Kokoladze/. Business-Engineering. – 2012. – #4. – pp. 69-73. – geo.; abs.: eng.

The geographical location of Georgia and the length of motor ways crossing the South Caucasus, including the Central Asia transport corridor - the new Silk Road - TPACECA, require the necessity of setting up of a logistics centre, which would undertake information support to the existing transport infrastructure (sea ports, railway, motor roads), establishment of rational links between cargo owners and cargo carriers, as well as collection of information on the traffic of motor road transport and rail rolling stock between transport nodal points.

Auth.

C13. Medicine. Healthcare

10.C13.1. Long-term (6-month) hypolipidemic therapy peculiarities in patients with hypothyreosis in postmenopause period. /M. Balavadze, M. Akhvlediani, D. Gacheciladze, Sh. Avaliani, M. Khubua, N. Edisherashvili/. Actual Topics on Women Health. – 2012. – #1. – pp. 7-10. – geo.; abs.: eng.

The present study aims at revealing long-term (6-month) hypolipidemic therapy peculiarities in women with hypothyreosis taking into consideration the blood lipid metabolism. 156 women in post-menopause (average age 58.4 ± 5.3) were involved with the total cholesterol exceeding 6.2 mmol/l. The patients were divided into 2 groups. Group I consisted of 80 women with subclinical hypothyreosis, where TSH exceeded 4.0 mIU/ml); group II consisted of 76 women with clinical hypothyreosis, TSH being less than 4.0 mIU/ml. Both groups were divided into subgroups. The hypolipidemic treatment with 20 mg atorvastatin was carried out in the women of subgroups I and III, while in II and IV subgroups no specific hypolipidemic treatment was carried out. The patients were given general diet recommendations. The 6-month hypolipidemic therapy with atorvastatin in hypothyreosis appeared to be more affective than diet.

Auth.

10.C13.2. Heterozygous mutation of MTHFR gene and recurrent loss of pregnancy. /M. Janelidze, N. Khochiashvili, N. Phirtskhelani, T. Barbakadze, N. Shurgaia/. Actual Topics on Women Health. – 2012. – #1. – pp. 11-13. – geo.; abs.: eng.

The results of our clinical studies suggest that in case of genetic heterozygous mutation of MTHFR gene in pregnant women, despite normal levels of homocysteine in their blood, the recurrent loss of pregnancy may develop. We believe that this is mainly due to the deficiency of folates in the organism, because an adequate treatment with folic acid has allowed us to achieve in such pregnant a normal development of pregnancy process with physiological delivery of healthy newborns. Based on the foregoing, we conclude that normal levels of homocysteine in blood cannot be a reliable marker to determine the normal level of folats.

Auth.

10.C13.3. Bone mineral density in women with surgical menopause. /M. Zodelava, M. Janelidze, V. Khatiashvili, N. Shurgaia, T. Mamaladze, N. Tskhovrebashvili/. Actual Topics on Women Health. – 2012. – #1. – pp. 14-16. – geo.; abs.: eng.

Natural menopause is the permanent ending of menstruation that is not brought on by any type of medical treatment. However, not all women undergo natural menopause. Some women experience induced menopause as a result of surgery or medical treatments (chemotherapy, pelvic radiation therapy). Medically induced menopause does not offer women the chance to enter menopause gradually. Symptoms produced by premature menopause may be of short or long duration, and can produce physical and psychological distress that impacts the quality of life. Induced menopause at an early age, due to the abrupt cutoff of ovarian hormones, may also result in an increased risk for developing osteopenia and osteoporosis. The primary aim of this study was to determine BMD in women with surgical induced menopause. The study was carried out on the women with surgical menopause from 30 to 50 years ($n = 95$). The women were divided in two groups: I group – women with hysterectomy include bilateral oophorectomy ($n=52$) and II group – women

with hysterectomy with removal only one ovary (n=43). Duration of menopause was from 5 to 15 years. This groups were compared with age-matched control group (n=22). BMD was measured at three sites (distal radius, midshaft tibia and proximal phalanx) using the ultrasound bone sonometer (Sunlight Omnisense). Results were interpreted in accordance with criteria adopted by the WHO by T-score. The mean data of T-score in the group I of women was: distal radius - 2.7±0.12; midshaft tibia -3.1±0.08; proximal phalanx - 3.8±0.13. In the II group T-score was: -1.9±0.05; -2.4±0.05; -2.9±0.04 respectively. In control group decrease of BMD was not so significant, T-score was: -1.2±0.03; -1.1±0.05; -1.5±0.07 respectively. In the both groups of the women with surgical induced menopause BMD was decreased reflecting different degrees of osteopenia and osteoporosis. However, in the group of the women with hysterectomy and bilateral oophorectomy the osteoporosis was more severe and depends on the duration of menopause. While physicians conducting hysterectomies no longer routinely remove otherwise healthy ovaries as a “preventive” measure, there are still many oophorectomy performed, with all following results mentioned before.

Auth.

10.C13.4. Immunological treatment of infertility with limphoimmuno logical method. /N. Rusakova/. Actual Topics on Women Health. – 2012. – #1. – pp. 19-21. – geo.; abs.: eng.

For resorting immunology of the organism of sterile woman and blocking factor of autoserum addition stimulation – immunization with father’s antigens is needed. Limphoimmunotherapy has lots of advantages. The method of immunization by means of purified lymphocytes has been used at Zhordania Institute of Human Reproduction from 2008.

Auth.

10.C13.5. The use of β-adrenoblockers in the treatment of arterial hypertension in pregnant women.

/T. Kezeli, G. Tabidze, T. Tsiadze, N. Dolidze. /. Actual Topics on Women Health. – 2012. – #1. – pp. 22-23. – geo.; abs.: eng.

The literature on the application of β-adrenoblockers for the treatment of arterial hypertension during pregnancy. is reviwed. Decisions concerning the administration of various preparations from this group in pregnant women should be taken with consideration of efficacy in correction of hypertension and safety for fetus and neonate. The review contains a discussion of advantages and drawbacks of the use of β-adrenoblockers for the treatment of hypertension in pregnancy as compared with other antihypertensive drugs.

Auth.

10.C13.6. Treatment of infertility with stem cells. /N. Papidze/. Actual Topics on Women Health. – 2012. – #1. – pp. 24-29. – geo.; abs.: eng.

Infertility is a great medical and social problem of our century. A full diagnosis of infertility requires a long period of time. Today, there is reliable information that infertility can be defeated using stem cells.

Auth.

10.C13.7. Calcitonin gen-related peptide-dependent state of fetus under conditions of experimentally induced pre-eclampsia. /G. Bekaia, E. Sukhishvili/. Actual Topics on Women Health. – 2012. – #1. – pp. 34-37. – geo.; abs.: eng.

It is shown that systemic administration of calcitonin gene-related peptide (CGRP) can reverse hypertension in pregnant rats induced by blocking of nitric oxide production. This effect occurs only during pregnancy but not after birth. Simultaneously, with the decrease in the level of systemic arterial blood pressure, the CGRP significantly reduced the incidence of fetus mortality caused by preeclampsia, although has no effect on the loss of its average weight.

Auth.

10.C13.8. Treatment of viral hepatitis by acetate of magestrol. /I. Omanidze, S. Badzgaradze, M. Mzhavanadze, S. Grigorashvili/. Actual Topics on Women Health. – 2012. – #1. – pp. 41-43. – geo.; abs.: eng.

According to statistics, 200 000 people, and that is 7% of the total population, suffer from hepatitis C in Georgia,. For the combined treatment the Italian medicine “Stromeg” – Acetate of Magestrol 160 mg was used. In all the cases good and satisfactory results were observed.

Auth.

10.C13.9. Monitoring of bone mineral density in women with breast cancer. /G. Tsikhiseli, S. Nizharadze-Tsikhiseli, M. Zodelava, T. Mamaladze, N. Tskhovrebashvili/. Actual Topics on Women Health. – 2012. – #1. – pp. 43-46. – geo.; abs.: eng.

Breast cancer (BC) patients should be particularly alert to the decrease of bone mineral density (BMD), as many BC patients receive treatments that may increase their risk of developing osteoporosis. The aim of the present study was to determine BMD in women with BC, to consider for them adjuvant therapy after

successful treatment for BC with the following BMD monitoring. 80 women with new case histories of BC aged 35-76 years were studied. All the patients were divided into four age-matched groups. BMD was measured at three sites (distal radius, midshaft tibia and proximal phalanx) using the ultrasound bone sonometer (Sunlight, Omni sense). Results were interpreted according to the criteria adopted by the WHO by T score. the mean data for T score in the I group of patients with BC (n=14 age before 45 years) was: distal radius $-0,2\pm 0,02$; midshaft of the tibia $-0,2\pm 0,05$; proximal phalanx $-0,8\pm 0,11$; in the II group (n=24, 46-56 years) T score: $-0,8\pm 0,09$; $-1,8\pm 0,15$; $-1,6\pm 0,11$; in the III group (n=20, 57-65 years) T score: $-1,8\pm 0,18$; $-1,7\pm 0,13$; $-2,5\pm 0,04$; and in the IV group (n= 22, 66 years and up) T score $-2,2\pm 0,14$; $-2,4\pm 0,08$; $-3,4\pm 0,11$ at the same measurement sites respectively. in patients with BC was shown a high rate of decrease of BMD from osteopenia to osteoporotic changes, especially in the older postmenopausal groups, where BC and osteoporosis are common, and although both are dependent on estrogens, this leads to conflicting implications for the treatment: estrogen reduce the risk of fractures but increase the risk of BC. So, it is important that BMD must be determined in all women with BC, follow up monitored and, when necessary, is prophylactic appropriately protected considering their postoperative therapy.

Auth.

10.C13.10. Possibility of bariatric surgery in the treatment of severe obesity complicated by type II diabetes. /Kh. Kaladze, S. Kavtaradze, M. Gogoli/. Actual Topics on Women Health. – 2012. – #1. – pp. 58-60. – geo.; abs.: eng.

This randomized trial with a 1-year follow-up was performed in 45 severe obese patients. 15 patients received standard medical therapy, 15 patients received medical therapy plus gastric bypass, and 15 patients received medical therapy plus sleeve gastrotomy. The main endpoint was a glycated hemoglobin level of $\leq 6\%$ at the conclusion of the trial. The proportion of patients reaching the primary endpoint was 14% in the medical group, 48% in the gastric bypass group, and 39% in the sleeve gastrotomy group. No deaths were reported. Plasma glucose levels, reduction in required diabetic medications, and weight loss were all significantly improved in the 2 surgical groups. Serious complications were more frequent in patients undergoing gastric bypass. A total of 4 patients in the 2 surgical groups required another operation.

Auth.

10.C13.11. Modern views on implants, fixed plate prosthesis in the case of complete adentia. /V. Khutashvili/. Actual Topics on Women Health. – 2012. – #1. – pp. 61-64. – geo.; abs.: eng.

The article presents an analysis of the treatment of further results of 65 patients who had a complete adentia and were treated through removable dental plate prostheses fixed on implants. Studies conducted in groups of patients with different construction and implants enabled to identify the basic principles which have significant influence on immediate and further consequences of treatment. The obtained information allows to raise significantly [according to preliminary calculations 18-20%] the efficacy of the treatment in time. Given that the treated patients had type II, III and IV atrophy according to Oxsmann classification and that alveolar atrophy is an irreversible process, the percentage is rather high.

Auth.

10.C13.12. Expression and intensity of epidermal growth factor in human endometrium. /N. Dznelashvili, A. Mariamidze, D. Kasradze, A. Tavartkiladze/. Actual Topics on Women Health. – 2012. – #1. – pp. 70-73. – geo.; abs.: eng.

The epidermal growth factor was isolated in 1962. Alongside with many other effects, the factor activates the proliferation of granulocytes and hampers their differentiation, inhibiting the production of progesterone, estradiol and inhibin in these cells. It activates proliferation of cultivated placental trophoblasts, not revealing, however, similar effect in respect of their differentiation. The factor also accelerates embryonic development, facilitates proliferation of mammary glands cells and impairs their differentiation. Additionally, Epidermal Growth Factor exerts influence on the uterine endometrium. It can synergistically interact with estradiol; estrogen stimulates EGF synthesis in the endometrium. Excessive amount of estrogen intensifies endometrial proliferation, entailing the augmentation of EGF activity as well as expression of its receptors. Nevertheless, it is capable of operating independently to stimulate epithelial cell growth. EGF is a risk-bearing sign in tumor prognosis; consequently the inhibition of its receptors may decrease the possibility of tumor progression (malignization). The most attractive point for us was to study EGF in the case of endometrial hyperplasia. We have studied 35 women including: 22 patients of reproductive age (27-45) with disturbances of menstrual cycle revealed by menometrorrhagia. The second group consisted of 8 patients of premenopausal age with irregular menstrual cycles and dysfunctional uterine bleeding. Clinical study (endovaginal ultrasound examination) enabled to diagnose endometrial hyperplasia revealed by metrorrhagia. The material for morphologic investigation was obtained by endometrial scraping. Morphological and histological study was carried out as well. Fixation of the material was performed in 4% neutral formalin buffer for 24 h with subsequent embedding in paraffin, 4 μ m thick sections were attached to (placed on) a poly-L-lysine covered glass. Part of the sections was stained with hematoxylin and eosine (H&E). In order to obtain histological samples (specimens) for immunohistochemical investigation, primary

antibodies anti-EGFR (Novocastra; Leica Biosystems Newcastle Ltd., UK) were used. For blocking endogenous peroxidase the sections were deparaffinized and treated with 30% hydrogen peroxidase (10 min). Restoration of antigens was performed using 0.01M citrate buffer allowed for 20 min cooling. It was then washed in triphosphate buffer (Tbs) for 5 min. Incubation by protein blocking was allowed for 5min and then washed in Tbs (2x5 min). Incubation was performed by anti-EGFR dilute solution of 1:5 for 60min at 25°C. Then the solution was washed in Tbs (2x5min) and incubated for 30min using Post primary block followed by washing in Tbs (2x2 min). Subsequent incubation was performed using Novo Link Polymer for 30 min; the solution was then washed in Tbs (2x5 min.) Peroxidase was activated using process solution of diaminobenzidine for 5 min, rinsed with water and the nuclei were stained with hematoxylin (5 min.). Hyperplasia typing was performed on the basis of histological specimens with the clinical variant being determined. Immunohistochemical study revealed the intensity and spread (distribution, expansion) of EGF receptors staining. The intensity was defined as follows: ++ relatively intense staining; + moderate staining; +/- weak staining (Hitoshi Nikura et al.), the percentage being calculated. The numerical data obtained were processed statistically using SPS-12. For comparison, conventional standard was used (Hitoshi Nikura et al. October 20, 1995). Out of 27 patients of reproductive age, simple hyperplasia without atypia was revealed in 13 women; common hyperplasia with atypia – in 2 women; complex hyperplasia without atypia – in 13 women; complex hyperplasia with atypia – in 1 woman. Out of 8 patients of pre-menopause age, 6 women showed simple hyperplasia without atypia, while complex hyperplasia without atypia was seen in 2 patients. In total, out of 35 patients investigated, 19 patients had simple hyperplasia without atypia and 15 patients had complex hyperplasia with atypia. Based on the results obtained, the intensity of EGF was revealed in 100% of the patients. With that, weak expression was observed in 51.4%, while strong expression was seen in 48.4% of the patients. In simple hyperplasia, EGF is revealed with different rate of intensity; however weak intensity seems to be prevalent (11 patients out of 19). It turns out that predominance of weak expression is characteristic of simple hyperplasia. In complex hyperplasia both weak and strong expression was observed. Out of 17 patients with complex hyperplasia 10 showed strong expression, 7 showed weak expression, while 2 patients showed both weak and strong expression of the factor. In atypic hyperplasia (though seen in only one patient) strong expression was seen. Thus it can be concluded that expression of EGF in human endometrium is prominent in 100%; besides, EGF staining intensity increases with the exacerbation of hyperplasia severity.

Auth.

10.C13.13. Chemical aspects of the use of phenolic compounds. /M. Sikharulidze, M. Esaiashvili, I. Chkhikvishvili, S.Skliarenko/. Actual Topics on Women Health. – 2012. – #1. – pp. 74-76. – geo.; abs.: eng. These active ingredients have been found to correct dyslipidemia, normalize the glucose level, and decrease the overproduction of pro-inflammatory free radicals (NO-, superoxide-radicals) in animal and human studies.

Auth.

10.C13.14. Stem cells and prospects of their application in practical medicine. /N. Aleksidze/. Metsnie-reba da Teknologiebi. – 2011. – #4-6. – pp. 121-130. – geo.; abs.: eng., rus. The biological properties of stem cells, their distribution in different organs and tissues, and the up-to-date separation, cleaning, multiplying and conservation technologies are discussed. The achievements of medicine in the treatment of people by using stem cells and the prospects of their application are described in detail.

Auth.

10.C13.15. The effect of age determination and athletic training factors on heart rate. /G. Zubitashvili, D. Chitashvili/. Bulletin of the Georgian National Academy of Sciences. – 2012. – vol. 6. – #1. – pp. 125-128. – eng.; abs.: geo., eng.

The decrease dynamics of the heart rate of judokas with an increase of age is discussed. The degree of influence of age and training factors on heart rate decrease is estimated. It was found that over a 10-year period (8 to 18 years of age) in untrained individual's heart rate decreases on the average by 18 units, which is due to age, while in persons training in judo this index decreases on the average by 23.97 units. In the given age range, for judokas the data on heart rate decrease by additional 5.97 units compared with the untrained persons (23.97-18) is subjected to the effect of training factor.

Auth.

10.C13.16. Damage of cardiovascular system during systemic lupus erythematosus. /G. Chakhunashvili, N. Jobava, A. Bliadze/. Pediatric Cardiology. – 2012 – #6. – pp. 8-14. – geo.; abs.: geo., eng. The articles presents a review of modern literature about damage of the cardiovascular system during systemic lupus erythematosus and concludes that the disease is still of urgency and requires special attention at any age, especially during the neonatal period, in order to intervene in time and prevent upcoming complications.

Auth.

10.C13.17. Early discovery of morphologic (adaptive, pathologic) changes in cardiovascular system and modern governance of training process in young sportsmen. /G. Chakhunashvili, I. Dolidze, N. Jobava, K. Chakhunashvili, Z. Pkhaladze, T. Gogatishvili/. *Pediatric Cardiology*. – 2012 – #6. – pp. 15-20. – geo; abs.: geo., eng.

The article reviews the literature about early dysfunction and morphologic changes in cardiovascular system and modern training processes in young sportsmen (footballers) and focuses on the importance of proper governance of the training process and timely response to even minor such changes.

Auth.

10.C13.18. Status of the cardiovascular system during clandestine vegetative dysfunction and vascular reactivity in young sportsmen (subjects of diagnostic, treatment and prevention). /G. Chakhunashvili, I. Dolidze, N. Jobava, K. Chakhunashvili, Z. Pkhaladze, T. Gogatishvili/. *Pediatric Cardiology*. – 2012 – #6. – pp. 20-24. – geo; abs.: geo., eng.

The article reviews the literature about the cardiovascular system status during clandestine vegetative dysfunction and vascular reactivity in sportsmen children and teenagers (subjects of diagnostic, treatment and prevention), concluding on the necessity of constant physicians' control, perfection of the training process, increasing the restoration rate of the sportsman's organism in order to prevent further complications after irrational physical stress. All above said requires professional cooperation between pediatricians and sports doctors, so that a sportsman gets optimal training process.

Auth.

10.C13.19. Value of Dysrhythmias and Mitral Prolapse Diagnosis in Modern Pediatric Cardiology. /G. Chakhunashvili, N. Jobava, M. Shvangiradze, M. Inasaridze, T. Gogatishvili, A. Bliadze/. *Pediatric Cardiology*. - 2012 - #6. - pp. 25-27. - geo; abs.: geo., eng.

The purpose of research was to show value of dysrhythmias and mitral prolapse diagnosis in healthy sportsmen and diseased children. 250 children with mitral prolapse were observed, 225 of them were diseased and 25 sportsmen. In diseased children with mitral prolapse we had dysrhythmia in 56%. Complex clinical-instrumental research materials on revealing cardiomyopathies, differentiation criterias, with predictors, must be implemented in Georgian High Educational Institutions, Clinical Departments and Sportschools.

Auth.

10.C13.20. Correction of micronutrient deficiency in the treatment of cardiovascular diseases. /Sh. Zarnadze, I. Zarnadze/. *Pediatric Cardiology*. – 2012 – #6. – pp. 28-29. – geo; abs.: geo., eng.

The regulation on the addition of nutrients to foods recognizes that low intakes and even deficiencies exist for some micronutrients within the CVD groups, and that fortification has an important role in addressing such nutritional imbalances. Most rely on approximations of current intakes from conventional foods, food supplements and fortification (where practiced), with conservative assumptions and additional safety factors to minimize the risk of excess intakes in CVD groups, and thus are likely to underestimate the maximum safe level for many nutrients.

Auth.

10.C13.21. A comparative analysis of the physical and functional indicators of basketball players against the background of the action of Apikori preparation. /K. Chakhunashvili, N. Jobava, N. Badriashvili, N. Topuridze, Z. Shakarashvili, G. Chakhunashvili/. *Pediatric Cardiology*. – 2012 – #6. – pp. 30-32. – eng; abs.: geo., eng.

The work studies the role of an amino acid, mineral and vitamin Apikori in sportsmen's rehabilitation, considering the initial health indices. A medical examination of the cardiovascular system in 12 to 18 year-old 100 players under physical load was carried out. The obtained data were entered and analyzed by statistical software SPSS 11-5 The examination demonstrated the positive effects of Apikori on the physical and functional indices of the players.

Auth.

10.C13.22. Dynamics of changes in the immune system during acute viral respiratory infections in children treated with Apipulmo. /G. Chakhunashvili, N. Topuridze, N. Jobava, N. Badriashvili, K. Chakhunashvili/. *Social, Ecological & Clinical Pediatrics*. – 2012 – #14-9-8. – pp. 27-29. – geo; abs.: geo., eng.

The purpose of the research was to study dynamics of the changes in parameters of the immune system of children with acute viral respiratory infections treated with Apipulmo. Enrolled were 60 children aged 1 to 5 years with acute viral respiratory infection. The patients were divided into two groups: group I with 32 patients undergoing symptomatic treatment and group II with 28 patients getting Apipulmo with other basic treatment. The patients were under treatment for 20 days. The test for immunological status was conducted before end after the treatment session. Conclusions: 1. Apipulmo combined with basic treatment significantly

improves cellular as well as humoral Immune status of the patients with acute viral respiratory infections. 2. Adding Apipulmo in the basic treatment contributes to reduction of duration and complications of acute viral respiratory infections.

Auth.

10.C13.23. Immunological testimonies among the children with bronchopneumonia associated with thymomegalia disease treated with Apihepati. /G. Chakhunashvili, N. Badriashvili, N. Topuridze, N. Jobava, Z. Shakarashvili, K. Chakhunashvili, T. Gogilashvili/. Social, Ecological & Clinical Pediatrics. – 2012 – #14-9-8. – pp. 30-32. – geo; abs.: geo., eng.

The aim of the trail research was to study the immune defenses in the children of early age with bronchopneumonia. T- lymphocytes and their subpopulations CD3, CD4, CD8, the percentage levels of B lymphocytes, Ig G, Ig A, Ig M, testimonies in the serum of blood were studied. The results showed that cell immune system was more damaged than humor immune system during bronchopneumonia and that Apihepati, combined with the basic treatment, significantly improved the cellular and humor Immune status of the patients with bronchopneumonia.

Auth.

10.C13.24. The secret of reality of genomic imprinting. /M. Chipadze, E. Imnadze/. Social, Ecological & Clinical Pediatrics. – 2012 – #14-9-8. – pp. 32-33. – geo; abs.: geo., eng.

Genomic imprinting is an epigenetic phenomenon that involves gene expression – only from maternal or paternal pair of chromosomes without altering the genetic sequence. Given, an individual gets only semi-genetic information. This type of the uniparental disomy becomes the reason of losing a copy of the active gene. The appropriate expression of imprinted genes is important for normal development; otherwise it can lead to physical, mental and other health-related problems.

Auth.

10.C13.25. Spreading of subclinical hypothyreosis in pubertal age in Batumi. /T. Rukhadze, S. Glonti/. Social, Ecological & Clinical Pediatrics. – 2012 – #14-9-8. – pp. 37-38. – geo; abs.: geo., eng.

Aim of the research is to study spreading of subclinical hypothyreosis in girls of the pubertal age in Batumi. 112 girls aged 11 to 15 were observed by ultrasound examination of thyroid. TSH, FT4 and AT-TPO were defined in each of the examined girl's blood serum. The research showed a reliable growth of pathology due to subclinical and manifested functional disorders of the thyroid.

Auth.

10.C13.26. Parasitic diseases of children and age. /D. Tskhomelidze, I. Khabeisvili, D. Chakhunashvili, B. Janelidze, M. Kutsia, T. Kasrashvili, N. Nishnianidze/. Social, Ecological & Clinical Pediatrics. – 2012 – #14-9-8. – pp. 39-40. – geo; abs.: geo., eng.

Visceral leishmaniasis is a parasitic disease spread in Georgia, which generally infects children aged 2 to 4. However, since 1996 the number of infected adult people has significantly increased. Worthy of mention is the circumstance that as a result of examinations carried out in different regions of Georgia, visceral leishmaniasis was also detected in children aged 6 months to 2 years.

Auth.

10.C13.27. Rate of occurrence and clinical features of teeth development anomalies in the osteogenesis imperfecta patients. /K. Alania, M. Ivereli, T. Chighladze, N. Abashidze, Kh. Gogishvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 3-6. – geo.; abs.: eng.

A rare hereditary connective tissue disorder – osteogenesis imperfecta (OI) is the reason of tooth (dentine) development anomaly – dentinogenesis imperfecta type IB/DIIB (DI; DGI). Among the studied 19 patients DI clinical symptoms such as tooth discoloration was revealed in 21 (05%/4) persons; early abrasion – 36 (84%/7); peculiar form of teeth crown and root – 21.05%/4; increased constriction of the coronal-radicular junction, obliterated pulp chamber, short and narrow roots – 0%/0; periapical destruction of intact tooth root – 5.26%/1. Therefore, out of the examined OI patients, DI was observed in 42 (10%/8) persons. Adentia – tooth agenesis – is the anomaly of tooth number and is mostly genetically determined. Among the studied patients one case of adentia – 5.26% was detected with the manifestation of clinical symptoms such as tooth discoloration and early abrasion combined with the lack of 15 permanent teeth. The exact etiology of hyperdontia or supernumerary teeth is still unclear, but heredity is believed to be important. Out of the examined patients, one (5.26%) had a supernumerary tooth near the front line of the face (mesiodens). In our case, teeth development anomalies such as DI, adentia and hyperdontia has one genetic basement – hereditary disease OI. According to current literature, it is unknown whether there is any other relationship between them and is the subject of future research.

Auth.

10.C13.28. Foreign body in the appendix (description of a clinical case). /L. Akhmeteli, L. Dzneladze, L. Saginashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 6-7. – geo.; abs.: eng.

Foreign bodies in the appendix are rather uncommon in some reported cases the appendicular foreign bodies were asymptomatic for years. The acute onset of clinical manifestation is more common in the case of sharp and jagged foreign bodies. Small smooth foreign bodies can remain in the appendicular lumen without any symptoms for a long time. A case is reported, when the patient swallowed a nail and after 4 days developed a severe pain in the ileocaecal region. Objective signs were tenderness on palpation of the lower right quadrant with localized positive signs of peritoneal inflammation. An abdominal X-ray revealed a foreign body (nail in the ileocaecal region). With a diagnosis of GI tract foreign body, with possible damage of intestine, an operation was performed. The foreign body (nail, partly in caecum, and partly in the appendix, with the sharp part directed towards the caecum) was found. The foreign body was pushed manually into the appendix and appendectomy was performed. Immediate operative treatment is indicated for all clinically apparent cases. For those cases which are asymptomatic but the sharp foreign body is diagnosed, an operation should be performed to avoid complications. For smooth little foreign bodies in the appendicular lumen, operation can be postponed but planned appendectomy is recommended.

Auth.

10.C13.29. "Malignant" adhesive disease of the abdominal cavity. /G. Azmaiparashvili, G. Tomadze, A. Megreladze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 7-9. – geo.; abs.: eng.

Scar tissue normally is formed within an injured area, as a part of the healing process. Adhesions appear on adjacent surfaces and can connect them. Abdominal adhesions mostly appear after abdominal surgery or inflammation, and pelvic adhesions – after gynecological operations or pelvic inflammatory disease. In few hours after a surgical procedure (or other cause of tissue injury), inflammatory cells and fibrin from the blood are attracted to the site of injury; the end result is a scar formed between two cut surfaces. The same scarring process can start to develop adjacent to the site of injury because of mechanical irritation, drying, foreign bodies (piece of gauze, talc from surgical gloves) or lack of oxygen in the peritoneum – abdominal membrane. In the first days, fibrous adhesions made of fibrin (clotting substance derived from the blood), may appear and cause a temporary bowel obstruction with abdominal pain and constipation. These fibrous adhesions may disappear or develop into permanent fibrous adhesions, made of fibrous tissue from collagen, produced by fibroblasts, which may start to trigger symptoms months or years after surgery. Permanent fibrous adhesions do not likely resolve spontaneously. Three cases of "malignant" adhesive disease of abdominal cavity have been presented. In all three cases, due to existing hyperplastic adhesions, it was impossible to identify anatomical structures of intra-abdominal conglomerate and to perform adhesion lysis (synechiolysis); therefore we called the complication as "malignant". In this case fatal outcome is common. One of the main reasons of this type of adhesions can be traumatic injury and/or inflammation in the abdomen as well as certain predisposition towards hyperplastic synechiogenesis. Preventive measures are minimal traumatization of bowels, adequate antiinflammatory treatment and early postoperative activation of patients. Though all this measures cannot guarantee avoiding of the complication.

Auth.

10.C13.30. The serum level of glucose and insulin in patients with HCV infection. /T. Bochorishvili, E. Vashakidze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 9-11. – geo.; abs.: eng.

The aim of investigation was to study the role of insulin resistance in patients with HCV infection. 130 patients were investigated: 20 with acute hepatitis C; 38 with chronic hepatitis C; 72 with cirrhosis. The study demonstrated that the serum level of glucose and insulin in the patients with liver cirrhosis was higher than in the patients with acute and chronic HCV infection. The monitoring of patients with insulin resistance is to contribute to the prevention of complications and improvement of the quality of life.

Auth.

10.C13.31. HOMA-IR level after antiviral treatment in patients with chronic hepatitis type C. /T. Bochorishvili, E. Vashakidze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 11-13. – geo.; abs.: eng.

The aim of this study is to clarify the associations among the HOMA-IR level and the treatment outcome of pegylated interferon and ribavirin therapy in HCV-infected patients. The serum glucose, insulin and HOMA-IR levels before, during, and after treatment in 30 chronic HCV patients were quantified. Low levels of glucose, insulin and HOMA-IR were associated with a SVR. High levels were significantly associated with a nonresponse to treatment. In patients with relapse HOMA-IR, the level decreased during the treatment and after treatment returned to the initial value. These results suggest that HOMA-IR level identification enables early diagnosis and therapy of insulin resistance and will positively effect the antiviral therapy efficacy.

Auth.

10.C13.32. On the optimization of differential diagnostic algorithms for cheilitis. /M. Borjadze, M. Ivereli, O. Khardzeishvili, N. Abashidze, Kh. Gogishvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 13-15. – geo.; abs.: eng.

On the basis of an extended examination of 102 patients with various lip pathologies based on clinical-morphological algorithm, an optimal scheme of differential diagnostics was elaborated. Based on analysis of the examination results, the authors conclude that the general process (sometimes preferential) of various lip pathologies is inflammation, which, in some cases, may be represented by all featuring components or residual and post-inflammatory changes. Based on the above it may be recommended to include anti-inflammatory agents as the necessary component in the list of remedies against lip pathologies.

Auth.

10.C13.33. Antioxidant activity of celandine growing in Georgia. /A. Bozhadze, V. Mshvildadze, V. Vachnadze, A. Bakuridze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 15-16. – eng.; abs.: geo.

The antioxidant activity of alkaloids – chelidonine, stylophine, protopine and crude extracts #1, #2 were assessed *in vitro* by ORAC assay using AAPH, a generator of peroxy radicals, and *ex vivo* using a cell-based assay. The obtained results indicate that the ORAC value of alkaloid chelidonine is $25 \pm 3 \mu\text{mol TE/mg}$ (for control quercetine is 7.0 ± 0.2). But in *ex vivo* assay chelidonine was not effective – IC 50 value was >100 ; the authors think it is because chelidonine is cytotoxic for normal cells. The study shows that pure alkaloid chelidonine obtained from celandine possesses antioxidant activity and can serve as a raw material for obtaining a biologically active drug.

Auth.

10.C13.34. Ameloblastoma and aspects of its surgical treatment. /O. Bregadze, L. Atskvereli, N. Chuchulashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 17-19. – geo.; abs.: eng.

The authors discuss the aspects of surgical treatment of ameloblastoma and suggest their own position about three types of operational interventions applicable in the case of ameloblastoma. The authors give preference to mandibular jaw block-resection to be added with metal implants, where required. This operation ensures the preservation of the unruptured mandibular bone and achievement of the desired cosmetic and functional effect. In the case of the two reconstructive operations (resection, exarticulation) with auto bone and metal implant, neither cosmetic nor functional effect approaches the norm. The authors report their own clinical case of operational technique and analysis of the post-operational period.

Auth.

10.C13.35. Complications of arterial hypertension and their prevention. /V. Gvantseladze, G. Giorgadze, N. Gvantseladze, T. Janashia/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 21-24. – geo.; abs.: eng.

Case histories of 217 patients hospitalized because of emergency conditions if internal disease were analyzed. The principal causes of hospitalization included: arterial hypertension and its complications in 76 patients (70.7%), ischemic heart disease – 40.7%; cerebral vascular disease – 9.2%. Timely clinical examination and adequate treatment of hypertensive patients are at low level, while preventive measures are a rare event. To reduce the disability and mortality rate caused by hypertension complications, active intervention of the government in the public health system is required to set up a new link equipped with skilled physicians. Also necessary is the raising of patient self-consciousness and improvement of the doctor-patient relations.

Auth.

10.C13.36. The changes of the specific and nonspecific immunity indices during parodontosis. /N. Gogebashvili, L. Jashi/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 24-25. – geo.; abs.: eng.

Upon treatment of parodontosis a study of the changes in indices of nonspecific immunity (the migration of leucocytes in oral cavity, level of desquamation of epithelial cells, SIgA and lysozyme in saliva) and specific immunity phagocytic activity, CD3, CD4, CD8, CD19 of T and B immune system, anti-inflammatory cytokines IL1, IL8, TNFa and interferon system INFa, INFg) has found the appearance of secondary immune deficiency, the degree of which is indicative of the intensity of inflammatory processes that theoretically proves the necessity of immunomodulatory therapy. In this regard it is recommended to use immunotrophic, antioxidant and detoxic phyto-genetic preparations for immunomodulation, which increase the treatment efficacy and provide rapid normalization of specific and nonspecific indices.

Auth.

10.C13.37. Clinical evaluation of osteosynthesis methods used in case of the traumatic injuries of the upper and middle zone of the face. /Z. Gvenetadze, T. Danelia, G. Gvenetadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 27-29. – geo.; abs.: eng.

Despite the great achievements of the maxillo-facial surgeons, the treatment issue of the face upper and middle zone traumatic injuries is still of urgency. The importance of this problem is conditioned by the escalation of the injuries and unsatisfying treatment as a result of which different posttraumatic defects and deformations with abrupt aesthetic and functional disorders tend to develop. The results of treatment are compared in three groups of patients treated by various methods of osteosynthesis. In group I (n=102) osteosynthesis was carried out using wire suture. In group II (n=174) titanic miniplates and screws were used. In group III (n=12) combined methods were used (simultaneous fixation by wire sutures and titanium miniplates). Indications to the use of different osteosynthesis methods are defined, errors and complications in osteosynthesis in the upper and middle zones of the face are analyzed.

Auth.

10.C13.38. Working out the high-performance liquid chromatography. Method for determining the quantity of fluoxetine on the model of human blood plazma. /G. Gvritishvili, L. Kunchulia, B. Chumburidze, M. Jokhadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 30-33. – geo.; abs.: eng.

A high-performance liquid chromatography method of quantitative determination of fluoxetine in the human plasma of Georgian population has been developed with the use of Waters diode array detector (DAD). According to the authors, the applied method makes it possible to measure the concentration of fluoxetine in the human blood plasma within 1-200 ng, which is quite reliable for monitoring the fluoxetine concentration in the plasma of patient's blood for the purpose of safe and effective treatment, also for forensic medicine purposes.

Auth.

10.C13.39. Prospective comparison of mini invasive methods of surgical treatment of amebic liver abscesses. /G. Datuashvili, T. Tabutsadze, G. Lobzhanidze, B. Iremashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 34-37. – geo.; abs.: eng.

This work represents a prospective comparison of the laparoscopic method of treatment of amebic liver abscesses versus percutaneous needle aspiration. Considered is the surgical intervention of amebic liver abscess in the following situations: high risk of abscess rupture, as defined by cavity size greater than 5 cm; left lobe liver abscess, which is associated with higher mortality and frequency of peritoneal leak or rupture into the pericardium; failure to observe a clinical medical response to therapy within 5-7 days and to differentiate from a pyogenic liver abscess. Our study has shown that the laparoscopic intervention may be more effective than percutaneous needle aspiration. There were no complications that usually occur after needle aspiration. The study suggests that laparoscopic intervention may avoid the problems related to intermittent percutaneous needle aspiration. We consider that laparoscopy must become the method of choice in surgical treatment of amebic liver abscess as far as it absolutely enables aspiration, sanation and drainage of the abdominal cavity. Although further proof with a large-scale study is necessary.

Auth.

10.C13.40. Nutrition and social protection of internally displaced persons (IDPs). /T. Darsania, D. Raminasvili, Sh. Zarnadze, B. Kurashvili, I. Zarnadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 37-38. – eng.; abs.: geo.

The study results concerning dietary intake and social condition of IDP communities reveal a significant deficit in their diet of such products as meat, fish, vegetables and excessive consumption of pasta, margarine, and bread. Unbalanced nutrition in this category of population is caused mainly by their poor socio-economic condition – low income and lack of health education. The local governments and relief organizations involved in provision of care and support to the IDPs should intensify efforts to improve the nutritional status of the entire IDPs especially for pensioners.

Auth.

10.C13.41. Lipid exchange parameters, high-sensitivity C reactive protein and cytokines in patients with acute coronary syndrome. /N. Emukhvari, R. Napetvaridze, I. Mamatsashvili, Kh. Khijakadze, R. Miminoshvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 39-41. – geo.; abs.: eng.

Recent studies suggest that immunological and inflammatory processes play a key role in the development of acute coronary syndrome (ACS), which is confirmed by elevation in blood of high-sensitive C reactive protein (HS-CRP) and IL-6 levels. Several studies have demonstrated that these pro-inflammatory factors have prognostic value in patients with acute coronary syndrome. In the present study the levels of lipid exchange parameters, high-sensitivity C reactive protein and IL-6 are investigated and the association between this parameters and ACS severity evaluated. This trial was carried out at TSMU Hospital. We examined 100 patients with acute coronary syndrome: unstable angina, myocardial infarction without ST

elevation and with ST elevated myocardial infarction. In patients were investigated cardiovascular disease risk factors: arterial hypertension, diabetes type 2, dyslipidemia, body mass index, smoking. Hs-CRP and IL-6 levels were determined. Results: serum HS-CRP and IL-6 levels showed a statistically significant difference between the groups UA, STEMI and NSTEMI. Also, our study demonstrated a significant elevation of pro-inflammatory factors in diabetic and dyslipidemic patients with ACS in comparison with non diabetic and non dyslipidemic patients with ACS. We can presume that the increased HS-CRP and IL-6 levels in diabetic and dyslipidemic patients with ACS represent a high inflammatory state and explain the worst prognosis of these patients.

Auth.

10.C13.42. Correlation of gamma-glutamyl transferase concentration with acute coronary syndrome severity and risk factors. /N. Emukhvari, R. Napetvaridze, I. Mamatsashvili, Kh. Khijakadze, R. Miminoshvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 41-43. – geo.; abs.: eng.

GGT an enzyme responsible for the extra cellular catabolism of antioxidant glutathione may participate in atherogenesis. Higher serum GGT is associated with development of cardiovascular disease risk factors. GGT levels also correlate positively with C-reactive protein. This trial was carried out at TSMU Hospital. We examined 100 patients with acute coronary syndrome: unstable angina, myocardial infarction without ST elevation and with ST elevated myocardial infarction. In patients were investigated cardiovascular disease risk factors: arterial hypertension, diabetes type 2, dyslipidemia, body mass index, and smoking. Serum GGT, HS-CRP and lipoprotein levels were determined. Results: serum GGT and HS-CRP levels were higher in acute coronary syndrome patients compared to controls. There was also correlation between GGT and HS-CRP, in subgroup analysis, the higher difference with NSTEMI and STEMI groups than UAP group proposes a relationship between GGT and severity of acute coronary syndromes.

Auth.

10.C13.43. A-V malformation of pelvic blood vessels and a combined operative approach. /G. Vardishvili, L. Mukhigulashvili, L. Kitsmarishvili, E. Aladashvili, T. Ruadze, G. Jinchveladze, M. Kutateladze, K. Kuntelia/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 46-48. – geo.; abs.: eng.

Congenital arterio venous malformation of the pelvic blood vessels is one of the rarely encountered surgical pathologies (pAVM), which is characterized by a high index of morbidity and mortality rates. A 42 year old female patient was admitted in the Department of Vascular Surgery at the Aversi Clinic, Tbilisi, Georgia. Her main complaint was bleeding ulcer from a gigantic pulsatile tumour over the right gluteal region. Initially she noticed an asymmetrical growth of the right gluteus 15 years ago. At present the swelling is characterized by hyper pigmented skin with a trophic ulcer. Irregular rough edges with necrotic ulcer base were noticed in the upper inner quadrant. Angiography of the pelvic vessels, played a key role in diagnosis of the disease. Initially, CT angiogram was done. Vivid malformations were obvious in the right pelvis, comprising the entire right gluteus. The contrasted Inferior vena cava, in its arterial phase is also noticed. During the first stage, therapeutic embolisation of the superior gluteal artery was done with two vascular plugs (AMPLATZER) followed by embolisation of several other branches of the same artery comprising the malformations with 12 COILS. Post embolisation, the second CT shows the disappearance of most of the malformations. During the second stage, open surgery was performed with excision of the malformation. As a result of which, approximately 2/3 of right gluteus was actually excised, the vascularisation of the right gluteus practically disappeared. The gigantic stump of the Right inner artery after embolisation was obvious. The wound was left open for a week, for delayed primary closure and later closed with approximating sutures using local soft tissues. The healing process was satisfactory without any obvious complications. It was completed in 6 weeks. The application of combined endovascular and open surgery have reached the effectiveness of treating high flow complex A-V malformations.

Auth.

10.C13.44. Shiga toxin-producing *E. coli* (STEC) infection and its complications. /E. Vashakidze, T. Megrelishvili, E. Pachkoria, L. Tevzadze, M. Lashkarashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 48-50. – geo.; abs.: eng.

In 2011, 100 hospitalized patients with hemorrhagic colitis underwent observation at the Center of Infectious Diseases, Aids and Clinical Immunology Practical-Research Center. The aim of our research was identification of STEC-strains rate in the structure of hemorrhagic colitis and revealing of clinical features of those cases complicated by HUS. STEC –infection was confirmed by the bacteriological, molecular-biological and serological investigations (PCR an ImmunoCard STAT methods) (NCDC) in case of 50 patients. The laboratory results indicate that STEC is circulating in Georgia. There are not only O157 but non-

0157 strains as well (026,0111, 0103 and etc.) After revealing the shiga toxin molecular markers in the stool by the use of the new and modern laboratory researches (PCR and ImmunoCard STAT) the rate of confirmation of the STEC infection has significantly increased in comparison with the bacteriological researches (41% vs. 19%). STEC infection was characterized by the severe course of clinical manifestation comparatively to the hemorrhagic colitis. Complications developed in case of 32% of patients, out of which HUS was revealed more frequently in women with the history of premorbid background (26%). 5 patients required dialysis. Every patient was cured by complex etiological- pathogenic therapy and there were no cases with lethality.

Auth.

10.C13.45. Antioxidant polyphenols from endemic *Betula megrelica* growing in Georgia. /L. Zardiashvili, M. Jokhadze, J. Kuchukhidze, V. Mshvildadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 50-52. – eng.; abs.: geo.

The methanol extract showed significant activities in antioxidant assays (IC₅₀ 0.28± 0.05 µg/mL) and contained a high level of total phenolic content. The highest DPPH radical scavenging effect was detected in organic ethyl acetate fraction (IC₅₀ 0.12 ± 0.02 µg/mL) followed by chloroform and n-hexane fractions (IC₅₀ 0.62± 0.02 µg/mL and 0.82± 0.02 µg/mL respectively). Those activities were higher than that of α-tocopherol (IC₅₀ 0.37± 0.03 µg/mL) (Table). When considering the organic fractions of *B. megrelica* L., the DPPH radical scavenging capacities increased towards the ethyl acetate fraction with increasing the polarity of the solvent.

Auth.

10.C13.46. Idiopathic duodenal varix as an extremely rare cause of gastrointestinal bleeding. /G. Tomadze, S. Kemoklidze, A. Megreladze, G. Azmaiparashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 52-55. – geo.; abs.: eng.

Duodenal varix results from retroperitoneal ectopic porto-systemic shunt, usually originating from gastroduodenal vein. Although DV are a rare cause of gastrointestinal bleeding, over 40% mortality rate has been reported after the initial bleeding episode. In the majority of cases DV is associated with intrahepatic or extrahepatic portal hypertension and with esophageal and or cardiac varices. We report a case of a 33 old man with no medical history of liver disease but with three episodes of upper GI bleeding. Endoscopy excluded esophageal or cardiac varices. Duodenal varices were identified with endoscopy and ultrasonography. Abdominal scan in angio regime excluded liver disease, portal hypertension and revealed isolated duodenal varices. Bleeding was stopped with conservative treatment. Reported case is interesting because of several reasons: 1. We described duodenal varices with no evidence of portal hypertension; 2. Duodenal varices were isolated, without esophageal or cardiac varices. 3. Bleeding was stopped just with medical means (conservative treatment, PPI).

Auth.

10.C13.47. Postoperative hospital-acquired infections. /B. Iremashvili, Z. Kheladze, G. Gvasalia, Zv. Kheladze, G. Datuashvili, T. Tabutsadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 55-57. – engl.; abs.: geo.

Postoperative hospital-acquired infections (HAI) – also called nosocomial infections occur worldwide and affect both developed and resource-poor countries. The following three factors are the determinants of any of 18 infectious processes: the infecting organism (in surgical patients, usually bacteria); the environment in which the infection takes place (the local response); the host defense mechanisms, which deal systemically with the infectious process. Applying correct strategies for the prevention of surgical site infection help to reduce surgical patients' morbidity, mortality and length of stay, and save cost for the healthcare institutions.

Auth.

10.C13.48. Retrograde jejuno-jejunal intussusception in Braun's anastomosis. A rare postoperative complication. /B. Iremashvili, G. Lobzhanidze, G. Datuashvili, T. Tabutsadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 57-59. – geo.; abs.: eng.

Postoperative enterogastric intussusception following Billroth II gastrectomy is a rare complication. The presented form of intussusception – the case of invagination of the efferent loop through a Braun's side-to-side jejuno-jejunal anastomosis occurs only in 5% of all the enterogastric intussusceptions. This form of intussusception is a quite different type of invagination, not only as to its location but also with respect to its causes and symptoms. Invagination may occur shortly or late following the operation. This invagination may be acute and is characterized by a typical symptom combination of pain in abdomen, haematemesis, high intestinal obstruction and profuse vomiting. A history of gastric surgery can help in making an accurate diagnosis. An early diagnosis and urgent surgical intervention are mandatory.

Auth.

10.C13.49. Prevalence of carbohydrate metabolism disorders in general practice. /A. Isakadze, M. Noniashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 59-61. – geo.; abs.: eng.

The study of prevalence of carbohydrate metabolism disorders (CHMD) in females. Materials and methods. A representative sample of 20-59 year-old female population of the city of Tbilisi was examined using age-specific standardized index, WHO tests and criteria. CHMD occurred rather frequently. Tolerance to glucose was abnormal in 50% of the examinees. Diabetes mellitus affected 20-29 year-old women 4 times more frequently than poor glucose tolerance. An opposite trend was observed for 40-49 year-old women. Relevant prophylactic measures are required for female Tbilisi population.

Auth.

10.C13.50. Sulfonylurea hypoglycemic drugs. /N. Kamkamidze, T. Chikviladze, B. Chumburidze, T. Otashvili, M. Jorjikia, H. Ioramashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 61-64. – geo.; abs.: eng.

Diabetes mellitus is one of the leading medical-social problems of the modern medicine. Index of diabetes distribution in different countries varies from 2% to 6%. In the last years, owing to the progress achieved in diabetes management, patients' lives have been significantly extended, the life quality improved. However, diabetes mellitus of any type remains to be a serious disease and together with observation of healthy lifestyle and nutrition demands a serious treatment. The classification of peroral medical preparations of diabetes type II and the description of pharmacologic groups are presented. Sulfonylurea derivatives, their generation, structure of I, II and III generation preparations, synthesis, mechanism of hypoglycemic effect, connection between chemical structure and pharmacologic effect, methods of qualitative and quantitative analysis are discussed.

Auth.

10.C13.51. The role of intracellular infections in cases of urethritis in males. /E. Kikacheishvili, M. Dzagnidze, E. Mirvelashvili, A. Dedabrishvili, E. Sukhishvili, K. Apridonidze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 64-65. – geo.; abs.: eng.

The importance of intracellular infections in biocenosis of urethritis in males was studied. By luminescent-microscopic methods of research was determined that in 70% of cases mycoplasma and herpes simplex virus took place. Among them – ureaplasma was identified in 65% of cases, Chlamydia – in 55% and cytomegalovirus – in 40%. The obtained results indicate the specific weight of intracellular infection stimulators, especially of mycoplasma and herpes simplex virus. These stimulators were revealed in low titer (+). The recurrent research, showed that the percentage of stimulators and their titers by intensity of luminescence remained to be low. Most likely, intracellular infections of urethritis in males play a part of associated pathologies. Though, high indices of their identification point to the necessity of a complex application of drugs against intracellular infection together with the ethiotropic therapy of urethritis.

Auth.

10.C13.52. History of laparoscopic surgery development in Georgia. /M. Kiladze, G. Pipia, D. Elgandashvili, T. Chartolani/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 66-67. – geo.; abs.: eng.

In Georgia, laparoscopic surgery has been developed since the 90s of the 20th century. The first laparoscopic cholecystectomy was performed in 1993. Since 2000, at the Zurab Tskhakaia Thoraco-abdominal Clinic, nowadays the TSMU thoracic surgery department, the following 21 laparoscopic surgeries have been performed: thoracoscopic apical lung resection (1999); pre-peritonitis plastic of groin hernia, appendectomy, cholecystectomy, correction of acute intestinal obstruction – synechiolysis (2000); primary and post-surgery plastic of ventral hernia, liver segmental resection, transcystic drainage of choledochus (2003); diaphragm esophagus hole hernia plastic (2005); splenectomy, left adrenalectomy, lymphadenectomies of abdominal cavity and retroperitoneal area; correction, seromyotomy and fundopexy for esophageal achalasia (2007); right adrenalectomy, video-assistant right hemicolectomy (2010). To date, laparoscopic surgery is being successfully applied in Tbilisi and over 30 regional clinics.

Auth.

10.C13.53. Evaluation of polyphenols content and cytotoxicactivities of buds of *Populus deltoides* growing in Georgia. /J. Kuchukhidze, M. Jokhadze, T. Murtazashvili, V. Mshvildadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 67-68. – eng.; abs.: geo.

The present study was undertaken to evaluate the polyphenols content and cytotoxicity activity of different organic soluble materials of the methanolic extract of *P. deltoides*. The amount of total phenol content was found to differ for different extracts and ranged from 45.76 mg to 310 mg of GAE/g of extract of *P. deltoides*. Out of all extracts, the highest phenolic content was found in MESR (310 mg of GAE/g of extract) followed by DMSF (225.08 mg of GAE/g of extract). Significant amount of phenolics were also seen in CTSF (111.52 mg of GAE/g of extract), HSF (48.20 mg of GAE /g of extract) and AQSF (44.25 mg of GAE /g of extract).

Auth.

10.C13.54. Hygiene evaluation of the labour terms of the Georgian tobacco production workers. /R. Kverenchkiladze, A. Chikovani, M. Kvatadze, M. Rizhinashvili, N. Tatalashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 68-70. – geo.; abs.: eng.

Factors of work conditions and working process have been investigated. The workplace air is leading factor among occupational factors. Workers are exposed to allergic tobacco dust, the concentration of which exceeds the maximum permissible level (MPL) 1,3-5,7 times. Therefore, the working conditions belong to 3.2 and 3.3 class of hazard. In 72.5%, noise level exceeds the MPL. In total, the working conditions of the studied enterprise belong to 3.1 and 3.2 class of hazard, according to Hygienic Classification. Only several workplaces belong to 3.3 class of hazard. The main reasons of harmful factors are identified, including: technology process peculiarities, poor ventilation, inadequate tightness of the major technological components, etc. Relevant preventive measures were developed, the practical implementation of which would serve as a basis for improving the working condition.

Auth.

10.C13.55. Surgical treatment of postoperative gigantic ventral hernias. /N. Lomidze, I. Gelashvili, I. Tsereteli, Z. Manijashvili, T. Chkhikvadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 71-73. – geo.; abs.: eng.

The concept of modern hernioplasty is the treatment of ventral hernias with tension-free hernioplastic methods. At the Tbilisi State Medical University, treatment with polypropylene mesh has been practiced since 2001. During this time 68 patients have been operated; age – from 30 to 82; men – 26, women- 42. After SWR classification: MW3-4 R1-52 patients and MW3-4 R2-3 – 16 patients. 11 patients had 2-3 concomitant diseases: ischemic disease of heart, atherosclerotic cardiosclerosis, hypertonic disease; diabetes mellitus, obesity II-III degree, hang tummy. In 52 patients the size of hernial sac varied 10X8cm, in 11 patients 18X15, in 5 patients 25X20cm. For hernioplasty we used polypropylene meshes of "Ethicon". All operations were performed under general anesthesia, in 31 patients endotracheal anesthesia was combined with peridural anesthesia. We used two tension free methods: Sublay method (Rives plasty) was used in 32 patients, onlay method (Chevrel plasty) 24; Sublay+onlay combined method in 12 patients. In postoperative period seroma developed in 1 patient operated with sublay method, and in 7 patients with onlay method. In all cases seroma was abolished with puncture under ultrasound guide, puncture was performed 1-3 times. Wound was infected in two patients in whom hernioplasty was performed with onlay method. In 1990 american surgeons reported new reconstruction of anterior abdominal wall with Components Separation method [12,13,15]. In our clinic (2008-2011) 12 patients were operated for gigantic ventral hernia with Ramirez method. After SWR 23 classification: in nine patients size of the hernial sac was 15X10cm (MW3R1), in two patients 18X15 (MW4R1), in one patient 25X20cm (MW4R2). In conclusion tension free hernioplasty gives ability to avoid tension of tissues and increase of intraabdominal pressure while putting organs inside the stomach, this reduces postoperative complications and recurrence. In patients operated with onlay method risk of postoperative complications such as seroma, wound infection, mesh removal is increased than in sublay methods. In reconstruction of anterior abdominal wall with components separation method has all characteristics of tension free method, except strengthening of hernial sac with modern alloplastic material. Thus, while performing gigantic ventral hernioplasties one of the methods of tension free hernioplasty can be selectively used.

Auth.

10.C13.56. Cytotoxic steroidal glycosides from Georgian *Allium rotundum*. /M. Maisashvili, D. Chincharadze, J. Kuchukhidze, M. Jokhadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 74-75. – eng.; abs.: geo.

The MTT test was initially performed with the alkaloids for the determination of the IC₅₀ (a concentration which allows the death of 50% of the treated cells), establishing the starting point for the next experiments, this procedure had to be adopted because there are no previous studies with these substances. The bulbs of dried *Allium rotundum* were extracted with 60% EtOH. The advantages of this extractive method are a more complete extraction of all classes of metabolites and a better fractionation of metabolites that are obtained partially separated in three early fractions. All compounds were first assayed and only the active extracts were submitted to further fractionation. All the fractions from each step of the purification procedure were assayed and the active ones were further fractionated and purified using different methods to obtain pure active compounds. Figure show that compounds [1- 4] possess a relatively similar cytotoxicity against tumor cell lines, with IC₅₀ values ranging from 2.3±0.08 µM (trilin), 3.9±0.1 µM (dideglucoeruboside), 4.7±0.2 µM (aginoside), 5.9±0.2 µM (eruboside B) for HELA.

Auth.

10.C13.57. Effectiveness of BALF cytology using cytospin-prep method for evaluation of parenchymal lung disease. /T. Mamaladze, D. Chkonia, K. Vacharadze, L. Vashakidze, V. Toronjadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 75-78. – geo.; abs.: eng.

Diagnostic difficulties in pulmonary cytology may be compounded by other medical problems, lack of pertinent information, and the presence of rare tumors. In the current study, the authors describe and present BALF as particular diagnostic challenges and diagnostic tool to assist in the accurate diagnosis. The aim of the study is to evaluate different morphological criteria for the distinction between inflammatory, neoplastic and granulomatous diseases, demonstrate the importance of correlating clinical and radiologic findings with the cytologic findings. This review outlines potential pitfalls in pulmonary cytology and presents diagnostic tools to assist in the accurate diagnosis.

Auth.

10.C13.58. “New ischemic criteria” and their metabolic determinants. /N. Mamamtavrishvili, N. Shara-shidze, R. Abashidze, A. Kvirkvelia/. Tbilisi State Medical University’s Collection of Scientific Works. – 2011. – #45. – pp. 78-81. – geo.; abs.: eng.

Myocardial dysfunction in patients with ischemic heart disease (IHD) may be caused by irreversible structural deterioration (necrosis, fibrosis, left ventricular remodeling) as well as by reversible ischemia of myocardium. Manifestations of reversible ischemia of cardiomyocytes may be as follows: hibernation, stunning and syndrome of metabolic adaptation i.e. ischemic preconditioning. The common feature of these pathological conditions is reduction of myocardial contractility with preserved viability of cardiomyocytes. In present paper Pathophysiological determinants of above mentioned ischemic syndromes based on experts opinion and clinical research is analyzed. Perspective of its practical use has been shown. Further in-depth study of ischemic syndromes will contribute to work out and implement new pharmacological methods for myocardium protection from ischemic injury.

Auth.

10.C13.59. Methadone – literature overview. /R. Macharadze, P. Tushurashvili, L. Adeishvili-Andguladze, M. Jokhadze, M. Chichikoshvili/. Tbilisi State Medical University’s Collection of Scientific Works. – 2011. – #45. – pp. 81-85. – geo.; abs.: eng.

Methadone is a long acting opioid. It was first synthesized in 1937 by German scientists Bockmühl and Ehrhart. In 1942 the commercial synthesizing of the drug started under the name Amidone. Since 1954 it is known as Methadone. At the end of the 1940s a full-scale clinical research of Methadone was conducted and its active use in medicine began. It was used as a morphine substitution in cases of acute pain. In the 1960s, a program for the treatment of heroine dependency was developed. The overview contains information of literature sources on methadone’s pharmacological effect, dosage form, use, chronic use symptoms, dosage, pharmacodynamics and toxicology.

Auth.

10.C13.60. The development of methadone extraction methods from biological material. /R. Macharadze, P. Tushurashvili, L. Adeishvili-Andguladze, M. Jokhadze, M. Chichikoshvili/. Tbilisi State Medical University’s Collection of Scientific Works. – 2011. – #45. – pp. 85-87. – geo.; abs.: eng.

The goal of this study was the development of isolation methods for methadone from biological liquids. Two methods, liquid-liquid extraction and solid phase extraction (SPE) were developed. We have studied the effect of methadone extraction conditions on the isolation and experimentally found that the best extractant for methadone is a chloroform-isopropanol(9:1) mixture with pH=9. And for the SPE we have used the vacuum manifold Supelco, with silicagel C-18 solid phase and dichloromethaneisopropanol- ammonia (72:26:2) mixture as a solvent.

Auth.

10.C13.61. Internal hernias. /A. Megreladze, G. Tomadze, G. Azmaiparashvili, S. Kemoklidze/. Tbilisi State Medical University’s Collection of Scientific Works. – 2011. – #45. – pp. 87-89. – geo.; abs.: eng.

Internal hernia is a rare disease (less than 1% of all hernia cases) and can cause small-bowel obstruction in 5-8% and (1,2). These hernias may be either congenital or acquired. This condition involves herniation of a viscus, usually the small bowel, through a normal or abnormal aperture within the peritoneal cavity. This herniation may be persistent or intermittent. Because of the risk of strangulation of the hernia contents, even small internal hernias are dangerous and may be lethal. First description of internal hernia belongs to Austrian W. Treitz, who described the disease in 1857 (9). We present three cases of internal hernias. All of them underwent emergency operations because of ileus. In one case the reason of ileus was incarceration of small bowel in the defect of mesocolon, in second case the reason was right sided paraduodenal hernia and in the third case – retrocecal internal hernia. We confirm, that internal hernias are difficult to diagnose with both clinical and imaging studies. Treatment is just operative. In the vast majority of cases the reason of operations is ileus. Hernia elements should be separated very carefully, since they might contain main vessels of vital importance.

Auth.

10.C13.62. Clinical course and epidemiological peculiarities of leptospirosis in Georgia. /T. Megrelishvili, E. Vashakidze, N. Mamuchishvili T. Khuchua, M. Machankaladze, G. Korkotashvili, M. Kvitashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 89-91. – geo.; abs.: eng. The article considers a recent course of sporadic leptospirosis cases. The severity of clinical course is determined by polyorganic defeat of constitution in the early stage of disease. Almost in half of patients the development of acute liver insufficiency in the first week of disease is observed. The heaviest outcome is caused by hemorrhagic component and central neural systems defeat.

Auth.

10.C13.63. Interleukin-10 and interleukin-12 level changes in peripheral blood following antiviral treatment in patients with chronic hepatitis type C. /I. Mikadze, E. Vashakidze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 91-93. – geo.; abs.: eng.

The aim of this study was to clarify the associations among serum cytokines levels and treatment outcome of pegylated interferon and ribavirin therapy in hepatitis C virus HCV-infected patients. We quantified serum cytokines before, during, and after treatment in 30 chronic HCV patients. High levels of IL-12 were associated with a SRV. Conversely, high baseline IL-10 levels were significantly associated with a no response to treatment. In multivariate analysis, low IL-10 and high IL-12 levels were independently associated with a SVR. These 2 cytokine levels were decreased from baseline levels 12 weeks into treatment and remained low in patients with a SVR. These results suggest that serum IL-10 and IL-12 levels are predictive of the response to HCV treatment with pegylated interferon and ribavirin.

Auth.

10.C13.64. The role of interleukin-10 and interleukin-12 in immunopathogenesis of hcvinfection. /I. Mikadze, E. Vashakidze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 93-95. – geo.; abs.: eng.

The aim of investigation was to study cytokine-producing ability of blood immune cells in type of viral hepatitis C, correlation with the degree of hepatic lesion and liver cirrhosis. 130 patients were investigated: 20 with acute hepatitis C, 38 with chronic hepatitis C and 72 with cirrhosis: among them 10 with Stage A, 14 with Stage B and 48 with Stage C. We used 30 healthy people as the controls. The results suggest significant changes of cytokine-producing ability of blood immune cells type of viral hepatitis C. The results showed that various types of chronic viral hepatitis C and stages of cirrhosis were associated with misbalance in production of anti-inflammatory and pro-inflammatory cytokines, i. e. a significant rise of IL-10 and IL-12 concentration, which were the most prominent in cases of severe hepatic lesion.

Auth.

10.C13.65. Imaging-guided percutaneous core biopsy of thoracic lesions. /M. Mizandari, T. Azrumelashvili, D. Magalashvili, T. Macharashvili, N. Onashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 95-99. – geo.; abs.: eng.

Purpose: Guidance techniques, approaches, possible complications of Imaging Guided Percutaneous Thoracic Lesion Core Biopsy (IGPTLCB) are outlined Material and Methods: IGPTLCB was performed to 52 patients using 18 G diameter cutting-aspiration biopsy device or biopsy gun; among them 18 (34,6%) Pulmonary and Pleural lesions, 2 (3,8%) – rib pathology, 32 (61,6%) – mediastinal lymphadenopathy; anterior mediastinum – 10 (19,2%), middle mediastinum – 9 (17,3%), and 13 (25,0%) posterior mediastinum. Ultrasound for procedure guidance was used in 23 cases; among them – ‘Free Hand’ technique 11 (47,8%), and needle guide technique – 12 (52,1%). Among Ultrasound guided Core Biopsy – anterior mediastinum – 8 (34,7%) cases (in all cases needle passed extrapleurally), pulmonary and pleural lesions – 13 (56,5%) and rib pathology – 2 (3,8%) In all cases lesions were located adjacent to the thoracic wall and were reachable for Ultrasound guided biopsy. CT for guidance was used in 29 cases (when Ultrasound failed to image the ‘target’). 2(6,9%) patients – anterior mediastinum lesions, 9(31,0%) – middle mediastinum, 13(44,8%) – posterior mediastinum and pulmonary/pleural pathology – 5(17,3%). Intercostal approach, adjacent to the sternum (needle passed extrapleurally) was used in 2(6,9%) anterior mediastinum cases and intercostal area approach ranging from paravertebral, scapular anterior, middle and posterior axillary line was used in all other cases. The safe puncture site was selected after vessel imaging by intravenous contrast injection, using skin markers; biopsy needle was inserted in axial plane in the depth and by the angle, determined on CT image. In transpleural cases the first step insertion depth was selected so that the needle should not penetrate pleura; after this control CT was performed to document the correct puncture direction and the direction was corrected if needed. The needle tip, located beyond the ‘target’ and the position of the deepest insertion was also documented on CT. Results: Adequate tissue material was received in all cases. The procedure was easily tolerated by patients, the significant pain, requiring administration of additional analgetics was mentioned in 4 (7,7%) cases. Ultrasound guided procedures had no complications; the pneumothorax was documented in 7(13,5%) cases of CT guidance total; among them only 2 (3,8%) patients required the subsequent treatment. Conclusions: IGPTLCB is effective and minimally invasive; other techniques for thoracic lesion core biopsy should be used only in IGPTLCB failure cases. The

advantages of Ultrasound guidance are possibility of real-time imaging, noninvasiveness and cost-effectiveness; this technique cannot be used if the lesion is not adjacent to thoracic wall. The advantage of CT guidance is the possibility of visualization of all thoracic structures. When the adequate guidance technique used, IGPTLCB is a safe procedure and should be recommended for wide use in selected patients. Ultrasound should be used for procedure guidance if the "target" can be adequately imaged by this technique.

Auth.

10.C13.66. Reflux esophagitis illness rehabilitation results. /N. Saakashvili, I. Chabashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 101-102. – geo.; abs.: eng.

In order to determine the therapeutic effect of "Ladzgveria" mineral water, a study under hospital conditions of 35 patients with reflux esophagitis was carried out. "Ladzgveria" is low-mineral sulphate-calcium-magnesium-aluminum water. According to the study, the water has a very high rate of therapeutic effect (88.2%). The treatment proceeded with clinical and endoscopic image improvements. It has an anti-inflammatory action, causes improvements of the esophageal sphincter muscles functions and of internal pressure and acidity regulation of stomach. For that reason, in the case of reflux esophagitis it is necessary to give preference to natural hard composite natural mineral waters, especially to "Ladzgveria".

Auth.

10.C13.67. The endocrinic effects of the mineral water "Lashichala" in patients with diabetes melitus type 2. /N. Saakashvili, I. Chabashvili, T. Matsaberidze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 102-103. – geo.; abs.: eng.

The therapeutic action of "Lashichala" mineral water on 80 patients with diabetes mellitus type 2 was studied. Light forms of diabetes were detected in 13.9% patients and medium in 86.1%. The treatment had a positive effect on diabetic patients. The higher the level of sugar in blood the better the sugar-level lowering effect of the water was detected. Since the insulin regulation feature of "Lashichala" is observed in 10-20 minutes following the water consumption, we recommend to diabetic people to drink the mineral water 10-20 minutes before eating. The "Lashichala" mineral water is to be regularly used as a preventive and therapeutic means to increase chances of avoiding further complications in diabetic patients.

Auth.

10.C13.68. A rare case of Crohn's disease. /L. Saginashvili, L. Akhmeteli, L. Dzeladze, N. Khotenashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 103-105. – geo.; abs.: eng.

Crohn's disease is a chronic transmural disease of unknown etiology of the gastro-intestinal tract. It can affect any area of the GI tract, from the mouth to the anus, but most commonly affects the lower part of the small intestine and colon. The case of a 38-year-old woman with multiple complications of Crohn's disease such as perforation of small intestine, malignant transformation, bowel obstruction, toxic dilatation of the colon, dermatitis and perianal fistulas is reported. She underwent several operations and died in 7 years from severe malabsorption and malnutrition. There is no surgical cure for Crohn's disease. Surgery is used primarily for Crohn's diseases' complications. Resection of the intestine does not reduce a possibility of recurrences (50% of patients can expect to have a recurrence of symptoms within four years of surgery) and it can lead to the short-bowel syndrome. That is why the main goal is to spare the length of the intestine and keep it functioning.

Auth.

10.C13.69. Cardiac manifestations of the Fabry-Anderson-syndrome. /N. Katamadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 105-107. – geo.; abs.: eng.

Fabry-Anderson-Syndrome is the X-linked hereditary sphingolipidoses caused by lysosomal enzyme alpha-galactosidase A (Ceramidase) deficiency. The disease consists in the accumulation of the so-called Gb3 and/or GL3 mainly in the cardiac muscle and kidneys, also in the endothelium of blood vessels, nerve cells and skeletal muscles. Cardiac manifestations are so standard that making of a reliable diagnosis is rather complicated and often requires joint efforts of cardiologists and genetists. The Fabry-Anderson disease is suspicious if hypertrophic cardiomyopathy is mixed with the following clinical manifestations: microalbuminuria, proteinuria and kidney chronic failure of the unknown etiology; early insult (till 55 of age); angiokeratoma (especially in the lower third of abdomen, groin area and buttocks); arterial hypertension; acroparesthesias, cold and heat intolerance, frequent burning or freezing; hypohidrosis; vision and/or audio disorders; loaded anamnesis. Diagnostics is of crucial importance as it gives the possibility to manage this incurable disease (with α -Galactosidase A, created by genetic engineering).

Auth.

10.C13.70. Influence of esophageal motility on the method of cardiospasm's treatment. /S. Kemoklidze, G. Tomadze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 107-109. – geo.; abs.: eng.

The treatment for cardiospasm (achalasia) is based on the principle that there is an abnormal sphincter which causes obstruction and that weakening, but not destroying it completely, improves esophageal emptying even though the underlying pathology itself cannot be changed. Dilatation of the lower esophagus and its treatment were described by Willis in 1672. The first successful surgical procedure was performed by a German surgeon, Ernest Heller, on 14 April 1913 through a laparotomy and consisted of a double myotomy. The article analyzes 922 cases of cardiospasm and reveals that motility of esophagus can determine a method of treatment. According to obtained results, in case of normal esophageal motility pneumodilatation gives good results. If cardiospasm is with increased motility, method of choice should be Heller's myotomy with Nissen's fundoplication. When motility is decreased, preference should be given to Heller's myotomy with partial fundoplication.

Auth.

10.C13.71. Treatment of children diarrhea in hospitals and primary health care centers of some regions of Georgia and its compliance with WHO's recommendations. /N. Kavlashvili, M. Kherkheulidze, K. Sharangia, E. Kandelaki, T. Parulava, I. Shalamberidze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 109-111. – geo.; abs.: eng.

The article aims at analyzing compliance of management of acute diarrhea in children with WHO's treatment guidelines. A questionnaire-based, cross-sectional survey was conducted in hospitals and out-patient clinics. 153 questionnaires were analyzed (26% – hospitals, 74% – out-patient clinics). The majority of respondents defined diarrhea (69%) and classified severity of dehydration (75%) correctly, 25% mixed up signs of moderate and severe dehydration. 88% uses ORS, only 51% follow WHO recommendations on fast rehydration. 75% do not know benefits of low osmolarity ORS. 42% hospital staff uses IV rehydration in case of moderate dehydration. 94% of respondents use probiotics, 35% – antiemetics, 27% – antidiarrheals, 45% – antimicrobial drugs, from those 65% uses them during bloody diarrhea. The majority does not use Zinc. Most respondents advise continuation of breastfeeding, 32% prescribe lactose free formula. In elder children restrictions in diet are still in practice. The primary level health care providers adhere to the WHO recommendations better than hospital doctors. The results show that WHO recommendations on using ORS and continuation of breastfeeding are most followed. The problematic issues are the excessive use of antibiotics and IV fluids, no use of zinc, unnecessary use of antidiarrheals and antiemetics.

Auth.

10.C13.72. Determination of *in vitro* release of ofloxacin containing medical preparation "Kafra" and its analogs using a high-performance liquid chromatography technique. /T. Chikviladze, Sh. Tskhadadze, B. Chumburidze, D. Chinchradze, N. Lashauri, T. Otarashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 111-113. – geo.; abs.: eng.

In modern medicine the growing use of fluoroquinolones conditions their broad antibacterial spectrum, high capacity of absorption from bowels, comparatively low toxicity and unique mechanism of action – capacity of inhibition of DNA gyrase that causes death of a microbe (bactericidal effect). Fluoroquinolones are distinguished by high penetration capacity in lungs tissue, tissues of urogenital organs, bones. Ofloxacin is one of the most experienced and successful preparation of fluoroquinolones group. Purpose of investigation was – comparison of *in vitro* release of 400 mg tablets of "Kafra" containing Ofloxacin, produced by the Georgian pharmaceutical company "GMP" and its analogs "Tarivid" and "Oflohexal" by using the high-performance liquid chromatography technique. According to the received results, average percentage release of "Kafra" is 97.41%, "Oflohexal" – 99.96% and of "Tarivid" – 100.47%. Inclination in comparison with Oflohexal is 2.5 %, as compared with Tarivid – 3.1% (norm \pm 5%). "Kafra" 400 mg tablets containing Ofloxacin produced by the Georgian pharmaceutical company GMP are characterized by good release quality.

Auth.

10.C13.73. L type calcium channel-blocker – Amlodipine. /A. Tsertsvadze, T. Chikviladze, B. Chumburidze, T. Otarashvili, M. Jorjikia, H. Ioramashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 114-117. – geo.; abs.: eng.

Calcium channel blockers are used in cardiology for more than 40 years. Their broad use in clinical practice is conditioned by high anti-ischemic and antianginal action. Calcium antagonists are therapeutic agents group, which have similar action mechanism though they differ by pharmacokinetic parameters, tissular selectivity, and effect on frequency of heartbeats. By the authors' group in the work is presented classification of Calcium blockers. Have been discussed 1,4 Dihydropyridine derivatives and their III generation preparation – Amlodipine. Has been given a comparative characterization of Amlodipine maleate and besylate, history of their creation, optical isomers of Amlodipine and mechanism of their pharmacologic

action. Have been presented Amlodipine synthesis, firm preparations. Have been discussed connection between chemical structure and pharmacological action, methods of qualitative and quantitative analysis.

Auth.

10.C13.74. Characteristics of the distribution of nervous system diseases in the ammonium nitrate production workers. /M. Tsimakuridze, D. Zurashvili, M. Tsimakuridze, E. Maisuradze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 117-120. – geo.; abs.: eng.

The frequency of spread of nervous system diseases among the workers' of ammonium production has been studied. It is established that the diseases caused by industrial physical hazards (industrial noise, vibration, high temperature and industrial aerosols) belong to a group of disorders known as work-related diseases.

Auth.

10.C13.75. Phototherapy and pulse currents in the treatment of patients with scalp psoriasis. /N. I. Tsiskarishvili, A. Katsitadze, N. V. Tsiskarishvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 120-123. – geo.; abs.: eng.

The search and implementation of new effective and safe treatment of psoriasis remains an important issue in dermatology. Recently, in the treatment of this pathology medium wavelength UVA – narrow-spectrum emission of 310-315 nm with a maximum emission of 311 nm (UVA -311 nm) has been increasingly used. The effectiveness of 311 nm wavelength phototherapy of local hand-foot psoriasis was demonstrated in 2007. At the same time the important role of stress, which leads to psychological, physiological, and social disadaptation has been observed in a substantial number of psoriatic patients. We did not find any data concerning the effectiveness of phototherapy with the combined use of pulsed currents in treatment of scalp psoriasis for the medical and psychological corrections of patients. Based on the above-mentioned the aim of this study was: jointly with physiotherapeutic action on the CNS to establish the effectiveness of local phototherapy of the scalp psoriasis. To conduct sessions of phototherapy in patients with scalp psoriasis medium wavelength (280-320 nm with a maximum emission of 311 nm) UVA-comb has been used. Physiotherapeutic effects on the CNS were provided by means of transcranial direct current having certain characteristics and causing in patients the state of relaxation. The following methodical approach has been used for treatment of patients: three times a week all of them underwent to 311 nm UVA sessions (Dermalight 80 with a maximum emission of 311nm). Depending on skin type, the initial dose of UVA exposure was 0.05 - 0.15 J/cm², and depending on tolerability and efficacy of treatment, one-time increase of the dose of exposure was 0.05 -0.15 J/cm². Subsequent course of physiotherapeutic actions on the CNS consisted of 5-11 sessions with a frequency of 2-3 times per week for the first 5-6 procedures. Depending on the effectiveness of treatment, patients received 2-5 courses. 18-65 years old 25 patients (15 men and 10 women) with a1to 5 years duration local scalp psoriasis were followed up. Complete clinical cure was achieved in 70% of cases (17 patients), significant improvement – in 20% (5 patients) and improvement – in 10% (2 patients). Tolerability was good. We have shown a positive effect of this method to the general course of dermatosis (including a lengthening of re36 missions) and improvement of the emotional state of patients. After about the 6 months of treatment the proposed method allows to reduce the number of exacerbations in 1.5 – 2 times, and in case of further treatment by pulse current, provides the further improvement of results in longer periods.

Auth.

10.C13.76. Etiology of cholangiogenic liver abscesses. /I. Tsereteli, N. Lomidze, I. Gelashvili, Z. Manijashvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 123-125. – geo.; abs.: eng.

Biliary obstruction with hypertension and infection is the main cause of liver cholangiogenic abscesses (81.2%). Development of biliary hypertension in the patients with transhepatic or other type drainages (30) due to various reasons indicates the presence of stricture or tumor relapses (83.3%) and is the main cause of cholangiogenic liver abscesses. Also, frequent episodes of cholangitis and bacteriocholia in the small group of patients (13, 16.7%) with no biliary obstruction and hypertension (during bilio-digestive anastomoses and the damage of Vater papilla sphincter apparatus) are the etiologic factor for cholangiogenic liver abscesses.

Auth.

10.C13.77. Autoimmune process to collagen I during parodontitis. /L. Jashi, M. Iverieli, N. Abashidze, N. Gogebashvili, N. Adamia, Kh. Gogishvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 125-127. – geo.; abs.: eng.

During generalized parodontitis the inflammatory process caused by microorganisms helps to the development of an immune reaction against collagen I. This causes the destruction of collagen I, sensibilization of adhesive receptors, proliferation of antigen-reactive lymphocytes, and production of AAT. The intensity of above mentioned process correlates with the degree of generalization of the process. That's

why it is important to determine the titers of AAT to collagen I, for prognoses of relapses during generalized parodontitis, determining the gravity of process and efficiency of the treatment.

Auth.

10.C13.78. Prevalence of allergic rhinitis and its severity in adolescent population of Tbilisi. /M. Kherkheulidze, N. Adamia, I. Chkhaidze/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 129-132. – geo.; abs.: eng.

Aim: assessment of prevalence of allergic rhinitis and its severity in adolescents. Cross sectional study was conducted in randomly selected groups of adolescents using special questionnaire and VAS. 880 adolescents aged 14-17 were questioned, VAS questionnaire were performed only in cases with rhinitis signs. Rhinorrhea was revealed in 14,5%, sneezing in 13,2%, nasal itching in 13,75%, obstruction in 13,1% and non nasal symptoms in 4,4 % cases. Allergic rhinitis symptoms was significantly higher in boys ($p < 0,05$). Prevalence of allergic rhinitis in adolescents was 15,6 %, symptoms of allergic rhinitis worsened in spring and autumn. Average nasal severity score was 4.5 (3.2–5.6). In 73.9% of adolescents rhinitis symptoms affected quality of life, with strong correlation with the severity of nasal obstruction. Adolescents with a diagnosis of allergy had slightly but significantly ($P < 0.005$) greater VAS levels than those who did not have a diagnosis of allergy, but have the symptoms. So Prevalence of allergic rhinitis in adolescent population of Tbilisi is 15,6%. The prevalence show increasing tendency. The nasal symptoms of rhinitis are significantly frequent comparing with non nasal symptoms. Nasal obstruction has significantly higher impact on impairment of sleep, work and social activities then other nasal and non nasal symptoms.

Auth.

10.C13.79. HBV spread in seafarers. /G. Chkonia, I. Zarnadze, Sh. Zarnadze, L. Lomtadze, M. Kajrishvili/. Tbilisi State Medical University's Collection of Scientific Works. – 2011. – #45. – pp. 132-134. – eng.; abs.: geo.

According to some research, the number of inactive carriers is much higher than active disease manifestation in seafarers. The reason of high percentage of inactive carriers among seafarers is supposedly immunodepression caused by special conditions of labor on board. It is well known that virus reactivation among inactive carriers in case of immunodepression takes place in 20-30% of cases. Taking into consideration the above, the virus reactivation might be observed in the inactive carrier seafarers, especially on vessels transporting hazardous goods. It should be also noted that HBsAg inactive carriers are liable to an increased epidemiological risk in closed circumstances as board of ship. Statistics show that the hepatitis B virus is about thirty times more infectious than HIV/AIDS.

Auth.

10.C13.80. Bentonites and zeolites in medicine. /I. Khurtsilava, E. Buadze, N. Abuladze, N. Pailodze, G. Shvangiradze, R. Bochorishvili/. Proceedings of the Georgian National Academy of Sciences. – Chemical Series. – 2012. – vol. 38. – #1. – pp. 122-125. – rus. abs.: geo., eng.

The article deals with the application of bentonite and zeolite in medicine. It highlights the medical field where these minerals are used. Particularly, is considered the usage of bentonites as compounds of various medical ointments, therapeutic and prophylactic agents for diaper rash. Bentonites are designed as the boogies lubricants and catheters to protect the skin from the influence of various irritants, as an astringent in disorders of the gastrointestinal tract, etc. It is confirmed that zeolites are widely used in food supplements, in tooth paste, for medicinal preparations and so on.

Auth.

10.C13.81. Results of radical cystectomy with Mainz pouch II diversion (single institution experience). /G. Zhvania, Sh. Mshvildadze, G. Managadze, G. Khvadagiani/. Georgian Medical News. – 2012. – #10(211). – pp. 8-13. – eng.; abs.: geo., eng., rus.

Evaluation of the peri- and postoperative morbidity in patients who underwent radical cystectomy and sigma-rectum pouch (Mainz pouch II) diversion with curative intent for invasive bladder cancer. We've reviewed 320 patients with invasive bladder cancer who underwent radical cystectomy with lymphadenectomy and urinary diversion in our clinic from 1988 to 2011. In 134 (41.9%) patients Mainz pouch II diversion was performed. The results and complication rates have been analyzed in these patients. Intraoperative injury of the rectum occurred in 2 (1.5%) patient, early complications were found in 40 (29.9%) and late complications in – 5 (3.7%) patients. Oral alkalization was necessary in 30 (22.4%) cases. 9 (6.7%) patients were hospitalized because of severe acidosis. Acute pyelonephritis developed in 8 (5.9%) patients. Hydronephrosis developed in 15 (11.2%) cases. In 7 (5.2%) patients dilatation of upper urinary tract was bilateral and in 8 (5.9%) – unilateral. In 4 (2.9%) patients stricture of the ureteral anastomosis was diagnosed. All patients were dry at day time. Only three (2.2%) patients (2 male and 1 female) needed pads at night time. All of these three patients were above 70 years old. Two patients underwent surgical intervention for interintestinal abscess. One patient was operated because of mechanical bowel obstruction 2 month after surgery. Perioperative mortality was 3.7%. Mainz Pouch II has a low morbidity and mortality rates. This form of diversion is method

of choice for patients in whom the urethra cannot be used. In selected cases Mainz Pouch II is alternative to other types of continent diversion.

Auth.

10.C13.82. Body mass of pregnant as a risk factor for the development of obstetric complications. /G. Shelia, M. Beshkenadze/. Georgian Medical News. – 2012. – #10 (211). – pp. 14-17. – rus.; abs.: geo., eng., rus.

To elucidate the specific courses of the course of pregnancy and labor in patients with obesity and inadequate body mass. 280 women (pregnant females aged 17-38) clinically followed up for pregnancy and labor. The nutritional status was estimated by the Quetelet index (QI). Complications of pregnancy were more common in females with insufficient and excessive body mass. There are gestational diabetes, gestoses, uterine inertia, fetal macrosomy and perinatal mortality was observed in 67 % of the obese women, total number of spontaneous abortions was 9 % cases, in females with inadequate body mass. The neonatal outcomes of pregnancy and complications of labor were better in the pregnant females, who had normal QI. Thus, insufficient and/or excessive body mass is premorbid negative background and risk factor for the development of obstetric complications. Further studies will allow us to get answers to some of the issues raised and to the management of pregnant women with obesity and low levels of IQ.

Auth.

10.C13.83. The importance of local and general factors in development of inflammatory periodontal diseases in children and adolescents. /T. Shishniashvili, Z. Tsagareli, N. Khimshiashvili/. Georgian Medical News. – 2012. – #10 (211). – pp. 18-22. – rus.; abs.: geo., eng., rus.

The aim of the study was to investigate the influence of local and general adverse risk factors and their role in the development of inflammatory periodontal diseases in children and adolescents. The study of the dental status among 618 school children, 9 to 15 years of age has been performed. The obtained results revealed an ambiguous influence of general and local risk factors on the development of inflammatory periodontal diseases. Namely, among the general risk factors the main role is given to hormonal functioning state of juvenile age (26.5%) – (arrhythmia formation of hormonal activity). Among the local risk factors inducing inflammatory periodontal diseases at young age, the most significant are tooth-jaw anomalies (32.2%), especially – dental occlusion pathology, lips' bridle attachment anomalies, absence of interdental contacts, small vestibule of the mouth and so on. Poor oral hygiene, however, is also a significant factor in all age groups. Definition of the role and importance of general and local risk factors, taking into consideration patient's age, is of great importance in organization of early prevention, giving the possibility to predict disease possible development, choose most appropriate way to treat the specific situation, reduce the need of complex treatment and improve treatment outcomes.

Auth.

10.C13.84. Multimodal approach to anesthetic management of long-term operative interventions. /J. Sabirov, V. Sharipova/. Georgian Medical News. – 2012. – #10 (211). – pp. 28-33. – eng.; abs.: geo., eng., rus.

The aim of our investigation is the evaluation of multi-modal approach to anesthetic management during general anesthesia in comparison to traditional general anesthesia. 40 patients being inpatient to RRCEM from 2008 to 2009 have been investigated. Patients were divided into two groups according to the method of anesthesia performed: patients (n=20) who underwent multi-modal anesthesia; patients (n=20) of control group who underwent traditional general anesthesia. Multi-modal anesthetic management with the force to all parts of pain pathogenesis promotes the stability of hemodynamic indications in post-operative period, to minimum tension of homeostasis, less expressed reaction of sympathoadrenal system due to good neurovegetative protection.

Auth.

10.C13.85. Impaired fasting glycaemia as a risk factor of coronary heart disease. /S. Sultanova/. Georgian Medical News. – 2012. – #10 (211). – pp. 33-37. – rus.; abs.: geo., eng., rus.

The aim of the research was to study the prevalence of early carbohydrate metabolism disorders and their relationship to coronary heart disease (CHD) risk factors (RF) in the female population. Epidemiological studies were carried out on 952 women aged 20-59 years. The frequency of impaired fasting glycaemia (IFG) was 4.6 %, and the impaired glucose tolerance (IGT) found only 0.2%. It was found that the prevalence of CHD in female population is found in 2 times more often in the presence of IFG than in its absence (40.0% and 23.2%, respectively), observed in almost all age groups except 20-29 years, where CHD totally absent in individuals with IFG. The detection rate of the RF of cardiovascular disease with and without IFG also somewhat different: for example, hypertension, hypertriglyceridemia, hypercholesterolemia, obesity, is the criterion of the presence of metabolic syndrome, met with greater frequency in the presence of IFG.

Auth.

10.C13.86. The prevalence of main risk factors of CHD in women according to epidemiological and

clinical examination. /F. Kasumova/. Georgian Medical News. – 2012. – #10 (211). – pp. 38-42. – rus.; abs.: geo., eng., rus.

The aim of the research was to study the prevalence of main risk factors of coronary heart disease (CHD) in 200 women aged 30-59 years, according to epidemiological and clinical examination. It was found that the most common risk factors in women with CHD are abdominal obesity (AO), body mass index (BMI), triglycerides (TG), and hypercholesterolemia, with a somewhat lower rate – low physical activity (LPA), LDL cholesterol, atherogenic index, AH and HDL cholesterol. All risk factors, except for the LPA occur with greater frequency in the group of clinical examination compared to epidemiological. In women of fertility age and menopause all risk factors, except AH recorded almost the same frequency and only AH was more frequently diagnosed in women in menopause, as in epidemiological and clinical examination.

Auth.

10.C13.87. Insulin resistance disturbances in patients with HCV infection. /T. Bochorishvili, E. Vashakidze/. Georgian Medical News. – 2012. – #10 (211). – pp. 43-45. – rus.; abs.: geo., eng., rus.

The aim of investigation was to study the impact of insulin resistance in patients with HCV infection. 130 patients were investigated: 20 with acute hepatitis C; 38 with chronic hepatitis C; 72 with cirrhosis. The study demonstrated that the serum level of C-peptide and Insulin in patients with liver cirrhosis is higher, than in patients with acute and chronic HCV infection. This is necessary the monitoring of patients with insulin resistance, which will contribute to the prevention of complications and can improve patients' quality of life.

Auth.

10.C13.88. Genetic structure of hepatitis B and C virus population circulating among healthy and high risk of parenteral contamination individuals in Azerbaijan. /M. Mamedov, A. Dadasheva/. Georgian Medical News. – 2012. – #10 (211). – pp. 46-49. – rus.; abs.: geo., eng., rus.

Considering that information on genetic features of hepatitis B (HBV) and hepatitis C (HCV) viruses populations, circulating in Azerbaijan remains limited, authors by means of adequate serological and molecular-genetic methods defined major genetic parameters of HBV and HCV, identified among blood donors living in Azerbaijan and persons from groups with high risk of contamination with HBV and HCV. It was established that population of HBV is presented by dominating "wild" variant of HBV and mutant variants of

HBV,

defective on ability of producing HBeAg, HBcAg and even HBsAg. Thus more than 90% of HBV isolates belonged to D genotype, and less, than 10% – to A genotype. It is shown that population of HCV is presented by three genotypes: "1", "2" and "3", and the ratio of identification frequencies of these genotypes made approximately 71%:9%:20%, accordingly.

Auth.

10.C13.89. Our experience of neurovascular bundle surgical treatment interposition at transcondylar and supracondylar fractures of humeral bone at children. /R. Ahmedov, F. Masharipov, A. Hakimov/. Georgian Medical News. – 2012. – #10 (211). – pp. 50-55. – eng.; abs.: geo., eng., rus.

The main aim of the study was to discuss the modern approach to the diagnoses and surgical treatment of fractures of humerus in children, associated with compromised neurovascular status and signs of acute ischemia. The 10 year experience was analyzed, with frequency of complications, varied from 0.68% to 9% between the groups. The age, sex, mechanism of injury and neurovascular status were recorded in all 31 patients. Our data suggested that aggressive surgical approach, when indicated, is corresponding with well-reduced fracture in proper alignment with a viable and warm functional extremity in 93.5% of cases.

Auth.

10.C13.90. Child and adolescent body mass index data according to WHO new child growth standards in Georgia (Kakheti Region). /M. Kharabadze, M. Betaneli, R. Khetsuriani, Z. Rainauli, L. Khutsishvili/. Georgian Medical News. – 2012. – #10(211). – pp. 55-59. – eng.; abs.: geo., eng., rus.

The studies were carried in Georgia among 6-18 year-old 854 children and adolescents (417 girls, 437 boys). Measurements of weight, height and chest circumference were taken by the following standard techniques. The body mass index (BMI) of each child was computed as $\text{weight}/\text{height}^2$. The calculated BMI was compared to the World Health Organization's BMI – for-age centiles tables (5-19 years old girls and boys). According to the given results the nutritional status was defined: thinness - 2.6%, overweight - 13%, obesity - 7.2%. The most 6-18 years old children BMI is adequate to 25th, 50th and 75th centiles of the World Health Organization standard BMI -for-age percentile tables. The thinness was revealed only among the children of 6-12 age groups, with the prevalence among the girls. The high number of thin children is fixed with both 6 years. Older girls and boys (6.4%). 12 years old girls (11.1%), but the number of underweight children is less than the number of the same age schoolchildren in Tbilisi. The number of fat and overweighed children increases within the age and dominates among the boys. The highest percent of obesity was revealed among the children of both sex at the age of 11(21.5%) also among the 18 years old boys

(17.6%). The data analysis of the carried studies, allow comparisons with the other studies, carried out in different countries of the world. The data analysis showed that underweight, overweight and obesity distribution among the schoolchildren in Georgia is close to the statistics data of the Eastern and Central European countries.

Auth.

10.C13.91. Per os given bacteriophages changes the clinical course of diseases caused by bacterial agents in children. /K. Pagava, G. Metskhvarishvili, I. Korinteli, T. Gongadze/. Georgian Medical News. – 2012. – #10(211). – pp. 60-66. – rus.; abs.: geo., eng., rus.

The aim of the study was to reveal the possible effect of perorally given bacteriophages on the clinical course of diseases caused by infectious agents in children. The complex therapy with inclusion of bacteriophages was performed in 85 children aged from 1 week to 15 years, 36 girls, and 47 boys with following diagnoses: sepsis, bacterial diarrhea, urinary tract infections, bacterial infections of upper respiratory ways, bacterial pneumonia. For every case an appropriate analogous control was matched. Thus this open clinical trial was carried out according to the Case Control Study design. Clinical and paraclinical markers specific for different diseases and integrated index of the gravity of condition were defined by the method of multicriterial analysis, using fuzzy logic approaches. It was established that by peroral treatment with commercial bacteriophages the positive trends of investigated parameters had place. The improvement of the integrated index of gravity was most pronounced. We suppose that obtaining of more convincing evidences of the clinical value of bacteriophage therapy the further studies in the more number of patients with the usage of the generally accepted double blind method should be conducted.

Auth.

10.C13.92. Role of lung affection in development of catecholamine-induced myocardial injury and its correction (experimental study). /A. Semerjyan/. Georgian Medical News. – 2012. – #10(211). – pp. 66-70. – rus.; abs.: geo., eng., rus.

The present research was focused on studies of adrenaline-induced morphological and biochemical alterations in rat lungs and myocardium and prevention of these changes by improvement of alveolar gas exchange. The results obtained allow concluding that adrenaline-induced myocardial injury is a result of primary affection of lungs and suppression of alveolar gas exchange leading to generalized hypoxia and affection of cardiomyocytes. This is evidenced by prevention of myocardial injury in rats when preliminarily exposed to the mechanical lung ventilation prior to adrenaline injection.

Auth.

10.C13.93. Impact of thymosin-alpha1 on reproduction of herpes simplex virus in cell system and on course of acute experimental infection in mice. /M. Mamedov, S. Safarova, A. Dadasheva/. Georgian Medical News. – 2012. – #10(211). – pp. 71-75. – rus.; abs.: geo., eng., rus.

The article contains results of laboratory and experimental investigation carried out for comparative estimation of antiviral activity of thymosin-alpha1 (Ta1) against herpes simplex virus (HSV). It was demonstrated that administration of thymosin-alpha1 in cultivated in vitro cellular system had been inoculated with HSV provided inhibition of HSV reproduction and defense of cells of HSV cytopathogenic action. Moreover Ta1 ability to inhibit HSV reproduction in cell was comparable with the same ability of human alpha-interferon. Besides it was demonstrated that Ta1 parenteral administration to mice infected with HSV led to reduce of mice morbidity percent and prolonged of their survival rate. Ta1 ability to depress experimental viral infection development was higher than same ability of acyclovir.

Auth.

10.C13.94. Bio-archaeological research development in Georgia: steps, peculiarities, directions. /R. Shengelia, L. Bitadze, Sh. Laliashvili/. Georgian Medical News. – 2012. – #10(211). – pp. 75-81. – eng.; abs.: geo., eng., rus.

In Georgia, bio-archeology in its broad sense started developing with the research in paleo-anthropology and paleopathology. Paleoanthropology initially developed in line with archaeology. The study of biomaterial through the angle of paleopathology started in 1956. Later works were devoted to ethnogenesis, comparative anthropology, spreading physiological stresses and other issues. In recent years newly discovered rich archeological materials and introduction of the modern methods of research have outlined new prospects, and our decision is to put them in to action. From our point of view the research methods and aims of bio-archaeology include: 1. morphological study of biomaterial on the macroscopic level. 2. The research through chemical methods which gives us an opportunity to outline many parameters of life such as eating habits, the aspects of interrelation with the environment and metabolic processes through the spectrum analysis of main ingredients of material. The important part of this direction is the researching of stable isotopes which gives us additional and strong arguments. 3. Genetic research answers the following important questions: biomaterial's variety; racial and ethnic origin; time and place of migration processes traced on ethnogenesis; hereditary disease

history (dating, the origin of the diseases, epidemics and other); human and animal genome evolution and mutational changes; the role of environment (food, ecosystems) in genome changes. The results of the above mentioned research allow answering a lot of important historical and biomedical issues. From these, we have started the comparative analyses of the genographic data of Georgia, taking notes of the genetic changes which, in our opinion, are caused by the radical and stable changes of eating habits produced about 450-500 years ago, which probably resulted proportional imbalance of the diseases that appeared in the same period.

Auth.

10.C13.95. Herbal infusions for treatment of epilepsy (review). /H. Kuprashvili/. Georgian Medical News.– 2012. – #10(211). – pp. 82-85. – rus.; abs.: geo., eng., rus.

On the basis of literature data the possibility of using herbal infusions to treat epilepsy was studied and medical properties and the chemical composition of herbal infusions described in the literature were examined. The most often used plants were selected. On the basis on these data the optimal option of herbal infusion was composed. The effect of herbal infusion was studied on 60 rats. It is shown that in animals treated with herbal infusions, compared with the control group, decreased tonic traction, duration of seizures decreased by 71%, while their occurrence by 60% and animal survival increased by 67%. All these data indicate the potential effectiveness of herbal infusions.

Auth.

D. INTERSECTORAL PROBLEMS

D1. Organization and Management

10.D1.1. Land management system. /M. Khutsishvili/. Agrarian-economic Science and Technologies. – 2012. – #3. – pp. 27-29. – geo.; abs.: eng.

The priority of agriculture on land is conditioned by its economic role. Conservation of arable land, its fertility improvement and protection is one of the most important principles of land management. The land management is effective when its structure and functions fit the particular political and socio-economic situation, fully reflect the ongoing complex processes, and reveal the ability to overcome a crisis and adapt to new conditions. The objective assessment criteria of economic events will promote the strengthening of organizational-economic relations.

Auth.

10.D1.2. Cross-cultural management in Georgia in the context of globalization. /B. Ramishvili/. Metsnie-reba da Tskhovreba. – 2012. – #1(5). – pp. 27-31. – geo.; abs.: geo., eng., rus.

The current cross-cultural relations in the context of globalization represent a significant issue for development of modern international organizations, because of which an adjusted training system of managerial personnel of transnational companies, which is based on relevant scientific research has a long history of operation in advanced countries of the world. Georgia, as most developing countries, lacks such scientific resources and therefore the relevant educational system. Therefore, the creation of such a system to ensure international collaboration of local individuals and organizations is a must. The barriers to cross-cultural relations that may arise in transnational companies and the recommendations for overcoming them are discussed in detail.

Auth.

10.D1.3. On analytical solution of a multicriterion problem of stock of goods planning /D. Sikharulidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 60-65. – geo.; abs.: geo., eng., rus.

One of the inventory management problems, implying that the volume of consignment, its costs and storage expenditures are constant, while the sale price of each consignment is different, is considered. The problem is formulated as a problem with two nonlinear criteria with linear constraints. An analytical solution is given in the case of two types of goods.

Auth.

10.D1.4. Radiation border monitoring system in Georgia. /G. Nabakhtiani, A. Gigineishvili, L. Chkhartishvili, Sh. Dekanosidze/. Nano Studies. – 2012. – # 6. – pp. 61-64. – eng.

The main organizational principles of administrative and technical subsystems of the radiation border monitoring in Georgia are described.

Auth.

D2. Environmental Protection. Ecology

10.D2.1. The main principles of environment protection from pesticide contamination in Georgia. /G. Aleksidze, E. Orjonikidze/. Bulletin of the Academy of Agricultural Sciences of Georgia. – 2012. – #30. – pp. 84–86. – geo.; abs.: geo., eng., rus.

The questions of safe use of pesticides for protection of agricultural crops from harmful organisms are discussed. The perspectives and methods of reducing contamination of the environment from pesticides are mapped out. The main principles of integrated pest management system are worked out.

Auth.

10.D2.2. Assessments of ecogeochemistry of soils within the Tbilisi-Bolnisi highway strip (Georgia). /U. Zviadadze, N. Gachechiladze/. Mining Journal. – 2012. – #1(28). – pp. 8-12. – geo.; abs.: rus., eng.

It is known that the main source of ingress and accumulation of toxic metals in human organism is the systematic consumption of farm products growing on the soils polluted by these metals. Accumulation of toxicants in the soils is connected with various anthropogenic factors. Among these factors within the space situated out of area of large settlements one of the powerful factors are the motor roads with heavy traffic. Within the stripe adjacent to the highway the atmospheric air is saturated by metal-containing exhaust gases. The toxicants' ingress from the air enters the soil as an open geochemical system of landscape. The article considers the said issue by a typical example of Tbilisi-Bolnisi highway. The peculiarities of allocation of toxic metals within the area adjacent to the highway strip are studied and the causes of their more intensive accumulation in certain sites are identified.

Auth.

10.D2.3. On some problems of the use of asbestos and asbestos products. /A. Bezhanishvili, N. Bochorishvili, A. Grdzeldidze/. Mining Journal. – 2012. – #1(28). – pp. 87-90. – geo.; abs.: rus., eng.

The article deals with a declaration made by some international organizations, which request adoption of national bans on the use of asbestos and asbestos products. Asbestos is carcinogenic material, provoking a lot of occupational diseases, which is the main argument for banning its use. It was ascertained that indemnity expenses for treatment of occupational diseases provoked by asbestos are very high. In spite of this, the use of asbestos is banned only in 40 countries. Alternative recommendations on the replacement of asbestos by other materials are proposed.

Auth.

10.D2.4. Measures to purify the industrial sewage of Chiatura manganese enterprises flowing in the River Kvirila from radioactive substances. /N. Kiknadze, N. Mekvabishvili/. Mining Journal. – 2012. – #1(28). – pp. 91-92. – geo.; abs.: rus., eng.

The work considers the issues of purification of industrial sewage of Chiatura manganese enterprises flowing into the River Kvirila from radioactive substances, particularly radium and radon; monthly monitor analysis of Ra^{226} and Rn^{222} changeability from October 2010 to September 2011 inclusive is given. As a result of observations, it is established that the amount of radioactive substances in the industrial sewage of Chiatura manganese enterprises flowing in the River Kvirila reduced which can be explained by an increase in precipitations. At the same time, a new technique to remove Ra^{226} from the industrial sewage is proposed, namely the reagent based, wherein the Askana clay activated with nitric acid is used as a filter.

Auth.

10.D2.5. Tusheti Protected Areas: evaluation of natural regeneration processes in pine stands. /T. Kandelaki, I. Turashvili/. Agrarian-economic Science and Technologies. – 2012. – #2. – pp. 89-98. – geo.; abs.: eng.

Natural and cultural heritage preservation – protection is the main strategy of Tusheti Protected Areas. Protection and development of Pine Stands is the key point in this direction, which occupies a dominant place in the protected area and plays an essential role in its sustainable development. Accordingly, it is of urgency to study natural regeneration in pine stands that enables to estimate the progress of this process and factors influencing it. It should be noted that natural regeneration is directly dependent on the environmental conditions and the research has been carried out in all types of stands; pure and mixed pine groves, at different altitudes from sea level, of different slope gradient, of different exposure conditions, natural windows, basal and open areas, also in the stands of various frequency and age.

Auth.

10.D2.6. Urbanization and eco-geographical problems of big cities. /Sh. Kharziani-Kadzanaia/. Metsniereba daTehnologiebi. – 2011. – #4-6. – pp. 49-52. – geo.; abs.: eng., rus.

The article considers the problems of global urbanization and methods to avoid the expected ecological crisis. Special attention is given to such acute problems as the water and atmospheric air pollution. A list of the most harmful factors is compiled.

Auth.

10.D2.7. Protection of the Black Sea coastal zone from abrasive processes against a background of global warming by controlling the hydrological regime of rivers (by the example of the River Rioni).

/R. Diakonidze, L. Tsulukidze, T. Supatashvili/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 37-41. – geo.; abs.: geo., eng., rus.

The paper describes a brief history of the boundary changes of the Black Sea for the last 120-140 thousand years. Against a background of global warming of our planet, current problems of formation of the Black Sea coastal zone are assessed and one of the best opportunities for the protection against abrasive processes by controlling the solid runoff of rivers is proposed.

Auth.

10.D2.8. Influence of contemporary geotechnical processes on ecosystems within the TRACECA zone and their control. /Z. Varazashvili, G. Chakhaya, S. Modebadze, I. Khubulava/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 46-52. – geo.; abs.: geo., eng., rus.

The article concerns the modern geotechnical processes in the construction area and the impact of international transport corridor TRACECA passing through the territory of South Georgia, the causes of their origin, propagation conditions and development. The negative impact of these processes on the ecosystem of the region is described. The purpose of the article is to initiate and facilitate the creation of an inventory and monitoring of geotechnical processes and the development of their control strategy.

Auth.

10.D2.9. Measures against rockslides in road and rail transport corridors of Georgia. /I. Iremashvili, I. Pirtskhalaishvili/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 104-109. – geo.; abs.: geo., eng., rus.

The paper considers the options for the implementation of measures against rockslides on the slopes of the Eurasian road and rail transport corridor of Georgia. It is well known that the erosion of earth surfaces can be considered as permanent geological processes, and therefore, the stabilization of such surfaces is a very important task. For our conditions, the most reliable, durable, cheap and best option is to strengthen the eroded slopes with shotcrete attached to metal grids. The article describes the results, which revealed that the use of this kind of protective coating is very effective and appropriate because of its simplicity and the complexity of technical operations, technical and economic availability and high mobility.

Auth.

10.D2.10. The fundamental theoretical principles to determine some characteristics of reliability of the operative sheeting. /L. Itriashvili, K. Dadiani, Kh. Kiknadze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 110-113. – rus.; abs.: geo., eng., rus.

The article describes the fundamental theoretical principles needed to determine the dynamic characteristics of flow and its impact on the embankments, the results of experimental studies as well as the practical application of flexible protective coating.

Auth.

10.D2.11. Erosion-preventive stabilization of earth slopes using new stabilizer. /L. Itriashvili, E. Khosroshvili, N. Nibladze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp.114-119. – geo.; abs.: geo.,eng., rus.

The paper includes the data about the impact of soil improving poly-complex on the equivalent adhesion, water resistance, water and wind erosion, moisture content and germination of grass soils. A conclusion about the effectiveness of poly-complex for the protection of earth slopes against erosion is made.

Auth.

10.D2.12. Aggregation of heavy overwet Kolkhetian soils using poly-complex CBSS. /L. Maisaia, M. Shavlakadze, S. Kupreishvili, F. Lordkipanidze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 150-154. – rus.; abs.: geo., eng., rus.

The paper describes the results of investigations regarding the aggregation of heavy overwet Kolkhetian soils using poly-complex CBSS. We present new qualitative characteristics of soils acquired as a result of their aggregation. It is shown that the soils aggregated with CBSS increase the fertility of corn by 90%.

Auth.

10.D2.13. Research of anaerobic boil process of sewage water sediment. /A. Mekhraliev, M. Muradov, G. Sadikhov/. Collected Papers of Institute of Water Management. – 2011. – # 3. – pp. 167-170 – rus., abs.: geo., eng., rus.

The anaerobic boil process of sewage water sediment was studied in thermophile regime on laboratory

equipment. On the basis of food industry liquid wastes was manufactured an accelerator of the process. Experimental studies carried out with accelerator-biocatalyzer established an optimal amount to be added in reactive zone. Besides, it was established that biocatalyzer accelerates 2,5 times the above process. A new design of bioreactor was tested on the pilot equipment with total volume of 20m³. It should be mentioned that the results of pilot equipment test results confirmed the results obtained in laboratory conditions.

Auth.

10.D2.14. Hydraulic models of formation, movement along the watercourse and stop on talus train of hyper-concentrated mudflow. /O. Natishvili, V. Tevzadze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 175-179. – geo.; abs.: geo., eng., rus.

A hydraulic model of formation in the erosion breakout of movement and stopping on the talus train of hyper-concentrated mudflows taking into account their non-Newtonian (flow) characteristics is proposed. The model allows to effectively arrange mud dams within the boundaries of the watercourse and the talus train for the purpose of ensuring safety for the infrastructure located nearby.

Auth.

10.D2.15. New technology for arranging a slope erosion-preventive trench. N. Samkharadze, T. Janelidze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 185-187. – geo.; abs.: geo., eng., rus.

The paper gives a brief description of the existing tools and technologies for arranging erosion-preventive trenches on slopes to provide energy dissipation of the surface runoff and to reduce erosion process during intensive rains. Currently, the said trenches are cut by trenchers, which are unstable, fractured on their slopes and increase thus erosion processes; the working bodies are structurally complex, expensive and low-productive. A new technology and design of a roller mechanism, which provides the cutting of trenches using rolling and indentation is proposed. The so cut trenches are stable, crack-free, functional during a year, and significantly decrease the erosion processes. The rolling trencher is simple in design, highly productive and cost-effective.

Auth.

10.D2.16. Ecological risk assessment of an area. /L. Purtseladze/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 188-192. – geo.; abs.: geo., eng., rus.

The paper discusses the necessity of assessment of the duration of area maintenance and gives the risk assessment sequence in case of damage or malfunction. The frequency of ecological risk is assessed; the power assessment for the estimated parameter of the environmental risk of the area is defined; a biased and unbiased estimates using mathematical expectation are given. It is shown that for practical purposes it is not necessary to find true value of environmental risk for the anthropogenic area. It is enough to know the bound of confidence probability within its own limits. The calculation of bounds is carried out with the help of the Student's distribution.

Auth.

10.D2.17. The stability of the offshore strip at the confluence of the Rioni River and the sea through the city wastewater pipe. /I. Kadaria/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 193-197. – geo.; abs.: geo., eng., rus.

This article discusses the particular case of the coastal strip stability at the place where the debris-bearing waters of the River Rioni flow into the sea through the town wastewater pipe. Recommendations on the improvement of the shore protection in the coastal area through regulation of the wastewater discharge by the branch duct's headwork are given.

Auth.

10.D2.18. Modern measures to control soil erosion on mountain slopes. /G. Chakhaya, Z. Varazashvili, R. Diakonidze, L. Tsulukidze, I. Khubulava, T. Supatashvili/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 204-208. – geo.; abs.: geo., eng., rus.

The paper considers modern locally developed and internationally tested measures to control soil erosions. The possibilities of each of them to avoid soil erosion are discussed. For the conditions of Georgia, a cheap, easily fabricated and mounted geo-mat "Nesfile-2", meeting all modern standards, has been developed. It can be effectively used for protecting eroded soils and restoring local biodiversity, and respectively, maintaining the ecological balance.

Auth.

10.D2.19. Mathematical simulation of channel flow using the variational method. /G. Chitishvili, G. Dokhnadze, L. Kekelishvili/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 209-211. – geo.; abs.: geo., eng., rus.

The paper describes the study of forms of the effective cross-section section and other characteristics of

uniform, steady, turbulent channel flow using the method of calculus of variations.

Auth.

10.D2.20. Study of the processes of filtration of the mill plant effluents using grainy filter media. /V. Kvantidze/. Proceedings of the Georgian National Academy of Sciences. Chemical Series. – 2012. – vol. 38. – #1. – pp. 104-106. – rus. abs.: geo., eng.

It is experimentally proved that upon application of grainy filter media for treating mill plant effluents the most effective and economical results are ensured by using crushed ceramsite (expanded clay aggregate) and construction slag. The advantages of the construction slag are shown by the charging height -1 meter and by the size of granules 0.5...4/0 mm, that provides the effectiveness of treatment by 95–97%, which meets the requirements of the treated water to be discharged into the drainage system.

Auth.

10.D2.21. Service staff protection from radium and radon action. /N. Kiknadze, N. Mekvabishvili/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 46-48. – geo.; abs.: geo., eng., rus.

The problems of ecological conditions in mining production are considered. The composition of sewage waters flowing out of manganese deposits is studied, the possibilities of water purification, as well as the problems of water hardness disposal of radioactive substances are discussed.

Auth.

10.D2.22. Water, atmosphere and climate. /R. Kldiashvili, D. Bibileishvili/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 56-59. – geo.; abs.: geo., eng., rus.

The distribution and the role of water in the formation of climate, atmosphere and weather, in space study, in the origin of life, in the growth and development of living organisms, in preserving of strength and health of human beings, in agriculture, medicine, religious rites are discussed. The expressions associated with water which are widely found in the Georgian language and presented.

Auth.

10.D2.23. Diagnostics of an ecological system in terms of balance and the causal analysis of its possible disturbances. /V. Radzievski, N. Jaliabova, M. Mikeladze, D. Radzievski/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 226-232. - geo.; abs.: geo., eng., rus.

The problem of diagnostics of the ecological system state in terms of balance is being solved. The causes and sources of the observable disturbances are identified using an analysis of causes. The solution of the problem of diagnostics and the causal analysis enable to avoid the ecological system imbalance or to promote to its restoration. Examples of the actual problem solutions are given.

Auth.

10.D2.24. Program to identify the environmental pollution degree its individual components - air, water and soil. /D. Radzievski/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 233-238. - rus.; abs.: geo., eng., rus.

The principle of program building by using databases is considered. A description of the environmental pollution identification and measurement program is given. The designation of the administration and the main module of the program, as well as how to work with it are explained.

Auth.

D4. Other Intersectoral Problems

10.D4.1. Computer program for calculation of seismically safe charge mass of industrial explosions and distances. /R. Mikhelson, S. Khomeriki, D. Khomeriki, A. Khvadagiani, D. Supatashvili/. Mining Journal. – 2012. – #1(28). – pp. 73-77. – geo.; abs.: rus., eng.

The calculation methods of seismically safe charge masses of explosions and distances from the explosion epicentre to the protected sites are presented. The above methods are taken as a basis for developing a relevant computer program algorithm. The forms of chunk and operation of the program are presented.

Auth.

10.D4.2. Mathematical modeling of a catastrophic wave caused by possible failure of the Zonkari Dam. /T. Gvelesiani, G. Berdzenashvili/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 29-36. – geo.; abs.: geo., eng., rus.

This paper includes the essential results of the project financed by the British Petroleum Co. The wave, which can originate as a result of Zonkari high (71 m) earth dam (at the River Patara Liakhvi) failure, is considered. Graphical dependencies of the wave parameters on time or longitudinal coordinates are obtained on the

basis of new software developed by the authors. Using the obtained data, we can forecast the impact of the mentioned wave on the main oil pipeline (Baku-Geyhan), which crosses the River Didi Liakhvi, near Gori.

Auth.

10.D4.3. The modeling of wave interaction with coastal slopes stabilized by ripraps and shaped massifs. /I. Iordanishvili, M. Vartanov, K. Iordanishvili, I. Iremashvili, E. Khosroshvili/. Collected Papers of Institute of Water Management. – 2011. – #3. – pp. 98-103. – rus.; abs.: geo., eng., rus.

The paper includes information on the methods developed previously for the modeling of wave processes up to the inshore. Taking into account large-scale changes, an analysis of the hydrodynamic characteristics: maximum wave pressure, height of weight setup and diameter of riprap on the slope for the inshore (setup and ingress of waves in the area of slopes) is proposed. The calculations are implemented on the basis of hydrodynamic investigations in the wave testers of various dimensions.

Auth.

10.D4.4. Mathematical model of discontinuous wave spreading after its spilling on bank slope (setup and rollback). /R. Kiladze/. Hydroengineering. – 2012. – #1-2(11-12). – pp. 60-69. – rus.; abs.: geo., eng., rus.

The phenomenon of spilling of discontinuous wave on a bank slope, its spreading and formation of forward and backward wave flows are considered. On the basis of definite schematization of this phenomenon and the respective system of differential equations the approximation of analytical solution is achieved to describe the non-steady flow of water in this zone. Hence follows a series of formulas determining the main hydraulic characteristics of setup and rollback of wave.

Auth.

10.D4.5. An Intelligence system of medical diagnosis and treatment of choice. /V. Radzievski, N. Jaliabova, D. Radzievski/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 212-218. – rus.; abs.: geo., eng., rus.

The method of the computerized diagnostics of the state of complex systems based on the diagnosed system knowledge is offered. Such knowledge includes the descriptions of possible breaks of components of the system, and the information concerning the correlations existing among the breaks. The problem of the decisions automation directed to the removal of the breaks under the criteria given and estimated by experts is solved. The problem solution is illustrated by the example of medicine diagnostics, and the choice of treatment mode. The most probable diagnose algorithm at the given level of consideration is worked out. The method of the choice of medical products prescribed to the given disease on the basis of multiple criteria is offered.

Auth.

10.D4.6. Differentiation of diseases by means of an intelligence system. /N. Jaliabova, V. Radzievski/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2012. – #16. – pp. 219-225. – geo.; abs.: geo., eng., rus.

An intelligence system to differentiate acute forms of stomach diseases is constructed. The problem of automation of a choice of decisions is solved. At the given level of consideration, the most probable diagnose algorithm is developed. The system works in the interactive mode. Interaction with is conducted in the natural language, on which basis the system identifies and diagnoses the disease.

Auth.

10.D4.7. Use of mathematical methods in medical ecology. /N. Poporadze, D. Abzianidze, M. Dvali, T. Meskhishvili/. Proceedings of Technical University of Georgia. – 2012. – #1(483). – pp. 54-58. – rus.; abs.: geo., eng., rus.

The paper gives a complete description of using mathematical methods for analysis of medical ecology processes.

Auth.

10.D4.8. Probabilistic modeling of formation of final decisions in social groups. /R. Kakubava, N. Kipiani, G. Makasarashvili/. Business-Engineering. – 2012. – #4. – pp. 16-18. – geo.; abs.: eng.

The work considers the problems of influence and authority in social groups. Particularly, the process of formation of the final decisions within multi-member social group and aspects of evolution of this process. On the basis of Markov chains and graph theory the following problems are researched: 1) How does each member of the group make the sustainable final decision? 2) In what conditions does the whole group or its distinct subgroup make the sustainable final decision? 3) What is the relationship between the group's final decision (if it's possible) and the initial considerations of members of the group?

Auth.

10.D4.9. Business engineering in the health care system and prevention of chronic diseases. /M.

Chikava/. Business-Engineering. – 2012. – #4. – pp. 167-175. – geo.; abs.: eng.

Business Engineering, as *process oriented management*, is recommended to be implemented in the health care system *management*. Business Engineering includes: Business Process Reengineering (BPR) and Continuous Improvement (CI). The patient's satisfaction with the process is the main criteria for assessing the quality of any process performance in the health care system. The innovative modernization of the public health system in our country needs to be carried through reengineering. Though change is painful, the successful transformation of medicine in the USA at the turn of the last century shows that it is possible. The chronic disease prevention and *preventive* treatment reengineering are important components of the health care reengineering. They must be based on the business *process* model, for which it is necessary to develop and redesign prevention programmes. Digestive disorders prevention models for adolescents are developed by us. The list of measures to be conducted is presented in hierarchical sequence. The trends of risk factors modification and homeopathic preventive treatment method described by us are recommended to be used for development of digestive disorders prevention programmes and business models. It will create the scientific basis for reengineering prevention of chronic diseases. Its practical implementation must be accompanied by the continuous improvement. BPR and CI together will allow to integrate prevention in health care management based on Business Engineering principles.

Auth.

10.D4.10. Applying social science research methods for technology assessment of nanotechnologies. /T.

Chachibaia, E. Raupp/. Nano Studies. – 2012. – # 5. – pp. 11-26. – eng.

Research into nanotechnology's impact on any societal implication, as ethical, environmental, economic, legal aspects, must try to keep pace with the technological progress that has been made. Otherwise, the technological progress will slow down. This will be one of the first times in history that social scientists have such a participatory role in nanotechnology's development. Technology and society evolve together. No one can fully understand the long-term implications of such advances, emerging under the heading of nanotechnology – the art and science of building complex, practical devices with atomic precision, with components measured in nanometers, billionths of a meter. Certain cultural values, including strong hopes and deep fears, are likely to shape public understanding of nanotechnology. Nanophilic hopes and nanophobic fears will not wait until after scientific work is completed, assessed and disseminated. The tangible results of nanotech will be selectively appreciated and interpreted in accordance with those hopes and fears. Nanotechnology must be developed in a safe and responsible manner. Ethical principles must be adhered to and potential health, safety or environmental risks scientifically studied, also in order to prepare for possible regulation. Societal impacts need to be examined and taken into account. Dialogue with the public is essential to focus attention on issues of real concern rather than "science fiction" scenarios.

Auth.