Georgian Abstracts Journal

9 (21), 2012

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 Economisti (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. Economisti — 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 Pharmacochemistry 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

List of periodical publications reflected in the present issue:

1. Accounting – 2011, #11, 12; 2012, #2

2. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation - 2011

3. Agrarian-Economic Science and Technologies – 2011, #1, 3(12); 2012, #1

4. Air Transport - 2011, #1(6)

5. Bulletin of Georgian National Academy of Sciences – 2011, v.5, #1, 2

6. Business-Courier – 2011, #1/3.

7. Business-Engineering – 2011, #1

8. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute – 2010, #2(17)

9. Culture & Philosophy – 2011

10. Economics and Business - 2011, #2, 3

11. Experimental and Clinical Medicine – 2011, #2, 3

12. Gadasaxadebi (Taxes) - 2010, #1,2,3,4; 2011, #4

13. Ganatleba – 2011, #1

14. Georgian Medical News (GMN) – 2012, #1(202)

15. Georgian Scientific News (GSN) – 2011, #2(10), #3(11)

16. Law and Economics – 2011, #2

17. Metsniereba da technologiebi (Science and Technologies) – 2011, #1-3, 4-6

18. Mining Journal - 2011, #1(26), 2(27)

19. Modern Problems of Architecture and Town Planning – 2011, #1

20. Nano Studies – 2011, #3, 4

21. New Agrarian Georgia - 2012, #1(9)

22. New Economist – 2012, #1

23. Photochemical Smog in Tbilisi (A. Amiranashvili, T. Bliadze, V. Chikhladze) – 2012, 160 pp.

24. Science and Life – 2011, #1,2

25. Scientific Proceedings of G. Tavartkiladze Teaching University – 2011, #1

26. Transactions of Technical University of Georgia – 2010, #1-4 (475-478); 2011, #1(479)

27. Wood Bulletin – 2011, #4

SUBJECT ENTRIES

A.   SOCIAL SCIENCES

A1.   State and Law. Jurisprudence
A2.   Sociology. Demography
A3.   Economy
A4.   Education
A5.   Informatics/Computer Science
A6.   Other Social Sciences

B.   NATURAL AND EXACT SCIENCES

B1.   Mathematics. Mechanics. Physics. Cybernetics
B2.   Chemistry. Biology
B3.   Geology. Geodesy
B4.   Geography. Cartography. Astronomy
B5.   Other Natural and Exact Sciences

C.   TECHNICAL AND APPLIED SCIENCES. SECTORS OF ECONOMY

C1.   Power Industry
C2.   Electrical Engineering. Electronics. Radio Engineering. Communications
C3.   Automation & Telemetry. Computer Engineering
C4.   Mining. Metallurgy. Chemical Industry
C5.   Mechanical Engineering. Instrument-making
C6.   Light Industry
C7.   Food Industry
C8.   Construction. Architecture
C9.   Agriculture and Forestry. Fishery
C10. Water Industry. Melioration
C11. Foreign and Domestic Trade. Tourism
C12. Transport
C13. Medicine. Healthcare

D.   INTERSECTORAL PROBLEMS

D1.   Organization and Management
D2.   Environmental Protection. Ecology
D3.   Statistics
D4.   Other Intersectoral Problems

A. SOCIAL SCIENCES

A1. State and Law. Jurisprudence

9.A1.1. Fields of competence of the public defender in Georgia and foreign countries. /K. Pridonashvili/. Law and Economics. – 2011. - #2. – pp. 39-61. – geo.; abs.: geo., eng., fr.

For the political-legal system of the Public Defender it is important to have relevant authority together with independence so that the Public Defender could have the opportunity to react to the offence. It is interesting to point out that the Institute of Ombudsman is more important and interesting in our country than in other developed democracies as the values and democratic institutes in Georgia are still in rudimentary condition, especially "parliamentarism" as this is the main factor of the development of the "Ombudsman". According to the facts and circumstances mentioned above, the publication aims to review and analyze fields and competence of the Ombudsman in Georgia and some other democratic countries, taking into consideration experience of developed countries in order that we could find and eliminate weak points of the Georgian Public Defender.

<div align="right">Auth.</div>

9.A1.2. Sino-Russian geopolitical interests in Central Asia and South Caucasus. /D. Pipinashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 144-148. – eng.; abs.: eng., geo.

The aim of this paper is to analyze the increasing geopolitical competition involving the US, Russia and China in Central Asia and South Caucasus in order to consolidate their spheres of influence in political, military, economic and energy fields. Many contemporary strategists believe that Eurasia, which encompasses countries located in Central Asia and South Caucasus, is of great importance in the geo-strategy of the 21st century, for example because of the region's dominance over important world oil resources in the Caspian Sea, and also because of its control over communication lines between the East and West. Both, Moscow and Beijing support the idea of a strong Sino-Russian partnership to counter the US power, but both have their own specific interests and distinct relationship with the United States. In the geopolitical games of the world's greatest powers, the Central Asia and South Caucasus region has been a major battlefield.

<div align="right">Auth.</div>

9.A1.3. The problem of duration of human detention in criminal procedure of Georgia and foreign countries. /K. Kharkhelauri/. Science and Life. – 2011. - #1(3). – pp. 90-94. – geo.; abs.: geo., rus., eng.

The problem of detention duration is discussed according to the law of criminal procedure of Georgia and foreign countries. The attention is paid to the extension of the detention term, status of the detainee, difference between imprisonment and restraint of liberty. The author judges about the activation of the defense mechanism of Convention's Article 5 in case of arrest. The author considers it expedient that an amendment be made in Georgian Criminal Procedure Code, according to which the arrestee will be acknowledged as accused not from the moment of arrest, as is now governed by the law, but after proper evidence have been found and that prior to it the person may be arrested as a suspect.

<div align="right">Auth.</div>

9.A1.4. Responsibility for the injury ensuing from the exploitation of traffic means. /R. Tsintsadze/. Science and Life. – 2011. - #2 (4). – pp. 89-96. – geo.; abs.: geo., rus., eng.

The work concerns delicti responsibility ensuing from the exploitation of traffic means. This source of damage origin is also the source of increased danger, though no such term is used in regard to Article 999 of the Civil Code of Georgia. Any means of transport represent a source of increased danger, since, ensuing from its constructive peculiarities, the ability of the person driving it, and from the characteristic feature of movement to proceed under inertia, it appears impossible to break the speed inherent to this transport and bring the car to an instant halt that creates the utmost danger for surrounding people. Responsibility for the damage caused by increased danger is characterized by one more, most important property. In this case the responsibility ensues not only on the basis of intentional or careless guilty attitude of the wrongdoer towards the ensuing result, but also with no guilt present, which is an exception from the general rule of guilty responsibility. In the work, by means of applying transport codes, statutes and special literature, the provisions of Article 999 of the Civil Code are investigated.

<div align="right">Auth.</div>

9.A1.5. Remedial guarantees of protection of the detained person according to the legislation of Georgia and foreign countries. /K. Kharkhelauri/. Science and Life. – 2011. - #2(4). – pp. 111-116. – geo.; abs.: geo., rus., eng.

The article deals with the remedial guarantees of protection of the detained person according to the legislation of Georgia and foreign countries that are considered and analyzed in comparative aspect. The attention is pointed to such important questions as: refusal of the accused from lawyer services, a choice of the defender, his/her replacement and mandatory appointment. The author argues on inadmissibility of restriction of the admission of the lawyer, frequently concerning carrying the formal character of the mandatory appointed defender, and the admission of the unlimited number of lawyers.

<div align="right">Auth.</div>

9.A1.6. On the perfection of criminal law. /V. Benidze/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 6-11. – geo.; abs.: geo., eng.
The article deals with the achievements and individual shortcomings of the new Criminal Procedure Code of Georgia. The author responds positively to the change in legislature, as far as it sets those core principles that will support righteous administration and reinforcement of justice. The author expresses his viewpoints about the issue and makes comments on the existing shortcomings of the new code. The author develops the approach that jury cannot be a guarantee for fair administration of justice and presents grounded arguments in support of his views. The author believes that the new code fails to cover the issues regulating extradition and rehabilitation and that the institute of the victim has been has become less effective.

<div align="right">Auth.</div>

9.A1.7. Fear of criminal violation in Georgian students. /H.Kury, E. Phutkaradze, M.Wuerger/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 12-28. – geo.; abs.: geo., eng.
The article studies the criminal-political significance of the criminal violation fear and the issue of criminal violation fear in Germany. It also deals with such matters as the poll results of the Georgian students; the fear of criminal violation according to standard themes; attitude to going out; the fear of criminal violation in respect of other threats and from the comparative aspect; the fear of criminal violation and the assessment of the appropriate sanctions.

<div align="right">Auth.</div>

9.A1.8. Government and self-government in China (legislative aspects). /G. Lobzhanidze/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 29-35. – geo.; abs.: geo., eng.
The author discusses government and self-government in China based on the national peculiarities. The whole government system of the State with its ministries and committees is shown. According to the author, scientists pay special attention to the negative and weak sides of China's legislative organ. The publication clearly reflects the system of law in China. It is a mix of the old traditional law and the modern legislation. In the old times, the functions of the court were given to the administrators, who knew nothing about law. The changes that have taken place since then are discussed.

<div align="right">Auth.</div>

9.A1.9. Creation of universal scientific and technical means and specialized packages for discovering and seizing evidence. /Sh. Pitskelauri/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 36-41. – geo.; abs.: geo., eng.
The article deals with scientific and technical means of discovering and seizing evidence. It also discusses the creation of specialized packages and their significance in fighting crime. The attention is focused on the organizational issues of application of the above-mentioned means in investigation. The optimal handling of these organizational issues is the precondition for collecting and investigating the materials, objects and information of evidential value.

<div align="right">Auth.</div>

9.A1.10. Legal bases of international adoption. /R. Shengelia, E. Shengelia/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 42-47. – geo.; abs.: geo., eng.
Adoption is a legal fact originating between the adoptive parents and the adoptee legal relations that exist between the biological parents and children. Lately, the legal issues associated with international adoption have become more urgent. Adoption of a child from Georgia to another state, as well as adoption of a foreign child to Georgia are regulated by such statutory acts: The United Nations Convention of 1989 "On the Rights of the Child", the Hague Convention of 1993 "On Protection of Children and Cooperation within the Scope of the International Adoption", the Civil Code of Georgia, and the Law of Georgia of December 18, 2009 "On Adoption and Foster Care". International adoption is carried out on the basis of an agreement reached between the central bodies of guardianship and trusteeship of the countries of birth of the child (the state of origin) and another (the host state). Permission of the Georgian court is also necessary for adoption of the child from Georgia to foreign country.

<div align="right">Auth.</div>

9.A1.11. Historic aspects of application of material objects as evidence. /S. Chelidze/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 48-52. – geo.; abs.: geo., eng.
The article deals with historic aspects of application of subjects known in evidential law as material evidence, material objects. It discusses the significance of material evidence in fighting the crime in legal sources of this county, in customary law, as well as in states of old civilization. It also analyzes the peculiarities concerning the evaluation of such kind of evidence.

<div align="right">Auth.</div>

9.A1.12. System of public administration in western countries (France, Germany). /L. Nebieridze/. Transactions of Technical University of Georgia. – 2010. – #3(477). – pp. 119-123. – geo.; res.: geo., eng., rus.
Scientific technical and political processes especially influence the public administration of western countries, such as France and Germany. If in the 20th century the bureaucracy activities were limited only to procedural facilities, controlling and political neutrality, in the early 21st century the public administration vector is being oriented to the programming issues. Cardinal changes have also taken place in the style of public administration. If at the beginning of the last century officials evaded risky actions and innovations, feared to make errors and were engaged in routine activities, the present-day officials do not fear making risky actions and are permanently seeking for new opportunities. Today, in western countries (Germany and France) the "neutral" administration no longer exists. Public service is politicized: high posts in the state machinery are occupied by politicized officials.

<div align="right">Auth.</div>

A2. Sociology. Demography

9.A2.1. Unemployment and the ways of improving employment for internally displaced persons. /N. Latsabidze/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 102-108. – geo.; abs.: geo., eng.
Alleviation of grave economic conditions and overcoming of mass unemployment of IDPs are possible by carrying out an active employment policy, from which it can be outlined: the organization of temporary and public works on the basis of special programs oriented towards employment; the state support for entrepreneurial initiative – by way of helping the development of small and medium-size businesses; the support to employment of handicapped by way of realizing special retraining programs as well as the setting of special quotas that will become a precondition for guaranteed employment of their certain part; the reinstatement of professional educational institutions and specialists' training or retraining in line with demands of enterprises of a specific branch and real possibilities of manufacture development.

<div align="right">Auth.</div>

9.A2.2. Comparative analysis of the population structure of Georgia and Germany. /N. Gelitashvili/. Economics and Business. - 2011. - #3. – pp. 97-108. – geo.; abs.: eng
The analysis of the age structure means the study of important demographic data. Together with gender factors it should also include employment and other economic aspects. Other important factors for the analysis may be: family conditions, age (of family members) and nationality. This publication presents the methodology, which serves to show social differences regarding life expectancy. The results demonstrate the dependence of life expectancy on the income level. Particularly, higher the income, longer life expectancy. Such tendency is more sharply revealed in males. In developing countries, a politically managed system of family planning becomes more and more popular. The consequence of such policy is the essential reduction of the birth rate, which is typical for developed countries. However, Georgia can be considered as an exception. The dependence between the birth-rate and GNP per capita is presented differently in comparison with other countries. Here we observe a negative correlation between two variables, like in developed countries.

<div align="right">Auth.</div>

A3. Economy

9.A3.1. Features of dynamics of consumer prices in Georgia. /S. Pavliashvili, B. Kitsmarishvili/. Science and Life. – 2011. - #2(4). – pp. 12-17. – geo.; abs.: geo., rus., eng.
The level of consumer prices in Georgia as of 2011 is disturbing. The planning of the consumer basket needs perfection according to modern requirements; otherwise serious mistrust to official inflation indicators will be take place. Along with negative influence of external factors, the unjustified high level of consumer prices is caused by the existence of monopolies or at the best oligopolies of separate companies operating in spheres of public health services, pharmaceutical and insurance activity realization of oil products, etc.

The consumer prices restraint by means of the artificially strengthened rate of national currency generally takes place at the expense of depreciation of remittances carried out by compatriots from abroad.

Auth.

9.A3.2. Eurobonds – the source of easing/worsening of Georgia's total external debt. /G. Khantadze/. Science and Life. – 2011. - #2(4). – pp. 70-75. – geo.; abs.: geo., rus., eng.
As the official data demonstrate, the government of Georgia has released 10-year validity obligation worth USD 500 million on 7 April 2011. The article also provides a statistical analysis of the total external debt of Georgia as of 30 June 2011. It is, therefore, concluded that the best way to ease rather than further deteriorate the external debt is not the Eurobond emission policy, (no matter how liquid it is), but profits due to a dramatic improvement of the country's macroeconomic indicators.

Auth.

9.A3.3. Evaluation and forecasting of labor resource use according to the labor market requirements. /O. Keshelashvili, T.Tavidashvili/. Agrarian-Economic Science and Technologies. – 2011. - # 3(12). – pp. 13-22. – geo.; abs.: geo., eng.
The research has shown that in all regions of Georgia women exceed men. High is the share of pensioners in the labor resource structure. This fact proves that the main labor resource – youth is not involved in the process because of different reasons. It is also mentioned that the share of able bodied population will gradually decrease, especially in the period when labor market will be occupied by youth born in the period of low natural birth rate. In this case, the attraction of foreign investments and their efficient use will be of great importance. The article shows the number of economically active, inactive, employed and self-employed people in villages. The great number of self-employed in villages is ascribed to the villagers' inability to go elsewhere and find a job. Labor productivity and the average monthly income in agriculture are rather low, which is conditioned by a poor material and technical basis and low skills of farmers. Prediction of labor resources for the near future is given.

Auth.

9.A3.4. Positive situation in foreign economic relations, the ways for its regulation and perfection. /O. Keshelashvili, G.Dznelashvili/. Agrarian-Economic Science and Technologies. – 2011. - # 3(12). – pp. 23-39. – geo.; abs.: geo., eng.
The article discusses the main problems of foreign economic relations in Georgia based on concrete statistics. An analysis of formation of foreign economic relations is given as well as detected shortcomings and ways of their eradication. The existing in Georgia economic situation can be improved by the strategic activities directed at enhancement of the efficiency of foreign economic relations. Foreign economic relations are a dynamic process and needs a systemic research, on which basis proposals and recommendations for their improvement will be worked out.

Auth.

9.A3.5. Ways of elaborating fiscal policy and improving the investment environment. /D. Vekua/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 53-58. – geo.; abs.: geo., eng.
The work discusses the key issues of tax policy that relate to development of national economy and to the process of attraction of additional financial resources. Proposed are the methods that can ensure target stimulation for investment activities. Also discussed are the aspects of fiscal policy in the tourism sphere that should accelerate the process of quantitative as well as qualitative transformation of the tourism market.

Auth.

9.A3.6. Georgia – the business start-up reformer. /A. Tavartkiladze/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 59-68. – geo.; abs.: geo., eng.
The work discusses the findings of the World Bank on business administration in Georgia during the last 5 years. According to them, Georgia has achieved the biggest progress and is the top reformer among the 183 countries. These results have been achieved in 2004-2009 with the help of US Treasury recommendations and with the intelligent and reasonable reforms implemented by the Georgian government. The article includes suggestions about future development and optimization of the above-mentioned process.

Auth.

9.A3.7. On the improvement of management in state enterprises in Georgia. /L.Totladze/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 73-77. – geo.; abs.: geo., eng.
The article considers such topical issues as the status of state-owned enterprises, their efficiency and development prospects in Georgia. Also discussed are the results of an audit conducted by the Chamber of Control under directions of the International Monetary Fund, as well as the conclusions on f further development of these enterprises made on their basis.

9.A3.8. ISO 9001-2000 and operational risk management. /V. Katsiashvili/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 94-101. – geo.; abs.: geo., eng.

ORM is and ISO 9001-2000 a decision-making tool to systematically help identify operational risks and benefits and determine the best courses of action for any given situation. In contrast to an Operational and Support Hazard Analysis (O&SHA), which is performed during development, ORM is performed during operational use. For example, an ORM might be performed before each flight. This risk management process, like other safety risk management processes, is designed to minimize risks in order to reduce mishaps, preserve assets, and safeguard the health and welfare.

9.A3.9. Tax targets hurt tax administration. /Ch. Stromme/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 115-118. – eng.; abs.: geo., eng.

 "Tax targets" are common tools in tax administration in developing countries but not unknown in others. Tax administration based on tax targets invariably leads to corruption, under-collected revenue and over-stated tax arrears that may be considered collectible. Tax targets must be repudiated in favor of budget forecasting, which can aid in the growth of the private sector and mitigate the effects of an economic downturn, coupled with modern tax arrears collection reform.

9.A3.10. Socio-economic policy priorities and the state strategy. /L.Tabatadze/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 119-124. – geo.; abs.: geo., eng.

The purpose of the article is to analyze and appreciate the social and economical situation of the country, to highlight and generalize the kinds of social risks and dangers. It aims to emphasize the social and political priorities of the country and to set the strategy which will be effective for settling the social problems that exist in the country.

9.A3.11. Product promotion methods. /K. Chagelishvili/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 125-129. – geo.; abs.: geo., eng.

Nowadays most business transactions are made through retail chains and therefore a whole complex of marketing activities is more actively used in these outlets. That is why it is so important to see to promotional actions in retail chains. Many marketers plan and implement plenty of promotional actions but only few of them are really successful. Therefore one should concentrate on the most effective promotional techniques.

9.A3.12. Innovative economy under conditions of globalization. /L. Chagelishvili/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 130-136. – geo.; abs.: geo., eng.

Under the conditions of globalization, when the competitiveness of different national economies is primarily determined by the level of technical development, the formation of economy on the basis of venture business development is obvious. The author describes the aspects of globalization and innovative economy and gives recommendations and solutions for forming clusters, where venture funds and companies will lead.

9.A3.13. Macroeconomic model of the Laffer-Keynesian synthesis. /Y. Ananiashvili, V. Papava/. Economics and Business. - 2011. - #3. – pp. 10-34. – rus.; abs.: eng

The article presents a model of macroeconomic equilibrium in which the aggregate demand and aggregate supply are considered not at the level of prices, as it is done traditionally, but in terms of functions dependent on the average tax rate. The concepts of optimal and equilibrium tax rates are introduced. In the first case, the volume of aggregate supply is maximal and in the latter case, the aggregate demand and supply coincide. Based on the analysis of the model, it is shown that when the government tries to maintain the equilibrium average tax rate at fixed level, the value of optimal tax rate becomes dependent upon the price level and relevant change in aggregate demand may lead to the approximation of optimal rate to the equilibrium rate. It is also demonstrated that every given value of the equilibrium tax rate can be matched with a set of functions and curves of aggregate supply and tax revenues of the national budget.

9.A3.14. Cooperation – **the way of Georgian village revival.** /P. Koghuashvili/. Economics and Business. - 2011. - #3. – pp. 41-54. – geo.; abs.: eng

The paper concerns the development of voluntary cooperation between the people living in rural areas, integration in processing enterprises (creation of united system of production, processing and realization of agricultural products) and regulation of existing main socio-economic and technical and technological

problems. The article provides arguments to prove the objective necessity of realization of the idea as well as economic mechanism of its realization and expected synergistic socio-economic impacts. Establishment of new forms of economy, based on social solidarity is especially notable, which automatically leads to employment of the people living in rural areas, increase of their income, rise of authority of agricultural labor and complex and accelerated development of a village.

<div align="right">Auth.</div>

9.A3.15. David Hume (1711-1776) at the beginning of economic thinking (300 years since his birth). /J. Kharitonashvili/. Economics and Business. - 2011. - #3. – pp. 55-60. – geo.; abs.: eng
D. Hume as an original thinker holds a prominent position among economists. One of the outstanding facts regarding D. Hume is that he expressed critics of mercantilism. D. Hume was the initiator of free trade. D. Hume created his own quantitative theory of money. According to this theory the amount of money existing in the economy defines the value of the money and the increase of the volume of money is the main cause of inflation. D. Hume discussed the issue of interest rates and required imposing low level of interest rates. He regarded that high level of interest rate was one of the factors that hindered the increase of profit, which remains stable even in case of reduction of interest rates or the "Investment Effectiveness". The ideas of D. Hume were lately used by other economists.

<div align="right">Auth.</div>

9.A3.16. Globalization and localization - development regulators. /D. Darsavelidze/. Economics and Business. - 2011. - #3. – pp. 61-70. – geo.; abs.: eng
The article discusses the issue of globalization and localization as development regulators, correlation between their scopes and basis of formation. The paper proves the necessity of strengthening localization process vs globalization. The ability of localization to reduce the negative influence of globalization is highlighted. Therefore, the article presents the importance of the study of globalization and localization level of the place through benchmarking and SWOT analysis. Finally, the paper concludes, that localization and globalization should be learnt not as confronting, but as dialectically interrelated and enriching contradicting unity.

<div align="right">Auth.</div>

9.A3.17. The essence, structure and main directions of globalization. /N. Chaduneli/. Economics and Business. - 2011. - #3. – pp. 71-82. – geo.; abs.: eng
It is a widely recognized fact that nearly since the second half of the twentieth century the social development of the world has been going on in conjunction with the globalization process. Undoubtedly, Globalization is a key term within our epoch, but a clear and unambiguous definition of this term has not been established yet. A comparably complete definition of globalization can be formulated as follows: Globalization is a process of formation of the united world, which is carried out by spreading of economic, political, social and cultural values of the developed countries to diverse areas of the developing and backward countries. The united world itself is presented as a planetary-scale, unified, but diverse system, where each state, with its political, economic and cultural individuality, is integral part of this system without contradiction with the principles of the common system. The principles of the unified system are: respect for human rights; freedom of entrepreneurship; fair distribution of products of economic development; sustainable development; respect of cultural, religious and language varieties. We can identify the following characteristics of globalization: objectivity, irreversibility, progressivism and historical-logicality. The main trends of globalization are: ideological, institutional, political, military and economic globalization.

<div align="right">Auth.</div>

9.A3.18. Regarding the issue of the Keynesian model of state regulation of economy. /M.Chikobava/. Economics and Business. - 2011. - #3. – pp. 83-96. – geo.; abs.: eng
The article considers the issue of possibilities to overcome basic contradictions of capitalism by using the Keynesian model of state regulation of economy. It is shown that by means of Keynesian model of state regulation of economy, which is still used today for managing the economies of developed countries, it's impossible to achieve macroeconomic balance not only practically, but also theoretically. It is also stated in the article, that overcoming of the main contradictions of capitalism was impossible on the basis of alternatives of Keynesian theory, such as neoconservative and neo-liberal concepts. Current global economic crisis proves this.

<div align="right">Auth.</div>

9.A3.19. Banking risk management features in post-crisis period. /D. Narmania/. Economics and Business. - 2011. - #3. – pp. 131-142. – geo.; abs.: eng
Banking risk is a situational characteristic of banking activities, which shows vagueness of the results and describes the probability of a negative deviation of the real expected result. There are three main categories of banking risks: credit risk, market risk and operational risk. Banking Risk adjustment is a combination of

methods aimed at protecting a bank from risks. Financial globalization has increased the importance of international regulation. Basel II is the second of the Basel Committee on Bank Supervision's recommendations, and unlike the first accord, Basel I, which was mainly focused on credit risk, the purpose of Basel II was to create standards and regulations on how much capital should financial institutions keep in reserve in order to reduce risks. Banks need to put capital aside to reduce the risks associated with its investing and lending practices. The risk management process in Georgia includes the following: risk determination; risk assessment; limits and monitoring; risk management information systems; risk control; asset and liability management; stress testing. As the indicators of the banking sector for the annual 2010 and I quarter of 2011 are still below the financial indicators of the before crisis period, it is necessary that the National Bank of Georgia and commercial banks take a number of measures: Development and the gradual implementation of the Basel Committee recommendations ("Basel II"). To be more exact, to use special initiative for non-member countries (Outreach to non-member countries); Perfection of commercial banks' internal regulations and standards, alleviation of restrictions imposed on some bank products during the crisis; The analysis of financial crisis of 2008-2010 by the National Bank of Georgia (NBG) and commercial banks, also analysis of implementation of regulations of NBG on "Risk Management in Commercial Banks"; Development of additional bank products for post-crisis period, especially deposit insurance, which is very important for commercial banks and their clients.

<div align="right">Auth.</div>

9.A3.20. Basic directions of budget and tax policy optimization in Georgia. /N. Kavtaradze/. Economics and Business. - 2011. - #3. – pp. 143-152. – geo.; abs.: eng
The article discusses the dynamics of the share of income, received from taxes in the formation of budget revenues and grant execution and Georgian state budget revenues in 2000-2010 years. The focus is directed to the structure of direct and indirect taxes and optimal correlation in budget revenues. The article also analyses the changes made in Tax Code directed at the optimization of the country's tax policy and tax rates and those shortcomings, which are still characteristic for Georgian tax system. On this background, the basic directions for improving the country's budget and tax policy are identified: the necessity of reducing the share of indirect taxes in budget tax incomes; to develop an effective mechanism for distributing general state taxes between budgets; strengthening the control over purposeful distribution and use of credits taken by the state; optimization of tax amounts and separate types of tax rates.

<div align="right">Auth.</div>

9.A3.21. Functions of human resource management department on modern stage. /N. Ghvedashvili/. Economics and Business. - 2011. - #3. – pp. 165-170. – geo.; abs.: eng
The article deals with the development of human resource management strategy and unified staff policy and its realization, implantation of the main procedures regarding human resources so that they meet the contemporary requirements, development of relevant normative, institutional, organizational and resource basis, implementation of the programs for improvement and development of human resources and other important issues.

<div align="right">Auth.</div>

9.A3.22. Conceptual approaches to the managerial analysis, as a company management function. /S. Abbasova/. Economics and Business. - 2011. - #3. – pp. 109-122. – rus.; abs.: eng
Nowadays, the issues of management are quite actively discussed in business. For achieving the goals, it's very important to have well organized managerial accounting and analysis, which requires selection of the best options on each stage of discussion and decision-making. The article includes critical aspects of management analysis, their practical application, the main objectives and responsibilities. All this proves the importance of managerial analysis for forecasting revenues, costs and financial results.

<div align="right">Auth.</div>

9.A3.23. On economic evaluation of engineering decisions. /G.Tkeshelashvili/. Business-engineering. – 2011. - #1. – pp 57-63. – geo.; abs.: eng.
Introduction of engineering decisions in the practice as well as implementation of any investment activities are preceded by substantiation of their economic appropriateness. For this purpose, the methods of defining economic effectiveness are used in practice. The mentioned envisages, on one hand, usage of coefficient for long-term investments to bring them to the moment of time when the investment begins achieving the result. It is defined by normative means instead of which the definition of this coefficient is offered against the inflation rate. On the other hand, it is necessary to change the so-called "normative coefficient of effectiveness" used when defining economic effect with the coefficient of average rate of bank loan. Such approach to effectiveness makes the calculations more credible and closer to the reality.

<div align="right">Auth.</div>

9.A3.24. Analysis of the critical state of a firm using methods of synergy. /V. Sesadze, G. Chikadze, N. Sesadze, A. Kekenadze/. Business-engineering. – 2011. - #1. – pp 64-68. – geo.; abs.: eng.
The article studies the critical state of firm using a method of synergy, in particular, the theory of accidents is offered. Practical value of the offered method consists in timely revealing the created discrepancy in the firm's structure and determining the critical moment. The proposed method makes it possible to influence the situation and prevent suspension in the firm's development.

Auth.

9.A3.25. Use of the catastrophe theory to analyze the state of economic systems. /G. Chikadze, V. Sesadze, N. Sesadze, S. Kekenadze/. Business-engineering. – 2011. - #1. – pp 69-77. – geo.; abs.: eng.
The article deals with the method of non-linear dynamics, in particular the catastrophe theory for assessing economic processes. The parameters of an economic system and the impact of definite factors on its stability are discussed.

Auth.

9.A3.26. Accounting and management of financial resources. /G. Nanuashvili/. Business-engineering. – 2011. - #1. – pp 78-81. – geo.; abs.: eng.
On the basis of a market economy, the practical implementation of the economy recovery programme in Georgia foresees the rise of the role and significance of finances in production. From the standpoint of accounting, an attitude towards the charter capital formation and recording must be changed. In modern world, the resources gained from sale of securities are growing in importance. Based on it, it would be reasonable to include the security dividends in the unrealized profit.

Auth.

9.A3.27. Calculation of gross regional product as a contributing factor to business development in regions. /E. Baratashvili, N. Grdzelishvili/. Business-engineering. – 2011. - #1. – pp. 111-121. – geo.; abs.: eng.
The paper discusses the importance of calculation of gross regional product (GRP) as a contributing factor to business development in regions. It is indicated how a great importance has been attached to the calculation of the GRP for the sustainable economic development, for overcoming the created disproportion in the regions and for harmonization of regional development. It is indicated that there is no essential difference between GDP and GRP. The GRP, like GDP, is the outcome of economic functioning but only on the regional level.

Auth.

9.A3.28. Corporation information systems and business decision-making in enterprise resource planning. /T. Mshvidobadze/. Business-engineering. – 2011. - #1. – pp. 174-177. – geo.; abs.: eng.
The given article discusses the question of classification of information systems. Corporation management levels, information systems used in management and their designation are considered in general. The SAP architecture (one of leaders of the EPR systems), its basic components and means of realization business decision-making on the basis of SAP in enterprise resource planning are considered.

Auth.

9.A3.29. Practical realization of multiple-factor economic-mathematic models of evaluation of efficiency of investments in power engineering of Georgia. /D. Japaridze, Z. Gachechiladze/. Business-engineering. – 2011. - #1. – pp. 184-193. – geo.; abs.: eng.
The current methods of the evaluation of efficiency of investments are characterized by serious defects. Elaboration of the evaluation of efficiency of investments in power engineering on the basis of comprehensive scientific research becomes a subject of great importance. By taking into account the results of scientific research and global experience in the investment policy, generalized integral multiple-factor criteria of the evaluation of efficiency of investments in power engineering being of a complex character and capable of objective evaluation of the ratio between used investment resources and efficiency of invested objects' future functioning, that will guarantee the interests both of investor and investments consumer, are elaborated. Time, inflation, the value of fund payback coefficient, exchange rate of national currency and interest rate parameters are accepted as the factors in the criteria. According to the specific character of the structure of power engineering and on the basis of the selected criteria several modifications of multiple-factor economic-mathematical models of the evaluation of efficiency of investments are established. These are: rehabilitation efficiency evaluation criteria of existing power enterprise, construction efficiency of power enterprise, and foreign investment efficiency evaluation in constructing local power enterprise. Due to approbation of the offered methodology in reality, investment efficiency was assessed in the key power enterprises, such as: Enguri HPP, Tbilsresi SPP, Gardabani gas turbine power plant and the Georgian national power grid on the basis of initial information received by analysis of technical, economic and statistical data, also audit reports. Calculations were made by a special computer program in Visual Basic,

which comprises the efficiency evaluation multi-criteria algorithms. The research result shows that the investment had ecological, technical and local social effect. The reliability and functional efficiency of the enterprise raised but investment efficiency is still low and payback period may last too long, except the gas turbine power plant which was constructed by means of foreign investment. Special measures should be undertaken to reduce management and operational costs.

<div align="right">Auth.</div>

9.A3.30. Securing payment of tax liabilities. /I. Gabisonia/. Business-engineering. – 2011. - #1. – pp. 203-207. – geo.; abs.: eng.
The article discusses the important questions of tax reform in Georgia, in particular, legal and practical aspects of securing payment of tax liabilities according to the old and new Tax Code; the taxpayers' rights protection are also considered.

<div align="right">Auth.</div>

9.A3.31. NATO ISAF Peace Mission in the process of economic rehabilitation and reintegration of Afghanistan. /T. Grigolia/. Business-engineering. – 2011. - #1. – pp. 208-210. – geo.; abs.: eng.
ISAF was created in accordance with the Bonn Conference in December 2001. Afghan opposition leaders attending the conference began the process of reconstructing their country by setting up a new government structure, namely the Afghan Transitional Authority. The concept of a UN-mandated international force to assist the newly established Afghan Transitional Authority was also launched at this occasion to create a secure environment in and around Kabul and support the reconstruction of Afghanistan. These agreements paved the way for the creation of a three-way partnership between the Afghan Transitional Authority, the United Nations Assistance Mission in Afghanistan (UNAMA) and ISAF. On 11 August 2003 NATO assumed leadership of the ISAF operation, turning the six-month national rotations to en end. The Alliance became responsible for the command, coordination and planning of the force, including the provision of a force commander and headquarters on the ground in Afghanistan. This new leadership overcame the problem of a continual search to find new nations to lead the mission and the difficulties of setting up a new headquarters every six months in a complex environment. A continuing NATO headquarters also enables small countries, less likely to take over leadership responsibility, to play a strong role within a multinational headquarters. Since 2006, ISAF has been involved in more intensive combat operations in southern Afghanistan, a tendency which continued in 2007 and 2008. Attacks on ISAF in other parts of Afghanistan are also mounting.

<div align="right">Auth.</div>

9.A3.32. For the issue of estimation of population's general standard of life. /P. Lemonjava/. Business-engineering. – 2011. - #1. – pp. 211-216. – geo.; abs.: eng.
It is impossible to express the population's general standard of life by one particular national measure because it is well-illustrated by quantity and quality rating system. In order to estimate the population's general standard of life, level of education and culture development, medical and health resort services, environmental conditions, provision of housing, real income per capita, amount of food and industrial products, service range, structure, prices and trend, rates for municipal and transport services, employment, average life expectancy and mean duration of working day should be considered. For estimation of the population's general standard of life both the "consumer price index" and the GDP deflator are used.

<div align="right">Auth.</div>

9.A3.33. Prices, price formation and the peculiarities of its change. /J.Kankadze, A.Mebonia, M.Kankadze/. Transactions of Technical University of Georgia. – 2010. – #1(475). – pp. 125-129. – geo; res.: geo., eng., rus.
Peculiarities of prices and price formation, as well as their criteria are discussed. The price formation nuances in accordance with modern market economy principles are established, as well as an analysis of commercial subjects actions in the direction of fixing prices on the market is made.

<div align="right">Auth.</div>

9.A3.34. Strategy and tactics of socio-economic transformation of Georgia under conditions of globalization. /G. Lobzhanidze/. Transactions of Technical University of Georgia. – 2010. – #3(477). – pp. 35-43. – geo.; res.: geo., eng., rus.
The controversial globalization processes and trends have been described and analyzed. Major tendencies, strategy and tactics for Georgia's socio-economic transformation have been defined and suggested, taking into consideration the Orthodox Christian principles and positive peculiarities of globalization, whose realization will give Georgia the possibilities of sustainable and safe development and enable the country to hold a worthy position in the world community.

<div align="right">Auth.</div>

9.A3.35. The problems of free economic zones set up in Georgia. /T. Bakanidze, A. Ediberidze /Transactions of Technical University of Georgia. – 2010. – #3(477). – pp. 124-129. – geo.; res.: geo., eng., rus.

The essence and functioning of a free economic zone in China, Dubai, U.S.A., and Georgia as well as its role in the economic development of these countries are considered. Also discussed are such questions as: which country's free economic zone model is the Poti free industry zone; what will be its positive and negative effects on Georgia's economy; whether it will prove successful, and how it will contribute to the improvement of general business environment; whether it will be as cost-effective for Georgia as in other world countries. A clear-cut analysis of a special role of the free economic zone in the country's industry development policy has been made.

<div align="right">Auth.</div>

9.A3.36. Problems of profit-and-loss account analysis. /P. Burduli/. Accounting. – 2011. - #11. – pp. 26-29. – geo.; abs.: geo., eng.

Profit-and-loss expresses financial results of the economic activity and is, accordingly, the most important category of a market economy. According to the international standards of accounting, a financial result is determined by two elements: gross profit and gross loss. Based on it, the article takes into consideration the problematic questions of proper formation of these elements, as well as the author's ideas about the improvement of national methodology of the profit-and-loss factor analysis.

<div align="right">Auth.</div>

9.A3.37. Global practice of regulation of financial accounting and auditing by international standards. /L. Chumburidze/. Accounting. – 2011. - # 12. – pp. 27-32. – geo.; abs.: geo., eng.

The article concerns the global practice of regulation of financial accounting and auditing by international standards, which is based on the requirements of the Board of International Financial Reporting Standards, International Federation of Accountants, European Parliament and European Community relating to the regulation of financial accounting and mandatory auditing. The directions of harmonization of international standards and professional development are discussed.

<div align="right">Auth.</div>

9.A3.38. Liquidity and long-term solvency analysis problems. /P. Burduli/. Accounting. – 2011. - # 12. – pp. 33-39. – geo.; abs.: geo., eng.

The article is dedicated to improvement of the methods of analysis of such important indicators of company financial standing as liquidity and long-term solvency. Based on the above, the article discusses: the essence liquidity and working capital and their analytical meaning; questions of analysis of short-term accounts payable; loan portfolio and reserves turnover indicators; a concept of long-term solvency and financial leverage analysis. In respect to individual questions, concrete recommendations, the practical realization of which the author thinks will lead to the improvement of financial analysis methodology and methods of the said indicators are given.

<div align="right">Auth.</div>

9.A3.39. Concept of sustainable development from the outlook of the 21st century. /O. Keshelashvili, S. Veshapidzae/. Agrarian-economic Science and Technologies. 2011. - #1. – pp. 10-14. - geo.; abs.: eng.

The article underlines that the economic model of the 21st century is completely different from the models and attitudes predominating some 20-30 years ago. Nowadays, the priority is given to sustainable development. It is mentioned that since the 1990s the ecology problem has acquired global character being reflected in the following: natural restorable resources (tropical forests, fish resources, etc.) are no longer self-renewing; the world eco system is being ruined, most species of flora and fauna are disappearing; more and more areas of the planet have transformed into zones of ecological risk; prospective climate change has been regarded as the most urgent challenge. It could be definitely said that sustainable development should become the basis for modern ecological-economic growth. There are four criteria of a more detailed analysis of sustainable development. Concepts of weak and strong sustainability are distinguished for making a more detailed analysis of sustainable development. Given that the concept of sustainable development has not been finally defined, the author proposes own scientific wording of it.

<div align="right">Auth.</div>

9.A3.40. Calculation of manufacturing overheads. /I. Chiladze/. Accounting. – 2012. - # 2. – pp. 34-44. – geo.; abs.: geo., eng.

The article deals with manufacturing overheads defining them as production management and service costs. It is mentioned that since they are indirect costs, they are apportioned between types of products, according to the selected base. The Author distinguished between the *allocation overheads, apportionment overheads* and *absorption overheads* and provides a detailed description of each of them and methods of their calculation.

9.A3.41. Calculation of crude oil cost - synthesis of FASS and GAAP international practices. /Sh. Shalashvili/. Accounting. – 2012. - # 2. – pp. 45-51. – geo.; abs.: geo., eng.

Due to inexistence of a generally accepted, or standard-defined, crude oil cost calculation method, the author has attempted to develop own approach to the issue. Namely, if a commercial extraction of oil is in process, it would be economically, as well as procedurally, justified to include in crude oil cost not only production costs, but also the depreciation of capitalized costs. On the contrary, if the commercial extraction of crude oil has not commenced and respectively capitalized costs are not being depreciated, the cost of the accumulated crude oil (as a result of miscellaneous exploration operations) should be assessed by taking into account only the direct or overhead costs being associated with the oil accumulation.

<div align="right">Auth.</div>

9.A3.42. How to arrest inflation and achieve economic growth. /L.Eliava/. Business-Courier. – 2011. - # 1/3. – pp. 75-82. – geo., eng.; abs.: geo., eng.

In the transition period of Georgia, following introduction of the national currency Lari, the banking sector turned into the most successful domains in the national economy. The rates of its development significantly exceeded the country's economic growth rates. This gave rise to the formation of a sustainable financial environment. Commercial banks being much sure of own stability have succeeded in liberalizing the process of lending as much as possible.

<div align="right">Auth.</div>

9.A3.43. Estimation of parameters of inflation models by means of the Kalman filter. /N. Gogoladze/. Georgian Scientific News (GSN). – 2011. - #3(11). – pp. 19-21. – rus., abs.: geo., eng., rus.

The work considers a model of inflation process with account of shadow economy being presented as a state space. To estimate the model parameters, the discrete Kalman filter is used. An optimal inflation control problem is posed by applying the method of dynamic programming.

<div align="right">Auth.</div>

9.A3.44. International educational relations of Georgia - the prerequisite for the formation of knowledge triangle. /I. Gagnidze/. Economics and Business. – 2011. - #2. – pp. 31-40. – geo.; abs.: eng.

The article deals with the educational and scientific relations of Georgia. Namely, its participation in Tempus and Erasmus Mundus programs, international relations of Shota Rustaveli Science Foundation and materials of Geostat about international student mobility. Proceeding from the above, it may be argued that strong international educational and scientific relations in Georgia are already a reality. It is noteworthy that these connections are dispersed throughout Georgia. Regional universities and institutes engaged in international projects confirm this. The analysis of the current situation shows that the working out of an economic development strategy of the country focusing on those industries, in which the country has regional competitive advantages (education and science, medicine, agriculture, transport, tourism) is essential; According to this strategy, the integrated multi-level policy of education and science development (by priority industries) should be designed. The situation in priority industries should be assessed against the three dimensions of the knowledge triangle (education, science, innovation and business); The dimensions of the knowledge triangle model should be created in those industries, where they do not exist; and where the agents operate in all the three directions of the triangle, the formation of effective links and clusters among them should be encouraged; within the clusters, synergies are swiftly gained and formal and informal education supply each other; the barriers for start-up business are low, investments inflows are purposeful, knowledge is deepened, employment grows and the development of industries is stable.

<div align="right">Auth.</div>

9.A3.45. Political aspects of the inflation targeting under the currency substitution. /A.Iacobashvili/. Economics and Business. – 2011. - #2. – pp. 59-72. – geo.; abs.: eng.

The article deals with a modern practice of inflation targeting that has been implemented in Georgia since 2008 within the monetary policy and analyzes its compatibility with the process of dollarization. Given the international practice, the model perfection is significantly dependent on critical outcomes of the inflation targeting under conditions of currency substitution, since control over the inflation-related public expenditures needs to be additionally specified according to the currency substitution degree. At the same time, monetary stabilization represents a serious challenge to policymakers because of both time inconsistency and expected conflicts of interest. To neutralize the time inconsistency, an account of the real economy sector would be reasonable for a long-term forecast, as well as unconditional protection (ensuring) of the National Bank's independence in order to raise efficiency.

<div align="right">Auth.</div>

9.A3.46. Peculiarities of insurance market formation in Georgia and its development trends. /D. Vekua, N.Paresashvili/. Economics and Business. – 2011. - #2. – pp. 89-96. – geo.; abs.: eng.

The article provides an analysis of insurance market development trends in Georgia emphasizing that its development creates opportunities for economy to attract new credit resources. Insurance market develops extensively, although there is still much to be done to create demand on insurance services, on one hand, and on the other – to better meet the insurance interests. The article provides a set of proposals for improving the management and organizational structure in the insurance sector, culture of service, and enhancing all the directions of marketing activities.

<div align="right">Auth.</div>

9.A3.47. Some peculiarities of management in developed countries of the world. /I. Masurashvili/. Economics and Business. – 2011. - #2. – pp. 127-136. – geo.; abs.: eng.

Management for Japanese companies is a benevolent use of power to ensure order and harmony. Japanese managers may sometimes abuse the power, but not its main function - the creation of socially-sanctioned control and public welfare. As for Americans, the management is a process, the essence of which consists in the notion "incentive– response". In Georgia, a simple choice of the eastern or western management can hardly be made, without taking account of local traditions and customs. The best solution for the national economy development would be the fitting of an interim option to the Georgian reality.

<div align="right">Auth.</div>

9.A3.48. Transport corridor of Georgia as a significant factor of increasing international integration and national economy competitiveness. /S. Pavliashvili, B. Kitsmarishvili/. Akhali Ekonomisti. – 2012. - #1. – pp. 7-12. – geo.; abs.: eng.

The geopolitical location of Georgia in many respects assisted development of its competitive status in the modern world. Under conditions of the current global processes the Caucasus region being on the intersection of Europe, Russia and Central Asia has a great strategic importance and a possibility for translating this advantage into a significant additional source of income for Georgia. In the article, the transport corridor of Georgia is considered as the significant factor of integration and increase of competitiveness of the national economy under the present globalization conditions. The characteristics of some theoretical and practical features of competitiveness are given; significant parameters concerning oil pipelines, motor, air and railway transport are given for the last fifteen years. The recognized factors of competition development include: the openness of economy, growth of transnational companies, the globalization of supply and demand, the deregulation of markets, and development of high technologies. It is shown that such a country as Georgia should constantly strive for harmonizing the national legislation with the international and maximally avoid economic expansion and discrimination. Under the current conditions, the essence of the economic sovereignty of the state does not consist in escalating the economic power of the state within its territory; much more important is adaptation to the international economic integration and creation of institutions which will draw us closer to globalization.

<div align="right">Auth.</div>

9.A3.49. Economic Discomfort Index: content and applicable value. /J. Archvadze/. Akhali Ekonomisti. – 2012. - #1. – pp. 13-16. – geo.; abs.: eng.

The macroeconomic stability of economy, its sustainability toward negative tendencies, is well depicted by Economic Discomfort Index, which is the sum of the inflation and unemployment rate. The use of this indicator in USA has almost a four-decade history; as for Georgia, in spite of the simplicity of its calculation, it is not applied yet. It is expedient for every country to have the subscript bound of the Economic Discomfort Index. According to the author, for USA it makes 7%, in Georgia -15%. In the last 14 years, the average value of EDI exceeded the level of 7% only by 1.385 pct in USA; as to Georgia, it exceeded the level of 15% by 5.986 pct, or by 3.4 times more. According to the last 14 years' statistics, the average yearly inflation index in Georgia exceeded 3.0 times (7.5% and 2.46%) that of USA, that of unemployment exceeding by 2.3 times (13.5% and 5.95% respectively). All this is indicative of Georgia's relative backwardness, as compared with USA, by not only general economic development, but also by economic sustainability and stable development. By this indicator, Georgia's position is much worse than that of our immediate neighbors – Azerbaijan and Armenia.

<div align="right">Auth.</div>

9.A3.50. Main aspects of real estate market's general model. /A. Sichinava, Sh. Veshapidze, L. Karchava, L. Osadze/. Akhali Ekonomisti. – 2012. - #1. – pp. 24-33. – geo.; abs.: eng.

The article discusses the formation of a real estate market in Georgia, which started in the 90s of the 20th century. The real estate market is described generally and can be defined as a system of economic and legal relations. It is formed on the basis of interaction of the turnover of commodities and money. The real estate market, as a self-regulated system, consists of 7 main elements: demand, supply, price, management, marketing, infrastructure and working procedures. The main functions of the real estate market are:

commercial, information, price-forming, incentive, competitive, intermediary, regulatory, investment, social, reallocation of land and other objects. Also analyzed is the real estate market system as a sphere of investments. The information infrastructure and main sources of a database generation are characterized. The real estate market types and its classification in the facet form are given.

<div align="right">Auth.</div>

9.A3.51. Commercial bank's portfolio of securities. /R. Papaskiri/. Akhali Ekonomisti. – 2012. - #1. – pp. 40-42. – geo.; abs.: eng.
The article describes a procedure for optimal management of a portfolio of securities, which is to take place only after a technical and fundamental analysis of the securities market has been made. This work is to be done by the bank's financial manager. The article lists the following economic indicators of an issue to be analyzed and evaluated by the bank manager: return on assets (ROA), overall liquidity (C_0), capital structure (C_3) and ratio – market value of assets/dividend yield (D/Y). The overall liquidity ratio shall not be less than 200%, the capital structure ratio shall not exceed 50%; the return shall not exceed 15%, while the ratio D/Y should be as less as possible.

<div align="right">Auth.</div>

9.A3.52. Methodic and methodological aspects of regional financial and economic independence. /R. Tateshvili/. Akhali Ekonomisti. – 2012. - #1. – pp. 43-45. – geo.; abs.: eng.
The paper reflects comprehension of the country's international experience of regulation of regional development theories and economic policy, research of the regional budget and tax equalization policy elements, and the government regulation-related tools. Special importance is given to an active participation of the State in the regulation of the country's territorial development process.

<div align="right">Auth.</div>

9.A3.53. Trans-border cooperation of Ukraine: retrospective review and prospect. /M. Shuba/. Akhali Ekonomisti. – 2012. - #1. – pp. 53-57. – rus.; abs.: eng.
The basic approaches to analyzing the phenomenon of trans-border cooperation and the most common forms of trans-border 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 trans-border cooperation is carried out at present are selected. The main factors that restrain the development of trans-border cooperation in Ukraine are considered. The existing recommendations concerning the future development of trans-border cooperation of Ukraine are generalized.

<div align="right">Auth.</div>

9.A3.54. The role of clustering in the regional development. /I. Meskhia, D. Jalagonia/. Scientific and Practical Journal Gadasakhadebi. – 2010. – #1. – pp. 36-45. – geo.; abs.: geo., eng.
The work analyzes the meaning, functions and role of regional clusters in raising the level of competitiveness. Also analyzed is the theory of clusters and the models tested in the world practice; the proprieties of clusters in the process of synergic effect are identified; the criteria of classification of clusters, the peculiarities of regional and industrial clusters and the required conditions for their forming and functioning are investigated. Also discussed are the clustering development stages and their present state in developed, developing and transition economy countries. Based on an analysis of natural clusters in Georgia being currently in embryo, proposals on the organization of regional clusters and expediency of the state aid for their implementation are made.

<div align="right">Auth.</div>

9.A3.55. Accounting of documentary credit operations. /D. Jalaghonia/. Gadasakhadebi. – 2010. – #2. – pp. 38-44. – geo.; abs.: geo., eng.
The article discusses the issues concerning accounting of documentary credit operations. Taking into consideration the available international practice, the importance of execution of documentary credit operations is mentioned. The general impossibility of existence of an interest-free bill of credit is stressed. In any case, the buyer will cover the value of the bill of credit, including the actual market interest that equals the current (discounted) value of the credit bill due, rather than its nominal value. The author argues the proposed issue based on specific examples using the simple and compound interest methods.

<div align="right">Auth.</div>

9.A3.56. Methodological and methodic bases for calculation of goodwill. /D. Jalagonia/. Gadasakhadebi. – 2010. – #3. – pp. 28-35. – geo.; abs.: geo., eng.
The work discusses the items related with accounting of "goodwill" in compliance with international standards. In order to appreciate the problem itself, the value of goodwill had been evaluated and studied before modification in international standards of financial accounting and by taking into consideration the methodology and methods that were formed after modification. The methodological and methodical bases of

calculation of goodwill are specified in consolidated reports received after amalgamation of enterprises. Also underlined is that according to new approaches under international standards, annual testing of goodwill for devaluation takes place rather than its depreciation. Specification and analysis of individual goodwill accounting-related issues are also of importance.

<div align="right">Auth.</div>

9.A3.57. Personnel management in an organization hit with crisis. /R. Kharebava/. Gadasakhadebi. – 2010. – #4. – pp. 13-23. – geo.; abs.: geo., eng.
What is the role of human resources in the survival of an organization in times of crisis? The article is an answer to this main question. It conveys the idea of importance of human resources in an organization hit with crisis, the role of an effective crisis management team in overcoming financial disasters and unpredictable events that affect the company's reputation and marketability by careful planning, organization, and implementation. The author discusses the problems faced by the management team in any organization during times of crisis: the problem of retaining the right employee that is one of the crucial challenges for any organization, keeping a pool of competent employees that will help the organization in pushing their sales, expanding their market, innovating new products and keeping operations as efficient as possible. What kind of the key performance indicators and assessment tools should be used for measurement? How to identify the problems and what actions should be taken to ensure the recovery of recruits and the venture? How to involve the employees in the decision-making process, in the resolution procedure? How to make effective decisions to prevent pushing down the morale of employees and prevent the talented workers from leaving the organization? How to train or coach them before making any drastic actions like transfers, demotions or terminations? How to build the self-confidence level and release the stress in order to overcome the crisis? The author offers several ways of coping with the above problems.

<div align="right">Auth.</div>

9.A3.58. Corporate management after the example of Tbilaviamsheni. /L.Takalandze/. Gadasakhadebi. – 2011. – #4. – pp. 45-51. – geo.; abs.: geo., eng.
The article provides discussion of the essence of the corporate management, its significance for Georgian companies, for which these issues are relatively new ones. On the rapidly growing market, in the environment of dynamically changing technologies and acute competition, the issue of attracting external funds is inevitable. This requires that the company work be organized according to modern management principles. In our country, the institution of corporate management is rather poorly developed. The article considers the problems relating to corporate management in Georgia as well as its local peculiarities after the example of the Georgian company "TAM – Tbilaviamsheni", being currently the most successful in using the corporate management principles.

<div align="right">Auth.</div>

A4. Education

9.A4.1. Reality and problems of architectural education. /V.Davitaia/. Modern Problems of Architecture and Town Planning. – 2011. - # 1. – pp. 26-29. – geo.; abs.: geo., eng., rus.
The problems of architectural education in the context of reforms in educational system and new realities are discussed in the report. Recommendations are given.

<div align="right">Auth.</div>

9.A4.2. An algorithm of forming a test of complex estimation in e-learning management system. /T. Zhvania/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 109-114. – geo.; abs.: geo., eng.
The possibilities and the place of the usage in the learning process of an e-learning management system LMS Moodle are described. In the electronic learning environment for automatic forming, the issues of the database for testing assignments are discussed and the complex algorithm of estimation of knowledge is offered.

<div align="right">Auth.</div>

9.A4.3. Several issues related to improving the teaching quality in Technical University of Georgia. /G. Dzidziguri, Z. Zurabishvili, Kh. Mkheidze, T. Datiashvili, Sh. Gongladze/. Business-engineering. – 2011. - #1. – pp. 8-20. – geo.; abs.: eng.
By the Communiqué of the Conference of European Ministers Responsible for Higher Education, Leuven and Louvain-la-Neuve, 28-29 April 2009, the higher education institutions have been asked to pay particular attention to improving the teaching quality of their study programmes at all levels. This should be a priority in the further implementation of the European Standards and Guidelines for quality assurance. Particular attention has been paid to quality assurance of teaching staff standard: Institutions should have ways of

satisfying themselves that staff involved with the teaching of students is qualified and competent to do so. They should be available to those undertaking external reviews, and commented upon in reports. It is important that those who teach have a full knowledge and understanding of the subject they are teaching, have the necessary skills and experience to transmit their knowledge and understanding effectively to students in a range of teaching contexts, and can access feedback on their own performance. It is obvious that the main obstacle for introduction of modern management systems in higher education institutions of partner countries is the absence of HRM policy, relevant procedures and lack of initial HR documentation. Therefore, on a given stage, for implementation of a modern performance evaluation system in Georgian Technical University priority has been given to the following activities: conducting job analysis for academic positions; Identifying employee specifications; identifying performance evaluation criteria; establishing performance evaluation system; conducting performance evaluation; identifying academic staff training and development needs; Introducing job management policy. The core of this is the strategic layer, which is focused on the instrument of a competence catalogue designed by the Tempus-Tuning Project. Additionally, on this layer, job requirements have been specified based on experiences with job performance, ideally measured in the context of quality management. On the operational layer, the level of competencies of academic staff was diagnosed based on structured questionnaires using the competency catalogue as a vocabulary. In comparison with the requirements specified for the job role, the competency gaps have been determined and recommendations on training measures have been carried out.

Auth.

9.A4.4. An effective role of e-learning technology for English language teaching by using meta-communication actors. /U. Demiray, T. Lominadze, I. Istifci/. Business-engineering. – 2011. - #1. – pp. 30-40. – eng.; abs.: eng.

Meta communication plays a key role in foreign language learning and teaching. Broadly speaking, meta communication is communication about communication. Meta communication is something that goes beyond communication and all language learners and teachers should be familiar with its existence. It should be stressed that meta communication which accompanies any message is very powerful. In face to face writing lessons, the student can make emphasis on any point by utilizing larger fonts, capital letters, or bold fonts in his essay. However, in virtual learning environments, students can make use of emoticons like :-) "happy", :-("sad", :-/ "perplexed", O.o "confused" to communicate about communication. Further, they can deploy some acronyms like (BTW= By the way, ASAP= as soon as possible, TM= tomorrow) to easily convey their messages. It should be emphasized that E-learning applications (virtual worlds, second life, ICTs) are very beneficial in foreign language learning and teaching since they create a platform for students and teachers to interact in a context with no boundaries of time and distance. In Transformational Generative Grammar, foreign language teachers describe syntactic structures in English by using grammatical symbols with meta communicational elements. For instance, every English Foreign Language-EFL or English Language Teaching-ELT teachers or students is familiar with the symbols and related meanings like (S= sentence, subject, V= verb, O= object, N= noun, NP= noun phrase, VP= verb phrase, etc.). On the other side, when teaching English pronunciation to Turkish EFL learners, foreign language teachers utilize phonetic symbols like /è, æ, å, ğ, w, ŋ/ to write transcriptions of English words. These phonetic symbols have meta communicational elements in their composition because they communicate about communication. At this juncture, foreign language teachers should learn frequently used emoticons, keyboard symbols, acronyms, grammatical and phonetic symbols and they should teach them to their students to enable them to establish successful communication with other people. Globalization is consolidated by the extraordinary invasion of higher education by new technologies, especially the Internet. Major changes in the social and economical conditions in Europe and worldwide force new needs and trends upon the technology. The main challenge for "the knowledge society of the future" is to ensure that each member of the society has the opportunity of continuous professional development, frequent retraining and obtaining new competences, mastering new information technologies (IT), lifelong learning (LLL), and so on. Within the education sector, a number of continuous efforts are taking place to stimulate the use of ICT at all levels of education. E-Learning has introduced new approaches of instructional delivery where the roles of teacher and student have significantly changed. The integration of information and communication technologies into the education field is in constant progression and generates empirical approaches for educational environment design. Some research projects in distance learning are introduced in the world.

Auth.

9.A4.5. Research and analysis of the basic features, merits and demerits of remote learning. /G. Nikuradze, J. Nikuradze, I. Chistiakova/. Ganatleba. – 2011. - #1. – pp. 22-26. – rus.; abs.: eng., geo.

Considered is the system of distance learning and its basic elements. Also considered are the forms of distance learning, its merits and demerits. Analyzed is a module of the educational and methodological process; recommended are the methods of both raising the quality and elimination of shortcomings of distance learning. The system has a number of advantages as well as of some drawbacks, the elimination of

which is a global task. But despite all this, remote learning is a relatively new form of knowledge transfer and represents, therefore, a topical direction of training of students.

<div align="right">Auth.</div>

9.A4.6. Short history of remote learning development. /J. Nikuradze, G.Nikuradze, V. Meladze/. Ganatleba. – 2011. - #1. – pp. 26-30. – rus.; abs.: eng., geo.
The history of remote/distance learning training is given, wherefrom the topicality and necessity of this form of learning in accordance with new requirements of the society in the different countries of the world becomes clear. With the advent of new technologies, a change in methods in remote learning is currently represented in the form of three generations of its development. Various factors of development of remote learning are considered and the fact that remote learning as a new form of training has lead to an increase of financing for the purpose on the part of the state is mentioned.

<div align="right">Auth.</div>

9.A4.7. Technical terminology and modern educational literature. /L. Sutidze, G. Iakobashvili/. Transactions of Technical University of Georgia. – 2010. – #1(475). – pp. 121-124. – geo.; res.: geo., eng., rus.
Since the majority of the technical literature in Georgian is translated from Russian, a correct choice of Georgian technical term corresponding to the Russian one is of importance in order to comply with the functional meaning and content of the given sentence. The issues concerning the proper usage of some technical terms are analyzed in terms of their functional meaning. Some blunders in translations of recently published technical literature are indicated, such, for example, as: bulldozer wing, rope reserving, etc. To prevent such blunders, the authors recommend the compilation and publication of explanatory glossaries of technical terms according to branches.

<div align="right">Auth.</div>

9.A4.8. On the problems of innovative training technologies in higher schools. /K. Abildaeva/. Georgian Scientific News (GSN). – 2011. - #2(10). – pp. 41-45. – rus., abs.: geo., eng., rus.
The problems of innovative training technologies in high schools, particularly modern interactive technologies of teaching languages are considered. The author states that training of highly qualified specialists is ineffective without teaching them a foreign language at the proper level. The necessity of learning a foreign language in the functional and stylistic aspect is universally recognized. The author uses the interactive modular technology by M.M. Zhanpeisova which is based on modern data of psychological and pedagogical sciences on a student's personality.

<div align="right">Auth.</div>

9.A4.9. The problem of creating AMC in the process of multilingual teaching of English. /M. Gyodakyan, A. Abrahamyan/. Georgian Scientific News (GSN). – 2011. - #3(11). – pp. 53-60. – rus., abs.: geo., eng., rus.
The problems of creating academic-methodological complexes have been stated. The methodological knowledge application sphere should be specified and elaborated for creating bilingual and multilingual teaching textbooks as well as new approaches and concepts. Contemporary textbooks should reflect the problems of regionalization along with the problems of globalization. It is important that student-oriented textbooks be created with respect of interests, abilities, attitudes, mentality of the student, as well as age-related, national, cultural and educational peculiarities.

<div align="right">Auth.</div>

A5. Informatics/Computer Science

9.A5.1. Internet and transformation of the community's political and economic model. /G. Jolia, D. Sekhniashvili/. Business-engineering. – 2011. - #1. – pp. 41-48. – geo.; abs.: eng.
The article deals with the world development trends and revolutionary changes offered by the Internet. Discussed are the expected global socio-economic outcomes of the introduction and dissemination of Internet-based technologies. The article concerns rather topical issues on the effects of the Internet upon the economy, public political life and civil society shaping.

<div align="right">Auth.</div>

9.A5.2. Filtration properties of wavelet technology algorithms. /I.Chkheidze, O.Tomaradze, L. Tokadze/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 97-100. – geo.; res.: geo., eng., rus.

The results of a study of filtration of random errors of wavelength algorithms are discussed. The experiments carried out in the Mathcad program environment demonstrated that the application of wavelet transformation noise improves the noise-imposed image quality by 2.5-3 db, while as a result of median filtration the improvement did not exceed 0.9-1 db. Consequently, the wavelet technology algorithms have the error filtration properties, when the effect of random errors on initial information is considered.

Auth.

9.A5.3. Electrocardiogram analysis on the basis of time-frequency wavelet transforms. /I. Chkheidze, L. Tokadze/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 101-104. – geo.; res.: geo., eng., rus.
Within the Matcad environment, based on the Wavelet Packet functions, a time-frequency representation of a cardiogram of a healthy patient and of a patient with ischemic heart disease is produced. An analysis of time-frequency characteristics allows detect on electrocardiogram the changes caused by ischemic heart disease at its early stage.

Auth.

9.A5.4. Set-up paradox and other paradoxes in the problems of probability modelling. /R. Kakubava, D.Gulua, G. Pipia, S. Samadar/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 105-109. – rus.; res.: geo., eng., rus.
In the given work system analysis for historical paradoxes in probability modeling problems is carried out. Main causes for their arising are considered. Some ideas on preventing such paradoxes are given. A particular attention is paid to the set-up (switchover) paradox having been fixed by American and Japanese specialists during the last decade. Namely, they have discovered the variance effect in queuing systems being widely spread in modern production. The authors of the article continue to work on clarifying this paradox and call upon interested colleagues to join them.

Auth.

9.A5.5. The functional-cost analysis. /L. Petriashvili, M. Okhanashvili/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 8-11. – geo.; abs.: eng., rus.
The article presents a wide range of various technologies applied for realizing the functional-cost analysis (FCA). In addition to a company budget resources and possibilities, the following factors are of importance in choosing the optimal criteria: model complexity, organized action and system integration. For many companies the choice of software and hardware is still an unsolvable problem. The company management will be able to handle financial problems using the proposed model.

Auth.

9.A5.6. Conceptual issues of teaching informatics. /E. Lagvilava/. Economics and Business. – 2011. - #2. – pp. 41-58. – geo.; abs.: eng.
Nowadays, in the age of information society, the main goal of teaching the course of informatics is formation of adequate culture of a person, formation of habits of using information for a person's development and self-assertion which are the inseparable and indispensible components of a person's common culture. The common-strategic goals and the desirable consequences should be defined concretely in the tasks of the course. The list of suggested tasks reflects comparatively independent subject's sphere of informatics. Above mentioned task's system represents the fundamentals for a new input in informatics and makes it easier to break this course into separate disciplines, modules, themes or variations. Optimization and refinement of disciplines of informatics studies should be maximally oriented at the consequences of teaching at public schools, higher educational institutions and post graduate studies. The concepts of teaching informatics should be refined, improved and brought closer to each other. There is an argumentative judgment of defining the concrete functions of informatics according to the levels of teaching and subject sphere, the integral and interdisciplinary character of informatics is also highlighted in the article. As a consequence of realization of represented concept the system of informatics study should ensure the preparation of professionals with both theoretical and practical knowledge. Technology based education should bring researchers and practitioners together.

Auth.

A6. Other Social Sciences

9.A6.1. Psychopathological characteristics of geniuses. /N. Gogichashvili/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 151-157. – geo.; abs.: geo., eng.
The work consists of a review of different approaches to the problem of genius, interrelationship existing between the nature of genius and psychiatric disorders, as well as common and distinguishing characteristic features and creative individual idiosyncrasies between the nature of genius and talent. The author uses the

psychological approaches to the life expectancy of geniuses, age-related peculiarities expressed by their talents and problems of mutual dependence on psychosomatic diseases.

<div align="right">Auth.</div>

9.A6.2. Phenomenon of a leader in political psychology. /N. Akhalashvili/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 137-143. – geo.; abs.: geo., eng.
Political leadership is an integral part of leadership psychology, its specificity being defined by its content and results. A political leader has the ability to gather around own self people, to make partciapants a of political process acknowldge his authority, etc. The institution of political leadership is an integral part of political life for a developed society. In small groups, leadership is informal. In big groups, there are formal structures of leadership. The subject of political psychology is to study characteristics of leader psychology and the influence of psychological characteristics over the political behavior. The main component in political leader's activity is " the I concept". Nowadays, political psychology is one of the prioritized branches as it maintains a unique balance to realize cohesion between political behaviour and internal political motivations.

<div align="right">Auth.</div>

9.A6.3. Issues of philosophy of morality. /T. Pantsulaia/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 182-189. – geo.; abs.: geo., eng.
Ethics (science about morale) is a philosophic discipline which formulates the norms necessary for human life. During centuries, morale offered to people specific reference points expressed through either religious norms and values or philosophically justified postulates, or in the form of life wisdom and experience. The problem consists in the understanding of the "existing" and "required". The way out should be sought in the necessary rules intended for high-morale relations rathet than in the established norms existing in human relations.

<div align="right">Auth.</div>

9.A6.4. Phenomenological Society of Georgia. /M. Dolidze/. Culture & Philosophy. – 2011. - pp. 12-27. - eng.; abs.: geo
The author offers an interpretation of life phenomenology based on a quantum–mechanics phenomenology phenomenological. Although the phenomenon of life starts to be realized on a level of cell and does not manifest itself in the atomic (quantum-mechanical) sphere, the phenomenological openness of a quantum system towards life makes such interpretation admissible. According to the author, life in a micro-world plays a role of an unknown, metaphysical object. The relation of quantum mechanics to the metaphysical mystery of life conditions a definite freedom of quantum particle on the one hand and the integrity of quantum cognitive situation on the other hand. The quantum situation is open towards the life phenomenon; it exceeds, thus, the micro-world borders and embraces the human creative reality, art, literature, manifests dualism, and, concurrently, unity of the creative freedom and vital necessity in the whole life.

<div align="right">Auth.</div>

9.A6.5. Intuition of life in Tymieniecka's phenomenology with a reference to intuition or Sat in Śankara's Advaita Vedanta. /O. Louchakova-Schwartz/. Culture & Philosophy. – 2011. - pp. 40-61. - eng.; abs.: geo
The author offers an analysis of direct intuition in Tymieniecka's journey of knowledge, with a sense of internal stillness and gratitude. Perhaps the above set of mental acts can be viewed as an algorithm of philosophical knowledge. The technical aspects of the *method* are nonexistent in Tymieniecka's case, but her general gnoseological stance is distinct and unique; it is the *novum* of direct intuition. In the analysis of Tymieniecka's use of direct intuition, the author made some use of the *noēma-noēsis* theory of intentional consciousness. However, as it is mentioned in the discussion, Tymieniecka herself extensively criticizes that theory's claims to universal applicability; Tymieniecka's broad contextualizing eliminates any doubt that imagination as a cognitive function and as *Imaginatio Creatrix* is much more prevalent in life than the intentional acts of consciousness. Therefore the author has to establish a delimiter to her own analysis: positioning direct intuition within the conceptual network of intentional consciousness limits the possibilities for understanding the former and semantically narrows the clearing within which imagination can be fully understood as part of one's own logoic manifestation. Juxtaposed with the fact that Tymieniecka's discovery of the crucial role of imagination in ontopoietic networks is direct-intuition-based - what else could it be?- these points lead her to believe that the very framework for the analysis of direct intuition needs to be eventually revised. It is possible that the concept of direct intuition, which is the major vehicle of Tymieniecka's insight, itself needs further clarification in order to understand Tymieniecka's method in her discovery of the role of imagination.

<div align="right">Auth.</div>

9.A6.6. Science and technology in the context of culture. /I. Kalandia/. Culture & Philosophy. – 2011. - pp. 62-67. - eng.; abs.: geo

It is well known that the specific characteristic of man is that he transforms nature and the surrounding reality according to the laws of beauty, i.e. according to values and thus creates a completely new reality – culture. Transformation of nature according to values supposes man's freedom and activity as necessary pre-conditions. Free activity is creative activity. Creativity is a necessary moment of man's transforming activity. Free creative activity is essential for man not just because it differentiates him from any other existing but because it, as a necessary pre-condition of man's transforming activity, has explanatory power. When we say that man transforms his own self in the process of transforming the reality we mean his creative activity. Man transforms the reality on the basis of understanding and comprehending regularities of the reality, determining the essence of things and events. Cognition is a complex process. Truth is not given "ready-made" to man. In order to grasp the truth man is to activate his consciousness in many directions. Cognition by necessity implies an active attitude of the subject to the object of cognition. Man's creativity in the process of cognition results in producing new cultural values, new knowledge and therefore cognition is not only a source of new knowledge but a component necessary to form and develop man's essential powers. The author argues that inevitable condition of establishment of human ideas in society is the development of spiritual values. Therefore we must restrict the tendency of making a fetish of scientific thought. Science and technology must be considered in the context of culture to keep it in the frames of system of human values.

Auth.

B. NATURAL AND EXACT SCIENCES

B1. Mathematics. Mechanics. Physics. Cybernetics

9.B1.1. Photoelectric properties of Cd- and Pb-doped thulium sesquisulfides thin films. /Z. Jabua, K. Davitadze, A. Gigineishvili/. Nano Studies. - 2011. - # 3. – pp. 13-18. – eng.; abs.: geo., eng.

The measurements of spectral and temperature dependences of photoconductivity and photo-electromotive force of Tm_2S_3 thin films doped with Pb and Cd in the region of photon energy of 0.3 – 3.3 eV and at the temperatures of 110 – 350 K have been carried out. The obtained experimental results have been interpreted with supposition of the basic role of photosensitivity of acceptor levels formed by vacancies in cations' sublattice during their compensation by the introducing of Pb and Cd donors. The ionization energies of Pb-donor and Tm-vacancy acceptor levels in Tm_2S_3 films have been determined.

Auth.

9.B1.2. Optical properties of SmSb and TmSb films. /A. Gigineishvili, L. Glurjidze, Z. Jabua/. Nano Studies. - 2011. - # 3. – pp. 19-24. – eng.; abs.: geo., eng.

At room temperature in the photon energy range of 0.05 – 5.50 eV, the spectral dependencies of the main optical parameters of crystalline samarium and thulium monoantimonides films prepared by thermal evaporation from two independent sources are reported. Using the X-ray L_3-absorption spectroscopy, a rare-earth ion valency is determined and its effect on the optical spectrum structure is studied.

Auth.

9.B1.3. Regulation of defect creation in ZnO p-type films by RBQE method. /T. Butkhuzi, M. Sharvashidze, T. Khulordava, N. Gapishvili, E. Kekelidze, N. Bukhsianidze, L. Aptsiauri, L. Trapaidze, R. Melkadze, I. Kamkamidze, L. Gapishvili/. Nano Studies. - 2011. - # 3. – pp. 151-156. – eng.; abs.: geo., eng.

In order to obtain impurity p-type conductivity in ZnO nano-films we carried out following experiment: n-type ZnO was implanted with F^+ ions at the concentration 10^{20} cm^{-3} at the energy E = 110 keV and at the dose D = 10^{16} cm^{-2}. Healing of the created defects in the implanted ZnO crystals were carried out by radical-beam-quasi-epitaxy (RBQE) method. According to the measurements with van der Pauw method the hole mobility, hole concentration and resistivity were found as 270 cm^2 / V s, $1.0*10^{19}$ cm^{-3} and $2.3*10^{-3}$ Ohm cm, respectively. In photo-luminescence (PL) spectrum (recorded at T = 70 K) of p-type ZnO:F layers maxima at λ = 369.1, 374.5, 382.4, 389.9 and 401.0 nm were observed. Here we demonstrate the ability of the RBQE technology for control of electrical and optical properties of ZnO material.

Auth.

9.B1.4. Faraday rotation in ultrafine magnetic structures. /L. Kalandadze/. Nano Studies. - 2011. - # 3. – pp. 157-162. - eng.; abs.: geo., eng.

The Faraday rotation is considered in magnetic fluids based on particles of magnetic oxides, for the optical constants of the material of which, n and k, the relation $k^2 \ll n^2$ holds. The Faraday rotation is represented within the theoretical Maxwell–Garnett model. A theoretical analysis has shown that Faraday rotation for magnetic fluids is related to the Faraday rotation on the material of particles by the simple

relation. According to this result, in specific experimental conditions the values of the Faraday rotation prorate to q, which is the occupancy of the volume of the magnetic fluid with magnetic particles, and spectral dependences of the Faraday rotation in magnetic fluid and in the proper bulk magnetic are similar. I hould be underlined that this result should be correct for all magnetic ultrafine media with the same relation between optical constants n and k.

<div align="right">Auth.</div>

9.B1.5. Evaluation of the effect of magnetic particles concentration on magneto-optical properties of ultra-dispersive media by dispersion analysis method. /L. Kalandadze/. Nano Studies. - 2011. - # 3. – pp. 177-180. - rus.; abs.: geo., eng.

The effect of the magnetic particles concentration q on the magneto-optical properties of an ultrafine magnetic medium has been evaluated in the case of magnetite magnetic fluids. Calculations performed by using the correlation analysis method showed that the q factor's effect on the equatorial Kerr effect frequency-dependences is of 53%. It should be underlined that this result will be also correct for any ultrafine magnetic medium, whose n and k optical constants satisfy the $n^2 \ll k^2$ condition.

<div align="right">Auth.</div>

9.B1.6. Dependence of energy-gap width on presence of shallow impurities in semiconductors with tetrahedral symmetry. / Z. Gogua, A. Gigineishvili, G. Kantidze, G. Iluridze, G. Rtveliashvili/. Nano Studies. - 2011. - # 3. – pp. 183-186. - eng.; abs.: geo., eng.

According to the common model of the impurity center, the semiconductor energy-gap width dependence on the concentration of impurities is calculated. A special role of impurities in decreasing the energy-gap width value is detected. A good agreement between the results of calculations and available experimental data is found.

<div align="right">Auth.</div>

9.B1.7. Nanostructured electrodes for energy conversion devices. /A. Tavkhelidze/. Nano Studies. - 2011. - # 3. – pp. 187-198. - eng.; abs.: geo., eng.

Recently, new quantum features have been studied in the area of nanostructured quantum wells (NQW). Periodic ridges on the surface of the layer impose additional boundary conditions on the electron wave function and reduce the quantum state density. The electrons rejected from forbidden quantum states have to occupy the states with higher energy. As a result, Fermi energy in NQW increases and work function (WF) decreases. We investigated a low WF electrode composed from a metal NQW layer and a base substrate. The substrate material was selected so that electrons were confined to the NQW. The WF value depends on ridge geometry and electron confinement. We calculate WF in the metal NQW films grown both on a semiconductor and metal substrates. In the case of semiconductor substrate, wide band gap materials are preferable as they allow more reduction in NQW work function. In the case of metal substrate, low Fermi energy materials are preferable. For most material pairs, the WF was reduced dramatically. Such structures, can serve as electrodes for room temperature thermionic and thermotunnel energy converters and coolers.

<div align="right">Auth.</div>

9.B1.8. Magnetoplastic effect in LiF crystals X-rayed in a weak magnetic field. /M. Galustashvili, M. Abramishvili, D. Driaev, V. Kvatchadze, S. Tsakadze/. Nano Studies. - 2011. - # 3. – pp. 199-204. - eng.; abs.: geo., eng.

The magnetoplastic effect studies in LiF crystals have shown that under a combined action of deformation and weak magnetic field the yield stress decreases twice and after removal of the field it restores the original value in about twenty-four hours. Theextremely low-dose X-raying, combined with magnetic field, also exerts an unhardening effect on LiF crystals. The observed magnetoplasticity can be attributed to spin evolution in a two-spin nanoreactor produced by paramagnetic defects in the system dislocation-stopper. Magnetic field does not induce appreciable changes in electron optical absorption spectra measured concurrently.

<div align="right">Auth.</div>

9.B1.9. Single-electron nanosystems. /A. Bibilashvili/. Nano Studies. - 2011. - # 3. – pp. 205-216. - geo.; abs.: geo., eng.

The conditions and physical features of tunneling of charge carriers and a single-electron through a potential barrier are considered. The equivalent schemes, characteristics and parameters of the tunneling electron in the case of single- and double-barrier structures are considered as well. A physical principle of single-electronic transistor, its main settings and some recent developments in this direction are presented.

<div align="right">Auth.</div>

9.B1.10. Lattice heat capacity of solids beyond the phonon-conception. /A. Gerasimov, L. Chkhartishvili, D. Buachidze/. Nano Studies. - 2011. - # 3. – pp. 217-226. - rus.; abs.: geo., eng.

The expression of the lattice heat capacity of solids as a function of temperature has been obtained in a new theoretical approach, without using the phonons-conception – by the direct analysis of the thermal excitation of atomic vibrations. It allows a quite good qualitatively description of both low and high temperature behaviors of this characteristic. The possibility of the theoretically obtained expression to describe quantitatively experimental temperature-dependence for the specific heat of solids has been demonstrated by fitting the theoretical curve to the experimental points available for β-rhombohedral boron crystal.

<div align="right">Auth.</div>

9.B1.11. Nanoboron (An overview). /L. Chkhartishvili/. Nano Studies. - 2011. - # 3. – pp. 227-314. - eng.; abs.: geo., eng.

Elemental boron possesses a variety of micro- and nano-structured forms, which can find applications in a number of techniques and technologies. The paper presents a review, which aims to describe in brief the methods of producing, atomic structures, and available data on the physical properties of micro- and nano-structured species of boron: molecules and clusters; crystals stabilized by intrinsic imperfections; amorphous films and powders; dispersed crystals; filamentary and fibrous structures; nanowires, nanoribbons, and nanobelts; planar and quasi-planar sheets, nanotubes and fullerenes; quasi- and nanocrystals.

<div align="right">Auth.</div>

9.B1.12. To the theory of electron mobility in Froehlich's model of the polaron. /B. Kotia/. Nano Studies. - 2011. - # 4. – pp. 43-48. - eng.; abs.: geo., eng.

The new, exact, generalized quantum evolutionary (kinetic) equations for double-time equilibrium correlation functions and statistical operator of electron–phonon system are derived with the help of projection operator method without using the random phase approximation. Electronic conductivity and drift mobility consistent uniform quantum theory have been constructed for Froehlich's model of the polaron with the help of these equations. This theory reproduces generalized Osaka result for electron's mobility at small frequencies and FHIP (Feynman–Hellwarth–Iddings–Platzman) theory at high frequencies of applied external electric field on crystal, respectively.

<div align="right">Auth.</div>

9.B1.13. On possibility and reasonability of practical realization of the unit length determination in micro- and nanoranges. /A. Danelyan, Yu. Machekhin, D. Gharibashvili, I. Lomidze, S. Mkrtychyan, S. Shotashvili, M. Lashauri/. Nano Studies. - 2011. - # 4. – pp. 139-154. - rus.; abs.: geo., eng.

The work represents development of the previous researches of the authors on the creation of a frequency measuring instrument of nano-scale dimensions, an alternative to the methods of laser interferometry of displacements. The expected resolution of the offered method is of the order of 0.5 picometers. The paper offers to use the heterodyne method to transfer frequency of signals to the standard frequency. It can essentially simplify a design of the device (there is no necessity for additional adjustable optical delays). The application of a precision comparator of frequencies should preserve the metrological characteristics and opportunities of the device.

<div align="right">Auth.</div>

9.B1.14. On some novel nanosensors and nanosensory systems. /P. Kervalishvili, T. Berberashvili, L. Chakhvashvili/. Nano Studies. - 2011. - # 4. – pp. 155-164. - eng.; abs.: geo., eng.

The science and technology of sensors and sensory systems as well as their industrial applications are rapidly developing directions of modern world economy. The quality of sensory instruments and networks is influencing almost all fields of information technology, environmental protection and level of production sites. Sensory networks are also doing much for defense and security of civil society. Elaboration of novel nanosensory materials, elements, devices and their management and control systems is one of the important tasks of physics and technology – the multidisciplinary field of natural science and engineering. The novel properties of well known semiconductors: germanium, silicon, metal oxides, etc. which are reachable by precise doping of different impurities (boron isotopes, 3d-metals, etc.) makes possible to establish different high sensitive devices, including gamma and neutron radiation nanosensors, temperature sensors of high stability, resistive sensors with memory, etc. These instruments integrated in recently developing intelligence networks, including those based on quantum information technologies, are the principal target of contemporary research work.

<div align="right">Auth.</div>

9.B1.15. Applied aspects of laser interferometry. /T. Pavliashvili, T. Kalabegishvili, V. Kvachadze/. Nano Studies. - 2011. - # 4. – pp. 165-178. - rus.; abs.: geo., eng.

The paper presents an overview on applied aspects of laser interferometry.

<div align="right">Auth.</div>

9.B1.16. Splitting fields for crossed group rings. /G. Rakviashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 5-9. – eng.; abs.: eng., geo.
It is proved that under certain conditions a crossed group ring over a field of a positive characteristic has a purely inseparable splitting field. For such crossed group ring some properties of its radical are investigated.

<div align="right">Auth.</div>

9.B1.17. On the properties of holomorphic functions in some Bergman weighted spaces. /G. Oniani, L. Tsibadze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 10-15. – eng.; abs.: eng., geo.
The paper discusses weighted Bergman spaces of holomorphic functions in the unit circle introduced by Matevosyan. Integral representations of functions of this class and their majorants are given. The case where a fractional integral belongs to the Hardy classes is studied.

<div align="right">Auth.</div>

9.B1.18. A maximum inequality for rearrangements of summands and its applications to orthogonal series and scheduling theory. /L. Chobanyan, S. Chobanyan, G. Giorgobiani/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 16-20. – eng.; abs.: eng., geo.
We give a two-sided estimation for the average of the quantity $\Phi(\max_{k \leq n} \| a_{\pi(1)} + ... + a_{\pi(k)} \|)$ with respect to all permutations $\pi : \{1, 2, ... n\} \to \{1, 2, ... n\}$, where $a = (a_1, ..., a_n)$ is an arbitrary collection of elements of a normed space X and $\Phi : R^+ \to R^+$ is an arbitrary increasing convex function. In the case $\Phi(t)=t^2$ and $X=R^1$ or $X=C^1$ the upper part of the inequality coincides with the famous Garsia inequality having a series of applications in orthogonal series and other problems of analysis. We also give a constructive algorithm for finding an optimal permutation having applications in scheduling theory.

<div align="right">Auth.</div>

9.B1.19. Coset lattices of lie algebras and their isomorphisms. /A. Lashkhi/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 21-30. – eng.; abs.: eng., geo.
For the Lie algebra over the ring the lattice of cosets is constructed. The necessary and sufficient conditions for distributivity, modularity, semimodularity of coset lattices are found. The fundamental theorem of affine geometry for nilpotent of class 2 Lie algebras is proved.

<div align="right">Auth.</div>

9.B1.20. Synthesis of $La_{2-x}Ba_xCuO_4$ high-temperature superconductor by means of photostimulated solid state reaction. /D. Daraselia, D. Japaridze, Z. Jibuti, A. Shengelaia/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 43-45. – eng.; abs.: eng., geo.
The first successful synthesis of $La_{2-x}Ba_xCuO_4$ high-temperature superconductor by means of photostimulated solid state reaction is reported. It is shown that this reaction is faster by two orders of magnitude than the conventional high-temperature solid state reaction in furnace and is stimulated by optical exposure.

<div align="right">Auth.</div>

9.B1.21. Description of multiparticle production of charged particles by gluon-dominance model in hadron-hadron and hadron-nucleus collisions. /L. Abesalashvili, L. Akhobadze, Y. Tevzadze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 46-50. – eng.; abs.: eng., geo.
The parameters of Gluon-Dominance Model (GDM) for π^- mesons and charged particles are obtained in the multiplicity distributions of hadron-hadron and hadron-nucleus interactions. We have made an attempt to give a description of different processes of multiparticle production by means of a unifed approach based on quark-gluon picture using phenomenological hadronization. We have obtained agreement of GDM with experimental data in a very wide energy range.

<div align="right">Auth.</div>

9.B1.22. Taylor expansion and Sobolev spaces. /B. Bojarski/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 5-10. – eng.; abs.: eng., geo.
In this paper, a new characterization of functions in the Sobolev space $W^{m,p}(R^n)$, $m \geq 1$ in the form of a pointwise inequality is given. This inequality reveals the local and global m-th order polynomial-like behaviour of these functions.

<div align="right">Auth.</div>

9.B1.23. On the estimation of a distribution function by an indirect sample. II. /E. Nadaraya, P. Babilua, G. Sokhadze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 11-18. – eng.; abs.: eng., geo.

In this paper, the limit theorems are proved for continuous functionals related to the estimate of $F_n(x)$ in the space $C[a, 1-a]$.

<div align="right">Auth.</div>

9.B1.24. On the generalized fast convergent sampling series. /Z. Piranashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 19-24. – eng.; abs.: eng., geo.
The generalized fast convergent sampling series and estimates of the remainder term are given. These estimates enable to receive the mentioned representation for stochastic processes and fields.

<div align="right">Auth.</div>

9.B1.25. Generalized theta-functions with characteristics and cusp forms corresponding to quadratic forms in nine variables. /T. Vepkhvadze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 25-30. – eng.; abs.: eng., geo.
The modular properties of generalized theta-functions with characteristics are used to build a cusp form of weight 9/2 on the congruence subgroup r_0 (48). It gives the opportunity of obtaining formulas for the number of representations of positive integers by quadratic forms in nine variables.

<div align="right">Auth.</div>

9.B1.26. On extremal solutions of two-point boundary value problems for second-order nonlinear singular differential equations. /N. Partsvania/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 31-36. – eng.; abs.: eng., geo.
Non-improvable in a certain sense conditions are established which guarantee the unique and non-unique solvability and the existence of a minimal and a maximal solutions of two-point boundary value problems for second order nonlinear singular differential equations, respectively.

<div align="right">Auth.</div>

9.B1.27. On the boundary conditions for the radial Schrödinger equation. /A. Khelashvili, T. Nadareishvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 37-41. – eng.; abs.: eng., geo.
It is shown that an equation for the radial wave function is compatible with the full three-dimensional Schrödinger equation if and only if a definite boundary condition is imposed on the radial wave function at the origin.

<div align="right">Auth.</div>

9.B1.28. Determination of phase transition order change points in LaH_{2+c} -type ordering dihydrides. /I. Ratishvili, N. Namoradze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 42-46. – eng.; abs.: eng., geo.
LaH_{2+cn}– type ordering hydrides are considered. Conditions which determine the values of critical concentrations associated with the phase transition type change and anomalously large heat capacity discontinuities are analyzed.

<div align="right">Auth.</div>

9.B1.29. Dependence between the energy-gap width and shallow impurities in semiconductors with tetrahedral symmetry. /Z. Gogua, , G. Kantidze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 47-50. – eng.; abs.: eng., geo.
According to the common model of the impurity center, the dependence between the energy-gap width and concentration of impurity is calculated in this paper. The individual role of impurities in decreasing the energy-gap width is shown. There is a good correspondence with the experimental results.

<div align="right">Auth.</div>

9.B1.30. Eigenvalue problem for the certain type of the low-order matrices. /D. Kalandarishvili, L. Karalashvili/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 84-92. – eng.; abs.: geo., eng.
Many problems of technology and science are reduced to the solving of partial differential equations with different conditions. To receive the numerical solutions of such problems, a diversity of difference schemes of the different order of accuracy is used. One of such approximating methods is known as a method without saturation. One approach to this method was received by means of the approximating method of the academician Shalva Mikeladze for the ordinary differential equations, which gave a possibility to raise the order of accuracy by increasing the number of approximating points. Using discrete and semi-discrete approximating schemes for solving the boundary value problem for the elliptic type partial differential equations with Dirichlet condition produced a type of matrices known as centrosymmetric or double symmetric ones. Peculiarities of such matrices give a possibility to reduce them to the half-order matrices and facilitate the construction of a characteristic equation. The characteristic equation of such matrices is

constructed in factorized form. All eigenvectors are given in explicit form. Such type of matrices has the same eigenvectors (eigenspaces) which in general do not depend on their elements. The diagonal form of such matrices contains their eigenvalues. When centrosymmetric matrices are also symmetric, matrix of spectral decomposition is constructed including the fourth order. Columns of the matrix of spectral decomposition represent orthonormal eigenvectors of the initial one. Matrix of decomposition and its inverse reduce the initial matrix to the diagonal form, which is very useful to find any power of the given matrix, raising into the power only the real eigenvalues of the diagonal form. Few theorems are represented to emphasize the peculiarities of such matrices.

<div align="right">Auth.</div>

9.B1.31. Exchanging interaction and criteria of ferromagnetism. /J. Tsertsvadze/. Ganatleba. – 2011. - #1. – pp. 99-103. – rus.; abs.: eng., geo.
The work considers the problem of explanation of the phenomenon of ferromagnetism based on the quantum-mechanical theory of exchanging electrostatic interaction of electrons in ferromagnetics created by I. I. Frenkel and W. Heisenberg.

<div align="right">Auth.</div>

9.B1.32. Minimization of the dynamic load of a high-speed rotary unit. /A. Chakhalyan/. Georgian Scientific News (GSN). – 2011. - #2(10). – pp. 19-21. – rus., abs.: geo., eng., rus.
In the work, in the program medium of MathCAD, a disk support with the cushioned suspension is modeled. Based on decisions and analysis of the equations of a system motion, the value of the amplitudes of the fluctuations of rotor and spring suspension of disk support are obtained and the optimum values of the hardness of elastic elements are determined. The most effective parameters for the solution of the optimization problems of the minimization of dynamic loads in the supports and the amplitude of the fluctuations of rotor are the hardness of disk and pivot bearings.

<div align="right">Auth.</div>

9.B1.33. Development of means for eliminating the state of weightlessness of astronauts in a spaceship at space exploration. /E. Bakuradze, E. Buadze, K. Bakuradze, N. Katamadze, R. Oboladze, N. Abesadze/. Georgian Scientific News (GSN). – 2011. - #2(10). – pp. 22-24. – rus., abs.: geo., eng., rus.
The article suggests possible ways of weightlessness elimination at space exploration by means of equipping space suits and proper places and points with textile composite tape elements witch are fed by adjustable power of magnetic flux. The latter creates artificial gravity for eliminating the astronaut weightlessness during a space flight - the most negative factor from medical and biological point of view. An alternative method for manufacturing a space suit by using composite materials is suggested. A technological approach to the manufacture of composite tape elements is given.

<div align="right">Auth.</div>

9.B1.34. On the Big Bang. /S. Avagyan/. Georgian Scientific News (GSN). – 2011. - #2(10). – pp. 31-33. – rus., abs.: geo., eng., rus.
The Big Bang, as such, could not have been occurred. The universe neither squeezes nor expands, but spins around the center of the universe. It is necessary to mention that the "dark substance" is the same "ether", the concept that was unfairly disregarded earlier.

<div align="right">Auth.</div>

9.B1.35. Geometrical modelling of the movement of bodies in the field of gravitation according to Ptolemy and from the point of view of modern mechanics. /V. Adamyan/. Georgian Scientific News (GSN). – 2011. - #2(10). – pp. 33-36. – rus., abs.: geo., eng., rus.
The article deals with the comparison of algorithms of Ptolemaic astronomy and geometrical theory of gravitation; their differences and likeness are shown which enabled to find some connection between the Ptolemaic astronomy and modern mechanics. The problems of mechanics are reduced to the definition of quantities with the help of actions over the segments. The interpretation of physical concepts into the language of geometry enabled to visualize these concepts and to solve mechanical tasks only based on geometrical considerations.

<div align="right">Auth.</div>

9.B1.36. The equation for entropy of open non-equilibrium systems and violation of the second law of thermodynamics. /A. Aptsiauri/. Georgian Scientific News (GSN). – 2011. - #3(11). – pp. 7-14. – rus., abs.: geo., eng., rus.
The work considers peculiarities of the entropy change in open and closed thermodynamic systems in the presence of the mechanical and thermal non-equilibrium. It is shown that in contrast to closed systems, in an open thermodynamic system, the work of surface forces may effect the reduction of entropy that disagrees with the principle of continuous entropy growth in isolated systems.

9.B1.37. The manufacturing technology and research methods of cryosorption pumps. /G. Dgebuadze, B. Bendeliani, G. Mumladze, T. Sordia,L. Tsakadze, V. Chanturidze/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 12-15. – geo.; abs.: eng., rus.
The article deals with the manufacturing technology and research methods of the physical-mechanical properties of the basic assemblies and structural elements of cryosorption pumps. Also shown is the principle scheme of a test bench for determining the basic technical characteristics of the pumps.

9.B1.38. Forced vibration of a rigid body in resistor medium. /R. Sokhadze/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 62-67. – geo.; abs.: eng., rus.
The work considers the problem of forced vibration of a point between parallel-serial connected springs in a resistant medium. The stiffness coefficient of an equivalent spring is calculated. The corresponding equation of vibration motion is obtained by substitution of concrete values from the general solution.

9.B1.39. New approach to the pure bending of plates. /N. Berishvili, T. Khmelidze, R. Giorgobiani/. Transactions of Technical University of Georgia. – 2011. – #1(479). – pp. 9-11. – geo.; res.: geo., eng., rus.
The effect of bending moments caused by outside forces acting in one direction on a plate on the stress in the perpendicular direction, which is disregarded in the classical theory of pure bending of plates under the Poisson's ratio constant value in the x and y directions, for which the boundary conditions on the plate edges are not satisfied, even if the corresponding deformation forces are taken into account, is considered. It is proposed that in the directions perpendicular to the outside bending moments acting on the plate as well the variable stresses originate that satisfy the boundary conditions. A differential equation of the bending of a plate, through the integration of which a representation of the bent plate is produced has been written down.

9.B1.40. Some contradictions in the theory of pure bending of plates . /N. Berishvili, T. Khmelidze, R. Giorgobiani/. Transactions of Technical University of Georgia. – 2011. – #1(479). – pp. 12-14. – geo.; res.: geo., eng., rus.
The stresses determined by the equations from the Hooke's generalized law accepted in the classical theory during pure bending of plates really differ from the stresses caused by outside moments, owing to which both the bending moments and bents differ from the real one. If the values on the right part of the equations of Hooke's generalized law are taken as stresses, then these stresses and the bending moments produced thereby will no longer comply with the boundary conditions on the plate edges, where the bending moments should equal the moments acting as outside loads. All these contradictions result from the fact that the Poisson's ratio is accepted as a constant value. The above-mentioned contradictions will be avoided in case the variable Poisson ratios v_x and v_y are taken into account.

9.B1.41. Control and monitoring fibrous-optical systems for a vibrator. /L. Beridze/. Transactions of Technical University of Georgia. – 2011. – #1(479). – pp. 15-19. – geo.; res.: geo., eng., rus.
A control and monitoring fibrous-optical system for a vibrator is developed and presented as an integral part of machines and plants. It enables to define parameters of the pressure created in a closed chamber, to manage and control the working process inside the device. The control system gives an opportunity to carry out measurements with the maximum accuracy.

9.B1.42. Calculation of a homogenous straight rod of constant section taking into account its longitudinal impact strength. /A. Khabeishvili/. Transactions of Technical University of Georgia. – 2010. – #1(475). – pp. 13-16. – geo.; res.: geo., eng., rus.
The article deals with the calculation of homogenous straight rod of constant section taking into account its longitudinal impact strength. A cross-section calculation formula is obtained enabling to determine different mechanical and geometrical features with simple calculations. The testing of strength conditions is exemplified.

9.B1.43. Calculation of shock-resistance of a homogeneous rolled-sheet right angled spring of constant section. /A. Khabeishvili/. Transactions of Technical University of Georgia. – 2010. – #1(475). – pp. 17-20. – geo.; res.: geo., eng., rus.

The article considers the static and dynamic calculation of shock-resistance of a homogeneous rolled-sheet right angled spring of constant section. A general calculation formula of the rod mass reduction coefficient is obtained. The value of the dynamic index is determined with and without taking into account the rod mass. In both cases, the maximum rated dynamic stresses are determined and compared to each other. It is numerically shown that the dynamic stresses significantly decrease depending on the rod mass.

Auth.

9.B1.44. Calculation of an elastic system in case of bending-twisting shock. /A. Khabeishvili, Z. Antelidze/. Transactions of Technical University of Georgia. – 2010. – #3(477). – pp. 14-16. – geo.; res.: geo., eng., rus.

The article deals with the calculation of an elastic system being under the falling load impact which causes the lateral bending and twisting. A new engineering method is used for determining the dynamic characteristics without the dynamic index. The obtained dynamic values do not differ from those determined by the available methods.

Auth.

9.B1.45. Longitudinal bending of the rod with a different module of elasticity for tension and compression. /T. Batsikadze, N. Murgulia, J. Nizharadze/. Transactions of Technical University of Georgia. – 2010. – #4(478). – pp. 9-13. – geo.; res.: geo., eng., rus.

A rod in the flexibility stage with the initial curvature being further subjected to the longitudinal compressive force is considered. The rod material is characterized of a module of different elasticity for tension and compression. A neutral axis equation of the rod for rectangular cross section, the position of which depends on the ratio of elastic modules is obtained. For a rod with hinged supports at the ends, an expression of the critical force, which is identical in form to the classical equation of Konsider, is obtained.

Auth.

9.B1.46. On the cylindrical rigidity of a plate. /N. Berishvili, T. Batsikadze, R. Chkoidze/. Transactions of Technical University of Georgia. – 2010. – #4(478). – pp. 14-16. – geo.; res.: geo., eng., rus.

It is shown that upon a cylindrical bend, the σ_x stresses in the x direction caused by the bending moment M_x cause in the y direction not only deformations, but also the σ_y stresses. By addition of the stresses produced by fixing the stresses and side pieces, the stresses in the y direction become equal to zero, owing the bend is cylindrical. Also shown is that rigidity of a plate as compared with the rigidity of a corresponding beam does not change, while the bending moment decreases, causing thus a decrease in the plate flexure.

Auth.

B2. Chemistry. Biology

9.B2.1. Nanosized iron oxide and hydroxide minerals as products of the phase formation in iron–carbon–water–oxygen systems: 1. Processes and mechanisms of the phase formation in the systems of iron–carbon galvanic coupling and steel electrode; separating the mixtures of iron–oxygen structures. /O. Lavrynenko/. Nano Studies. - 2011. - # 4. – pp. 5-20. - eng.; abs.: geo., eng.

In the first part of the investigation, the principle of galvanocoagulation process under condition of iron (steel) – carbon (coke) galvanic coupling is described. In the $St3–Fe^0–H_2O–O_2$ systems, the ultradisperse (nanosized) iron oxide and oxyhydroxide minerals of different crystallographic modifications and spinel ferrites of 3d-metals can be obtained. The physico-chemical conditions of the process influence the phase composition and type of ultradisperse structures. As initial structures formed in such systems Fe(II)–Fe(III) layered double hydtoxides (protolepidocrocite or Green Rust) and ferrihydrite which spring to develop α- and γ-morphological rows of iron–oxygen structures are shown.

Auth.

9.B2.2. Nanosized iron oxide and hydroxide minerals as products of the phase formation in iron–carbon–water–oxygen systems: 2. The formation of iron–oxygen seed-structures on steel surface; receiving nanosized iron oxide and hydroxide minerals and composites on steel surface and the experience of their usage in studying medical biological systems. /O. Lavrynenko/. Nano Studies. - 2011. - # 4. – pp. 21-40. - eng.; abs.: geo., eng.

The specific character of forming nanosized iron-oxygen structures in the interface area, i.e. steel surface – water dispersion medium – air oxygen is shown in the second part of review. The most important parameters which influenced the phase formation process on steel surface were the chemical composition and pH value of dispersion medium, temperature and oxidation conditions. Addition of the heavy metals species (Fe(II), Fe(III), Zn(II), Ni(II), Cu(I), Cu(II) etc.) and precious (noble) metals (Ag(I), Au(III), Pt(IV), Pd(II)) to the water dispersion medium diversified the phase composition of nanosized structures by spinel ferrites and core &

shell structures containing the ferromagnetic core and precious metal shell. The structures formed in such a system are used in medical biological investigation due to their biological properties.

<div align="right">Auth.</div>

9.B2.3. Geometric models for boron nitride elemental nanosystems. /L. Chkhartishvili/. Nano Studies. - 2011. - # 4. – pp. 85-94. - geo.; abs.: geo., eng.
Geometric models are introduced for regular boron nitride nanotubes and fullerenes. The explicit expressions in terms of B–N bonds length are obtained for atomic site coordinates and intersite distances in these species. A description made for the boron nitride nanosystems of regular geometries may serve as the basis for further calculation of ground-state parameters and electron structures.

<div align="right">Auth.</div>

9.B2.4. Synthesis of gold nanoparticles by *Streptomyces glaucus* 71 MD. /T. Kalabegishvili, E. Kirkesali, A. Rcheulishvili, I. Murusidze, D. Pataraya, M. Gurielidze, G. Tsertsvadze, V. Gabunia, D. Gvarjaladze, L. Lomidze/. Nano Studies. - 2011. - # 4. – pp. 113-118. - eng.; abs.: geo., eng.
An actinomycete (bacteria) strain *Streptomyces glaucus* 71MD isolated from the soybean rhizosphere in Georgian soils is examined for its ability to produce gold nanoparticles from an aqueous solution containing $HAuCl_4$ (chloroauric acid). The obtained results clearly show that gold nanoparticles formed by reduction of Au(III) ions by *Streptomyces glaucus* 71MD are crystalline in nature and are generally produced extracellularly.

<div align="right">Auth.</div>

9.B2.5. On obatining various modifications of nano-crystalline boron. /D. Gabunia, A. Gachechiladze, A. Mikeladze, O. Tsagareishvili, L. Chkhartishvili/. Nano Studies. - 2011. - # 4. – pp. 123-132. - rus.; abs.: geo., eng.
The present review is an attempt to separate from the available data the results which confirm the possibility of obtaining nanocrystalline structures of various modifications of boron.

<div align="right">Auth.</div>

9.B2.6. Growth of germanium nitride nanowires. / D. Jishiashvili, Z. Shiolashvili, N. Makhatadze, L. Kiria, A. Jishiashvili, V. Gobronidze/. Nano Studies. - 2011. - # 4. – pp. 133-138. - eng.; abs.: geo., eng.
The purpose of this work was to study the growth of germanium nitride nanowires at relatively low (500 – 580 ^{o}C) temperatures. A decrease in the synthesis temperature was caused by the application of active (N_2H_4) vapor. The hydrazine was containing 3 mol. % of water molecules. It was established that at 480 ^{o}C, due to the high reactivity of water the ball-shaped GeO_x clusters were formed on the Ge source surface. Beginning from 500 ^{o}C the nitriding ability of hydrazine decomposition products prevailed over the water induced effects and Ge_3N_4 nanowires started to grow on the surface of GeO_x clusters. They grow from the Ge-enriched nanodroplets through the vapor–liquid–solid mechanism. At temperatures exceeding 530 ^{o}C the growth mechanism changed to the vapor–solid method and Ge_3N_4 nanobelts were formed. All grown 1D nanostructures exhibited the α-Ge_3N_4 structure. It was found that the nucleation proceeds with the formation of both α- and β-Ge_3N_4 nuclei. However, only α-Ge_3N_4 grows in the form of one-dimensional nanostructure.

<div align="right">Auth.</div>

9.B2.7. Quantum-chemical study of the solvent effect on the formation ability of acetamide and N,N-dimethylacetamide complexes with metals. /M. Tsintsadze, J. Kereselidze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 55-57. – eng.; abs.: eng., geo.
The structural, energy and electronic characteristics of acetamide and N,N-dimethylacetamide in the form of gas as well as in solvents have been calculated by means of the quantum-chemical semiempirical AM1 method. It is shown that to estimate the effect on the formation ability of complex with metals individual analysis of structural, energetic and electronic characteristics in the state of gas and in solvents is necessary. The results obtained are used in estimating the effect of polarity of solvent.

<div align="right">Auth.</div>

9.B2.8. Mathematical-chemical investigation of some straight-chained alkyl mono-halides. /M. Gverdtsiteli, G. Lekishvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 58-59. – eng.; abs.: eng., geo.
The mathematical-chemical investigation of some straight-chained alkyl monohalides was carried out within the scope of the pseudo-ANB-matrices method. Six correlation equations of "structure-properties" type were constructed. Correlations are satisfactory.

<div align="right">Auth.</div>

9.B2.9. Plastid DNA sequence diversity in a worldwide set of grapevine cultivars (*Vitis vinifera* L. subsp. vinifera). /T. Beridze, I. Pipia, J. Beckae, Hsuae Sh.-Ch., M. Gamkrelidze, M. Gogniashvili, V. Tabidze, P. This, R. Bacilieri, V. Gotsiridze, M. Glonti, B. Schaal/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 98-103. – eng.; abs.: eng., geo.

DNA sequence diversity was investigated at two plastid regions (the trnH-psbA intergenic spacer and the rpl16 intron) in a geographically diverse group of 113 cultivated grape samples. This group included 40 samples from Georgia, home to over 500 grape cultivars and the earliest archaeological evidence of grape domestication. The Caucasus region in which Georgia lies is widely believed to be the area in which grape domestication began, and the study of genetic diversity in this region is viewed as key to understanding grape domestication in general. Four plastid haplotypes were found in 113 samples being marked by their characteristic 3 polymorphic positions: (AAA) – 23 samples, (ATT) – 29 samples, (GTA) – 26 samples, and (ATA) – 35 samples. The AAA haplotype was found only in Georgian samples. The fact that the Georgian cultivars exhibited both the unique plastid DNA variation (the AAA haplotype) and all other plastid haplotypes is consistent with the earlier conclusions that the unique and high genetic diversity is characteristic of the wild grape (*V. vinifera* subsp. sylvestris) in the Caucasus region.

<div align="right">Auth.</div>

9.B2.10. On the estimation of coefficients of one stochastic model of an enzymic reaction. /B. Dochviri, E. Nadaraya, G. Sokhadze, G. Tkemaladze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 104-107. – eng.; abs.: eng., geo.

A stochastic model of an enzymic reaction is considered. Using statistical methods, formulas are derived for calculating the coefficients contained in this model. In particular, estimators of the parameters of the Michaelis-Menten equation are obtained.

<div align="right">Auth.</div>

9.B2.11. Peculiarities of fragmentation in mass-spectra of dipyrrolonaphthalene amide derivatives. /Sh. Samsoniya, M. Trapaidze, N. Nikoleishvili, N. Kuprashvili, N. Esakia, D. Zurabishvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 54-60. – eng.; abs.: eng., geo.

In the present work fragmentation of molecular ions in mass-spectra of benzo[e]pyrrolo[3,2-g]indole dichloranhydride and diamides (hydrazine) obtained on its basis are compared to fragmentation of benzopyrroloindole, dihydrazides of indolo[4,5-e]indole and indolo[5,4-e]indole, and hydrazidohydrazones obtained on their basis. At the starting stages, elimination of side radicals (R) of molecular ions occurs and $[OC-HeT-CO]^+$ fragments containing dicarbonyl group having high-intensity peaks in the mass spectra are produced. For these ions, the quinoid structure is offered which, presumably, conditions their stability.

<div align="right">Auth.</div>

9.B2.12. Content of the biologically active trans-resveratrol and ε-viniferin in red grapevine varieties growing in Georgia. /M. Bezhuashvili, N. Vepkhishvili, T. Kobaidze, L. Shubladze, D. Okruashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 61-64. – eng.; abs.: eng., geo.

Stilbene-containing plate preparations have been extracted from the skin of industrial red grapevine (*Vitis vinifera* L.) growing in Georgia. These varieties are as follows: Saperavi, Saperavi Budeshurisebri, Cabernet Sauvignon, Otskhanuri Sapere, Ojaleshi, Aladasturi, Chkhaveri, Aleksandrouli, Mujuretuli, Asuretuli Shavi. With the use of the high-performance liquid chromatograph (HPLC), their diversified stilbene spectra have been detected, in which trans-resveratrol and ε-viniferin were identified. A common regularity - the concentration of trans-resveratrol significantly exceeds that of its dimer ε-viniferin – is obsrvable and its dimer identified in the skin of all grape varieties, in particular, the concentration of trans-resveratrol much exceeds that of its dimer ε-viniferin. The quantities of identified stilbenes vary depending on the varieties and habitats of the vine. Studying the stilbene spectrum is the theoretical basis to explain the functional designation ofgrape and wines in respect of their curative and nutritional value.

<div align="right">Auth.</div>

9.B2.13. Equations for approximate calculation of the dissociation parameters of weak dibasic organic acids. /E. Kvaratskhelia, R. Kvaratskhelia/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 65-68. – eng.; abs.: eng., geo.

Simple empirical equations for fast approximate calculation of first and second dissociation degrees and pH for dilute solutions of weak dibasic organic acids are suggested.

<div align="right">Auth.</div>

9.B2.14. Quantum-chemical modeling of the mechanisms of synthesis of pyrimidine and purine. /J. Kereselidze, M. Kvaraia, Z. Pachulia, T. Zarkua/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 69-72. – eng.; abs.: eng., geo.

The models of the mechanisms of synthesis of unsubstituted pyrimidine and purine by the quantum-chemical method of DFT (Density Functional Theory) are constructed. The conclusion is made that the offered models can promote careful and purposeful synthesis of these heterocyclic derivatives, including nucleotide bases.

Auth.

9.B2.15. On the kinetics of scale growth with the change of the effective area of diffusion. /O. Mikadze, I. Nakhutsrishvili, A. Kandelaki/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 73-75. – eng.; abs.: eng., geo.
On the basis of the Evans' conceptual theory, a new equation of the growth of scale with the change of the effective area of diffusion has been tested and formulas obtained that allow constructing the kinetic curves of oxidation both for specific heat-resistant alloys and for possible, hypothetical subjects of research.

Auth.

9.B2.16. Brain oxidation stress caused by isolation and violation of diurnal cycle. /K. Menabde, Z. Kuchukashvili, M. Chachua, M. Chipashvili, N. Koshoridze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 87-91. – eng.; abs.: eng., geo.
The functional state of rat brain pro- and anti-oxidant system under stress caused by 40-day long isolation and violation of diurnal cycle was studied. It was found that quantity of nitrogen oxide (NO) rises in rat brain cells, which is accompanied by an increase in the intensity of lipid peroxidation shown by a rise in the quantity of one of the primary and final products of this process – diene conjugates and thiobarbituric acid active compounds, including malonedialdehydes. At the same time, activity of anti-oxidant enzymes, such as superoxidedismutase and catalase, is intensified at the initial stage of stress. Meanwhile, when stress is prolonged, the activity of these enzymes is drastically reduced, which may result in cell death.

Auth.

9.B2.17. Chromatin thermostability in breast carcinoma tissue composition. /J. Monaselidze, G. Nemsadze, L.Kikalishvili, M. Gorgoshidze, D. Khachidze, M. Kiladze, E. Lomidze, M. Ramishvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 92-95. – eng.; abs.: eng., geo.
Thermostability and energetics of melting process of chromatin in the composition of normal and ductal breast carcinoma tissues at various stages of disease have been studied. It has been shown that the melting process of normal tissues proceeds in five transition stages at 55, 66, 78, 97 and 103°C. The first, second, and third transition stages are connected with melting of proteins, and the fourth and fifth transitions correspond to chromatin denaturation. The paper considers only the melting of chromatin. It was found that stability of both domains of carcinoma chromatin decreased by 5.0 and 3.5°C compared to the norm, and, which was more important, nearly 20% of ΔH_d from transition V was lost and added to transition IV without change of total chromatin denaturation enthalpy. The authors explain this change by strong rearrangement of the structural organization of both domains of chromatin – hetero and active chromatin. In particular, unfolding about 20% of 30nm fiber structure and its pass to 10 nm fiber and partial unfolding of 10nm fiber due to the loss of H1 histone and core histones H2A/H2B that coincide with the published data.

Auth.

9.B2.18. Study of materials produced on the basis of manganese-containing sulfate slime and ammonium. /T. Cheishvili, M. Shavlakadze/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 83-87. – geo.; res.: geo., eng., rus.
In composites made on the basis of manganese-containing sulfate slimes and ammonium nitrate for materials synthesized at 170-2000C their solubility tendency was determined in respect to test reagent (2% citric acid water solution). The produced extracts were spectrally researched, while phase composition of materials was stated with X-ray phase analysis. The study of materials proved that their major properties are determined by the temperature of synthesis, the initial ingredients' content in the charge, the type of phases created during thermal treatment, and the co-existence of crystalline-amorphous phases.

Auth.

9.B2.19. Influence of cold and enzyme maceration on the level of total phenols in red wine. /M. Khomasuridze, Kh. Mamaiashvili, L. Zhizhilashvili, G. Datukishvili/. Transactions of Technical University of Georgia. – 2010. – #3(477). – pp. 56-60. – eng.; res.: geo., eng., rus.
An experiment was arranged to compare enzyme maceration to cold maceration, to study their influence on quantity of total phenols in red wine, and to determine the optimal length of cold maceration. The Folin-Ciocalteu spectrophotometric method was applied to determine total phenols. Cold maceration was conducted during 6, 12, 24, 36 and 48 hours at 4°C temperature. Enzyme maceration was carried by enzyme preparation Extrazyme (Institute Oenologique De Champagne) according to manufacturer's recommendations. The data obtained by the spectrophotometrical analyses confirm that the cold maceration conducted at 4°C temperature promoted to an increase of the content of total phenols in red wine. The pre-fermentation enzyme maceration is more effective way to increase phenolic compounds in red wine than

cold maceration under the above-mentioned conditions. The cold maceration at 4°C temperature elevates the level of total phenols during 24 hours. Therefore, 24 hours are found to be the optimum time. The use of the enzyme preparation "Extrazyme" is expedient for making wine rich in phenolic compounds from the "Tavkveri" grapevine variety

<div align="right">Auth.</div>

9.B2.20. Additive system of structural ingredients for calculation of standard molar values of thermodynamic properties of waterless silicates. /A. Sarukhanishvili, E. Matsaberidze/. Transactions of Technical University of Georgia. – 2010. – #4(478). – pp. 29-33. – rus.; res.: geo., eng., rus.

A method to calculate the standard molar values for three thermodynamic properties (standard enthalpy $\Delta H^0_{f, 298}$ and Gibbs free energy $\Delta G^0_{f, 298}$ *of* formation, also standard entropy S^o_{298}) of waterless silicates, based on the use of additive system of structural ingredients in various crystallographic groups is proposed. The application of this method allows receive the standard molar values of $\Delta H^0_{f, 298}$ and $\Delta G^0_{f, 298}$ with an error less than 1%, and in case of S^o_{298} – less than 5%.

<div align="right">Auth.</div>

9.B2.21. α-Onocerin from the roots of *Ononis Arvensis* growing in Georgia. /M. Sichinava, M. Alania, M. Sutiashvili, J. Aneli/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 7-9. – rus.; abs.: geo., eng., rus.

Triterpenic alcohol α-onocerin has been isolated from the roots of *Ononis arvensis* (*Leguminosae L.*). The structure is established using IR-, ^{1}H and ^{13}C NMR spectroscopy.

<div align="right">Auth.</div>

9.B2.22. Chemical composition of *Astragalus bungeanus* Boriss. /M.Alania, N.Kavtaradze, S. Lavoie, A.Pichette, V.Mshvildadze, Z. Apakidze/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 10-13. – rus.; abs.: geo., eng., rus.

Flavonoid apigenin and cycloartan glycoside – cyclocantoside E were isolated from the overground parts of *Astragalus bungeanus* Boriss.The structures of the compounds were determined according to their physicochemical properties and IR-, UV-, ^{1}H and ^{13}C NMR spectral data. The compounds are isolated from the *Astragalus bungeanus* Boriss. for the first time.

<div align="right">Auth.</div>

9.B2.23. Preliminary chemical study of leaves of *Phellodendron lavallei* Dode. /M. Alania, K. Shalashvili, A. Bakuridze, M. Sutiashvili/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 14-18. – geo.; abs.: geo., eng., rus.

Chemical investigation of leaves of the cork tree – *Phellodendron lavallei* Dode, introduced in Georgian Black Sea coastal area is carried out. It is established that the leaves contain significant amounts of phenolic compounds (10 %). 4 individual compounds were isolated from the ethylacetate sum and identified as (2*R*,3*R*)-3,5-dihydroxy-2-(4-hydroxyphenyl)-8-(3-metylbut-2-enyl)-7-[O-β-D-glucopyranosyl]oxy-2,3-dihydrochromen-4-one (phellamurin), (2*R*,3*R*)-3,5–dihydroxy–2-(4-hydroxyphenyl)-7-[O-β-D-xylopyranosyl(1→3)-O-β-D-glucopyranosyl]-oxy-2,3-dihydro -chromen-4-one, hyperin and trifolin.

<div align="right">Auth.</div>

9.B2.24. Preliminary phytochemical analysis of sage species of the Georgian flora. /T. Sagareishvili, J. Aneli/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 19-25. – geo.; abs.: geo., eng., rus.

A preliminary phytochemical investigation of some species of sage growing in Georgia was carried out. A considerable amount of phenolic compounds, triterpens and essential oils has been established. 4 individual compounds belonging to condence catechu, triterpenoids and flavanons were isolated from the overground parts of the endemic plant - *Salvis garedji* Troitsk. The researsh is going on.

<div align="right">Auth.</div>

9.B2.25. Alkaloides *Stenbergia colchiciflora* Waldst et Kit. grown in Georgia. /L. Kintsurashvili/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 26-29. – rus.; abs.: geo., eng., rus.

Stenbergia colchiciflora Waldst et Kit. grown in Georgia was studied for the first time for the alkaloid composition. It has been established that in the elevated parts of the plant picked in the phase of flowering the amount of alkaloids amounted to 0.28%, in the bulbs – 0.45%; the maximum conent of galantamine in the elevated part was 0.05% in the phase of butonization and in the beginning of flowering; in the bulbs it accounted for 0.07% at the end of vegetation. Licorine, galantamine, tacetine, gemantamine have been isolated and identified.

<div align="right">Auth.</div>

9.B2.26. Alkaloids pseudocyclobuxin-D, cyclobuxin-D, L-cycloprotobuxin-C from the leaves of Buxus colchica Pojark. /N. Vachnadze, E. Jakeli, D. Tsakadze, V. Vachnadze/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 30-34. – rus.; abs.: geo., eng., rus.

Individual alkaloids were isolated chromatographically on columns with aluminum oxide using the methods of dependent distribution in organic solvents, in accordance with the degree of their polarity and basic capacity in phosphate-citrate buffers. Alkaloids pseudocyclobuxin-D, cyclobuxin-D, L-cycloprotobuxin-C have been isolated from *Buxus colchica* Pojark. for the first time.

<div align="right">Auth.</div>

9.B2.27. Development of methods of spectrophotometrical and planimetric analysis for alkaloids of *Veratrum lobelianum* Bernh. /T. Suladze/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 35-41. – rus.; abs.: geo., eng., rus.
The quantitative analysis methods were developed for pharmacologically and biologically active compounds in the roots *Veratrum lobelianum* Bernh to determine the spectrophotometric iervin and planimetric analysis method for alkaloids: psevdoiervin, rubiiervin, veralozin**,** veralozinin**,** veralozidin**.** As a result, the optimal periods for collection of plant material in order to receive the pharmacologically active alkaloid – iervin and to perform the standardization of the roots *Veratrum lobelianum* Bernh were determined.

<div align="right">Auth.</div>

9.B2.28. Application of the radiobiological method for studying the secondary metabolism processes in plants. / M. Gogebashvili, V. Vachnadze, N. Ivanishvili, E. Jakeli , M. Mudzhiri, G. Chkhikvadze/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 42-45. – geo.; abs.: geo., eng., rus.
The changes in activity of secondary metabolism during the post-radiating period in alkaloid plant *Vinca minor* are shown. On the basis of the analysis of quantitative change dynamics of alkaloids the data on the resistance of this process are obtained as well as the stimulating (15-20 Gy) and the inhibitory (100-150 Gy) intervals of doses are defined. An analysis of the quantitative change dynamics of certain alkaloids has shown that the quantitative changes are not proportional. This, in turn, is interpreted as a different level of radio-resistance of various links of the alkaloids' metabolism.

<div align="right">Auth.</div>

9.B2.29. On the standardization of *Hypericum perforatum* growing in Georgia. /P. Yavich, L. Churadze, T. Rukhadze, N. Gagua, K. Maghradze/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 46-53. – rus.; abs.: geo., eng., rus.
A quantitative analysis of main biologically active compounds in *Hypericum perforatum* growing in Georgia is performed. It is recommended to include the tests such as quantitative determination of tannins, chromatographic analyses, etc. in pharmacopoeial article. The validation of quantitave analysis has been performed and it is determined that the obtained data correspond with the existing standards.

<div align="right">Auth.</div>

9.B2.30. The point of validation of quantitative method for determination of biologically active compounds in the leaves of *Rhododendron caucasicum*. /P.Yavich, L. Churadze, T. Rukhadze, N. Gagua, K. Mchedlidze, K. Maghradze/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 54-60. – rus.; abs.: geo., eng., rus.
The standardization method of *Rhododendron caucasicum* leaves is developed. The validation of the method of quantitative determination of tannins and flavonoids sum in the leaves of *Rhododendron caucasicum*.is performed. It is approved that the both methods are precise and well reproducible. This gives the possibility to compile the corresponding pharmacopoeial article.

<div align="right">Auth.</div>

9.B2.31. Standartization of an antipsoriatic ointment with the keratolytic action. /Ts. Sulakvelidze, M.Malania, B.Kikalishvili, D.Turabelidze/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 61-64. – geo.; abs.: geo., eng., rus.
Psoranthron "C" as 0.5% and 1.5% ointment is a remedy for the treatment of psoriasis. Dithranol (1,8 - dihydroxy - 9 antrone) and salicylic acid are active substances of the preparation. A spectrophotometric method for dithranol standartization was worked out and titration method has been selected for quantitative determination of salicylic acid. Statistical treatment of these analytical methods revealed that the relative error of the obtained data was 5%.

<div align="right">Auth.</div>

9.B2.32. On the production of potential preparations from the Akhtala mud and their use in gynaecology. /M. Javakhia/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 65-68. – rus.; abs.: geo., eng., rus.
On the basis of high biological activity of the Akhtala mud and its use in gynecology, a recipe of a number of ointment compositions, including the emulsion MGD, Akhtala mud and substances with antibacterial and anti-inflammatory activity is proposed. The osmotic activity and stability of the proposed ointments are investigated.

Auth.

9.B2.33. Use of inorganic substances in pharmacy. /N. Abuladze/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 69-78. – rus.; abs.: geo., eng., rus.
One of the leading problems of modern pharmacy is to improve outdated and to develop new potential drugs by the involvement of economical and available natural materials in the range of active substances and excipients. A search for information on the application of inorganic substances in pharmacy - clays, zeolites, mineral waters, therapeutic (curative) muds, shungites, etc., for the preparation of pharmaceutical products was carried out. The present review cannot claim a complete coverage of the problem of application of inorganic substances in pharmacy, medicine, veterinary, cosmetics; it is just an outline of the main directions.

Auth.

9.B2.34. Radioprotectors and terminological discrepancies upon use of radioprotective agents. /N. Ivanishvili, M.Gogebashvili, P.Yavich/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 79-83. – geo.; abs.: geo., eng., rus.
In the work, an analysis of terminological discrepancies during manufacture, sale and use of radioprotective agents is made It is shown that non-use of the standard radiobiological characteristics (the dose conversion factor - DCF) might lead to problems associated with estimation of the radioprotectors' activity level of the made preparations, as well as to serious problems in connection with their use. Such a view is particularly important in respect of defining the principle of the time of administration of agents to the organism (i.e. prior or after the radiative effect). If in the first case the priority processes are the inhibition of various physiological and biochemical processes and decrease in cytological toxicity of free radicals upon use of the agents, the reactions associated with activation of the post-radiation restoration processes can take leading positions upon the use of such an agent after the radiative effect. Therefore, the terminological discipline should be strictly observed. Thus, radioprotectors may be defined as agents administered prior to radiative effect, while radiopreventive ones – as the agents administered after irradiation.

Auth.

9.B2.35. Biological activity of high-molecular fractions from the leaves of *Symphytun asperum* and *S. caucasicum*. /V.Barbakadze, M.Merlani, L.Gogilashvili, L.Amiranashvili, K.Mulkijanyan/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 84-90. – rus.; abs.: geo., eng., rus.
High-molecular fractions (>1000 kDa) from the leaves of *Symphytum asperum* and *S.caucasicum* displayed the anticomplementary activity, inhibition of luminol- and lucigenin-dependent chemiluminescence (CL_{lum} and CL_{luc}, respectively) generated by opsonyzed zymosan-stimulated human polymorphonuclear neutrophils (PMNs) and inhibition of CL_{luc} signal resulting from superoxide anion generation by the cell-free hypoxanthine/xanthineoxidase system. The anticomplementary and antioxidant activity of high-molecular (>1000 kDa) fractions of *S.asperum* and *S.caucasicum* leaves indicate of the possibility of using these preparations as potent anti-inflammatory and wound-healing agents.

Auth.

9.B2.36. Haematopoietic efficacy of poly [oxy-1-carboxy-2-(3,4-dihydroxyphenyl) ethylene] isolated from Comfrey (*Symphytum asperum*) roots. /M. Moistsrafishvili, N. Mushkiasvili, V. Barbakadze, L. Amiranashvili, L. Gogilashvili, M. Merlani/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 91-93. – geo.; abs.: geo., eng., rus.
The haematopoietic efficacy of polymer poly [oxy-1-carboxy-2-(3,4-dihydroxyphenyl) ethylene] isolated from Comfrey (*Symphytum asperum*) roots has been studied in mice drug-induced leukopenia caused by cytostatic cyclophosphan (350 mg / kg, ip). The aforesaid polymer (1 mg/kg ip) caused significant increase of leucopoiesis in experimental animals (165%, p <0,01).

Auth.

9.B2.37. Pharmacological investigation of *BUXUS* alkalods. /Zh. Novikova, K. Mulkijanyan, N. Vachnadze, V. Vachnadze/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 94-95. – rus.; abs.: geo., eng., rus.
The paper presents preliminary data on pharmacological studies of aqueous extracts of *B. colchica, B.balearica* and *B.semperviens*, as well as buxamine hydrochloride, which were carried out on isolated strips

of guinea-pig ileum. The study revealed that all the investigated extracts exhibit the antispasmodic activity. By their efficacy, the water extracts can be arranged in the following order: *B. balearica> B. semperviens> B. colchica*.

<div align="right">Auth.</div>

9.B2.38. Wound protective remedy. /K. Mulkijanyan, Zh. Novikova, M. Sulakvelidze, M. Moistsrafishvili/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 96-98. – rus.; abs.: geo., eng., rus.
The aim of present investigation was to determine specific pharmacological (wound healing) properties of GF-6 – novel protective agent for skin mechanical and burn wounds. In a mouse excisional wound model, GF-6 (topically 0.1 ml per wound) exhibited the ability to accelerate scab rejection and full re-epithelization in test wounds with no signs of bacterial contamination.

<div align="right">Auth.</div>

9.B2.39. Toxicological study of a phytopreparation Fertilogen. /L. Sikharulidze, N .Gogitidze, N. Mushkiashvili, K.Mulkijanyan/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 99-105. – geo.; abs.: geo., eng., rus.
Proposed is Fertilogen - a a paramedical (phyto) preparation to be used in the complex treatment of certain forms of female sterility caused by genital infections. The aim of the study was to reveal any possibly toxicity of Fertilogen. Based on the received results, Fertilogen belongs to Category 5 in accordance with the Globally Harmonized Classification System (GHS) of chemicals. The repeated 14-day oral administration of Fertilogen in a fivefold therapeutic dose, revealed no abnormalities in the functions of major systems of experimental animals; no cumulative effects of Fertilogen were observed as well.

<div align="right">Auth.</div>

9.B2.40. The role of apoptosis in wound healing. /K.Mulkijanyan/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 106-117. – rus.; abs.: geo., eng., rus.
The present review is primarily devoted to programmed cell death - apoptosis – and its importance in the wound healing process. The main pathways of apoptosis: mitochondrial, p53- and Fas-mediated are observed. In the normal healing of skin wounds, apoptosis is responsible for the removal of damaged inflammatory cells and the transformation of granulation tissue into scar. Violation of the regulation of apoptosis leads to the appearance of hypertrophic scars and keloid formation. Analysis of many sources of literature reflects the modern approach to the evaluation of different apoptotic factors role involved in wound healing.

<div align="right">Auth.</div>

9.B2.41. On the technology of commercial papain suppositories based on the proteolytic enzymes of Carica papaya plant. /M.Orjonikidze, D. Chanturia, G. Tsagareishvili/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 118-122. – geo.; abs.: geo., eng., rus.
The composition and technology of commercial papain suppositories based on cacao oil are developed; the optimum temperature condition of for production of the suppositories is selected; the physico-chemical and structural-mechanical parameters of quality of the papain suppositories are studied; the uniform distribution of enzymatic proteins in the suppositories is experimentally proved; and the compatibility of cacao-butter with papaya is established.

<div align="right">Auth.</div>

9.B2.42. Elaboration of a technique for determining the proteolytic activity of suppositories made from commercial papain. /M. Orjonikidze, D. Chanturia, L. Nadirashvili/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 123-126. – geo.; abs.: geo., eng., rus.
A technique for determining the proteolytic activity of a complex of papaya proteases in suppositories made from commercial papain was modified and tested. A technique for determining enzymatic proteins was developed. It has been experimentally established that cacao oil does not affect the proteolytic activity which remains stable during 6 months when kept at $+4^0C$.

<div align="right">Auth.</div>

9.B2.43. Considerations on the units and methods of determining the proteolytic activity of a complex of papaya enzymes. /G. Erkomaishvili/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 127-133. – geo.; abs.: geo., eng., rus.
The rationale of the merits and demerits of the currently accepted methods for determining the proteolytic activity of the papaya enzymes complex, the existing activity expression units, as well as the possibility of mutual conversion activity expressed in different units are considered.

<div align="right">Auth.</div>

9.B2.44. Establishment of optimal conditions for determining the proteolytic activity of papaya proteinase complex. /D. Chanturia, L. Vadachkoria, L.Nadirashvili, G . Erkomaishvili /. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 134-139. – geo.; abs.: geo., eng., rus.

The optimum conditions for determining the proteolytic activity of the proteinase complex of papaya (CPP) have been established. The pH optimum of proteolytic activity of CPP, the dependence of the CPP proteolytic activity on the concentration of casein and cysteine, the time of hydrolysis on the proteolytic activity of CPP are established. The temperature optimum of the proteolytic action of CPP was fixed as well as the effect of some ions on the proteolytic activity of CPP was studied.

<div align="right">Auth.</div>

9.B2.45. Degradation of biocompatible and biodegradable polyesteramide in an aqueous solution of papaya enzyme complex. /L. Vadachkoria, G. Erkomaishvili/. Collected Scientific Works of I. Kutateladze Pharmacochemistry Institute. – 2010. - #2(17). – pp. 140-143. – geo.; abs.: geo., eng., rus.

The degradation of biocompatible and biodegradable polyesteramide in an aqueous solution of papaya enzyme complex has been studied. The aforesaid polymer has been found to represent a substrate for papaya proteases.

<div align="right">Auth.</div>

B3. Geology. Geodesy

9.B3.1. New data on the U-Pb zircon age of the pre-alpine crystalline basement of the Black Sea-Central Transcaucasian terrane and their geological significance. /I. Gamkrelidze, D. Shengelia, T. Tsutsunava, Sun-Lin Chung, , Han-Yichiu, K. Chikhelidze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 64-76. – eng.; abs.: eng., geo.

The available data on the composition, interrelation, age and formation conditions of the pre-Alpine crystalline basement constituting rocks of the Black Sea-Central Transcaucasian terrain are considered. It is shown that the main stages of regional metamorphism and granite formation are fully corroborated by new U-Pb LA-ICP MS dating. The investigations carried out to fill up the gaps existing in isotope-geochronological data of the crystalline basement of the Black Sea-Central Transcaucasian terrain and considerably specify the age of pre-Alpine endogenic processes.

<div align="right">Auth.</div>

9.B3.2. Transformation of optical properties of tropospheric aerosols after rain. /K. Tavartkiladze, M. Elizbarashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 77-80. – eng.; abs.: eng., geo.

The transformation of spectral optical density of tropospheric aerosols within the wavelength range of 0.50 and 0.70 µm was studied in every 12 to 24 hours after rain, in conditions of high humidity (seashore and mountainous zone of Ajara). The concentration of aerosols was found to gradually decrease from 12 to 18 hours after the rain had stopped and the maximum of the range of distribution of aerosols by sizes to shift towards larger particles. After 18 hours, a reverse process is observed. A weak selective area of aerosol absorption is detected within the wavelength range of 0.62-0.64 µm and an approximate intensity of its absorption is calculated. The transformation of Ångström formula parameters is determined within the observed period of time.

<div align="right">Auth.</div>

9.B3.3. The initial data on industrial concentration of thorium and bismuth in hydrothermally altered lower-jurassic clay-shales of the stori canyon (Southern Slope of the Greater Caucasus, Kakheti). /A. Okrostsvaridze, K. Akimidze, A. Akimidze, D. Bluashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 76-82. – eng.; abs.: eng., geo.

On the southern slope of the Greater Caucasus, the river Stori canyon (Kakheti) exposes fractured, cataclastic and mylonitized Lower Jurassic clay-shales, which at more than 3 km distance undergo intensive hydrothermal silicification, carbonization and sulphide mineralization. This process is particularly intensively revealed in brecciated zones, where sometimes thick sulphide ore lodes are formed. The studies carried out by us showed that this entire complex of rocks in the described hydrothermal alteration process was enriched with thorium and bismuth up to industrial concentration (Th-100-200 g/t; Bi-200-900 g/t). This enrichment was especially intensively revealed in quartz-pyrite-pyrrhotine-copper pyrite veins, where the content of these elements reaches the level of the world class deposits (Th-0.3842%; Bi-0.4806 %; chemical analyses of thorium and bismuth have been performed in Vancouver "ACMELABS" laboratory, Canada, using the ICP-OSL method). The authors consider that this discovery has significant strategic and economic

value; hence hydrothermally altered Lower-Jurassic clay-shales of the Stori canyon need further urgent detailed study.

<div align="right">Auth.</div>

9.B3.4. Relation of mathematical expectation error of the contact of useful component calculated by the method of arithmetic mean to the variation of the distribution of mineralization. /N. Kajaia, D. Bluashvili, N. Japaridze, M. Tabatadze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 83-86. – eng.; abs.: eng., geo.
The quantitative data of geological investigations belong to 'badly organized systems' and accordingly the conclusions made on their basis are more or less prognostic. The main parameter of ore deposits economic evaluation – quantity of useful components - is also prognostic. Determination of the quantity of the metallic component in ore body is achieved by processing data obtained from discretely located observation points. In cases with extremely irregular mineralization, using the method of arithmetic mean gives an unacceptable error that significantly decreases the reliability of estimation and increases the costs of mining. We have performed calculation on data for more that 2000 samples from 26 locations that clearly show the strong correlative link between the quantitative values of the variation of mineralization distribution (variation factor) and the relative error. This interrelation gives an opportunity to correct the amount of content of the component calculated by the method of arithmetic mean with the regression equation using the variation factor.

<div align="right">Auth.</div>

9.B3.5. The morpho-functional analysis of rostrums of the Early Cretaceous belemnitids. /Sh. Keleptrishvili/. Mining Journal. – 2011. - #1(26). – pp. 4-7. – rus.; abs.: rus., geo., eng.
The work deals with the questions of morpho-functional meaning of rostrums of the Early Cretaceous belemnitids. It is noted that the diagenetic processes strongly change the initial condition of rostrums of many belemnites. The meaning of rostrums as eliminator of the phragmocone is not equivalent for different groups and it is defined by the character of a structure rostrum, its interconnection with phragmocones. Nowadays the rostrum's function as a support and protector of phragmocones can be considered as have been proved.

<div align="right">Auth.</div>

9.B3.6. On the expediency of exploitation of Georgian zeolitic deposits. /V. Lortkipanidze, G. Kapanadze/. Mining Journal. – 2011. - #1(26). – pp. 7-13. – geo.; abs.: geo., rus., eng.
This work represents prominent features of structure of zeolites and physico-chemical characteristics of these minerals calling forth their use in many branches of national economy. There is given a brief geological characteristic of the Tedzami and Dzegvi zeolite-containing tuff deposits in Georgia, as well as tuff stocks, containing zeolite. Presented are the basic technical-economic indices of development of Tedzami and Dzegvi deposits and results of researches carried out for the purpose of improving the drilling-and-blasting operations at the Tedzami quarry.

<div align="right">Auth.</div>

9.B3.7. Geochemical investigations of hydrocarbons in Sarmatian and Lower Pliocele deposits of Outer Kakheti in terms of oil-and-gas presence. /M. Kumelashvili /. Mining Journal. – 2011. - #1(26). – pp. 13-15. – geo.; abs.: geo., rus., eng.
Considered is the geochemical complex of studies of rocks and organic matters scattered therein within the Outer Kakheti's oil-and-gas bearing region, including a study of the reaction-capable iron and carbonate minerals, determination of the total organic carbon by the wet-combustion procedure, the gravimetric determination of chloroform and alcohol-benzene bituminoids and their group and elemental composition (bitumen A_{Cl}), also the estimation of prognostic resources by means of a geochemical method.

<div align="right">Auth.</div>

9.B3.8. Strike-slip deformations in the Georgian part of the Caucasus molasse depression. /L. Basheleishvili, M.Kumelashvili/. Mining Journal. – 2011. - #1(26). – pp. 16-18. – rus.; abs.: rus., geo., eng.
The study of the evolution of structural patterns from the collisional to post-collisional stage of the development of the Georgian section of the Caucasian molasse depression indicates the progressively increasing role of strike-slip deformations, especially right-lateral ones. The investigations show that it becomes possible to identify various genetic and morphokinematic forms of strike-slip deformations arising in the process of horizontal compression.

<div align="right">Auth.</div>

9.B3.9. Characteristic of engineering-hydrogeological conditions of building on the "Nadikvari" site. /M. Mardashova, M.Lapiashvili, N. Papiashvili /. Mining Journal. – 2011. - #1(26). – pp. 30-32. – geo.; abs.: geo., rus., eng.

The questions of geological structure, physical-mechanical properties of grounds and hydrogeological conditions of a construction territory situated in Ortachala are considered. On the basis of drilling and laboratory study of ground and water samples data, the positive and negative factors of building on the mentioned territory are considered, the corresponding conclusions are made and concrete recommendations regarding the possibility of building on each variety of grounds within the site are developed.

<div align="right">Auth.</div>

9.B3.10. Hydrogeological profile of the oil-prospecting area Supsa–Ompareti as an expression of the hydrogeochemical inversion in Kolkheti Lowland. /Kh. Avaliani, U. Zviadadze/. Transactions of Technical University of Georgia. – 2011. – #1(479). – pp. 20-25. – geo.; res.: geo., eng., rus.

Within the large artesian structure, the hydrogeochemical zoning of ground-waters' spread is expressed in the appropriate change of genetic types of water. The typical for ground-waters vertical hydrogeochemical zoning is disturbed frequently by the so-called "hydrogeochemical inversion". Neither the vast Kolkheti Artesian Basin is an exception in this respect, the present information being one of the reliable facts of the presence of the hydrogeochemical inversion within its limits.

<div align="right">Auth.</div>

9.B3.11. Biotite mineralogy and geochemistry in potassium granites of Dzirula crystalline rock-mass. /I. Mshvenieradze/. Transactions of Technical University of Georgia. – 2011. – #1(479). – pp. 25-28. – geo.; res.: geo., eng., rus.

Among the granite rock-forming minerals, quartz and biotite play a special role in endogenic metallogeny. Due to its unique lattice, quartz does not adjoin any ore element isomorphically and thus plays a positive role in endogenic metallogeny. As for biotite, it accumulates practically all the ore elements and thus affects not only the formation of deposits but also of their own minerals.

<div align="right">Auth.</div>

9.B3.12. Explosive energy management. /A. Gocholeishvili, I. Gelashvili/. Transactions of Technical University of Georgia. – 2010. – #1(475). – pp. 49-53. – geo.; res.: geo., eng., rus.

The article considers the following methods of management of the energy of explosion: change of explosive's discharge; change of industrial explosive's efficiency; change of explosion's kinematic characteristics. In order to improve the splitting rate of firm rocks, the initial pressure of explosive products should be increased and the length of their effect be reduced, which is achievable by origination if a counter blast and creation of a of a uniform stress field.

<div align="right">Auth.</div>

9.B3.13. A graphic method of setting empirical parameters for predicting structural deformations. /G. Meskhi, G. Chiaureli/. Transactions of Technical University of Georgia. – 2010. – #1(475). – pp. 54-58. – geo.; res.: geo., eng., rus.

The problem of predicting deformations of large engineering structures is one of the most important questions in studying the object's functioning regularity. A graphic method for setting parameters of a mathematical model for vertical shifts and their speeds in the engineering structures is presented. The method's accuracy analysis is given in a tabular form, confirming thus its practical application suitability.

<div align="right">Auth.</div>

9.B3.14. Flora and climate of the Early Sarmatian period of Kakheti (on the basis of palynological data). /I. Kokolashvili/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 53-59. – geo.; res.: geo., eng., rus.

The method of palynological analysis is widely used for a stratigraphical purpose, whose subjects of investigation are spores and pollen grains of plants fossilized in sedimentary rocks. The change in composition of palynological spectra of separate layers or group of layers allows to trace nearly continuous picture of evolution of biocenosis and to distinguish the stages of their development. In terms of geochronology, these stages can be considered as a basis for palynological subdivision of the Sarmatian deposits of Eastern Georgia. The spores and pollen grains are frequently presented in deposits void of other organic fossils. But even if the fauna is preserved, the palynological data make corrections in stratigraphical schemes; as regards the marine fauna, the palynocomplexes reflect the changes of dry land cenosis being first affected by climatic fluctuations. Up to now, the only palynological work about the Sarmatian deposits of Eastern Georgia was the article devoted to an analysis of corns from bore holes within the territory of Kakheti (N. Mchedlishvili, E. Mchedlishvili, 1953). In 2008-09, published were the articles (Maisuradze et al., 2008; Shatilova et al., 2009), in which the micro-paleontological analysis of the Middle Sarmatian deposits of Kartli, sections Nadarbazevi and Uplistsikhe is given. As regards Kakheti, the region is very interesting from the practical point of view, since its commercial oil reserves have not been sifficiently studied in terms of palynology.

<div align="right">Auth.</div>

9.B3.15. Comparative characteristic of georgia`s mineral and oil waters according to their microcomponents contents. /U. Zviadadze, Z. Gaganidze, N. Kitiashvili/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 63-67. – geo.; res.: geo., eng., rus.

By means of a comparative analysis of chemical elements' distribution in mineral waters of the southern slope of the Great Caucasus, on the one hand, and in the so called "oil waters", on the other hand, it is possible to group the elements as typomorphic or less characteristic for these waters of two different genesis and use them as geochemical search criteria in oil and mineral water deposits' surveys.

Auth.

9.B3.16. Geochemical aspects of Late Hercynian potassium granite formation of Dzirula crystalline rock mass (West Georgia). /I. Mshvenieradze/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 68-71. – geo.; res.: geo., eng., rus.

Dzirula crystalline rock massif is an elevated part of the Georgian block and according to geological location it belongs to the Greater and the Lesser Caucasus middle mount. The Geological structure of the rock mass includes rocks of different age: crystalline schist, phyllites, quartz diorites, the Late Hercynian potassium granites, which are widely spread in the rock massif. There are two principal kinds of rocks of the petrographic type distinguished in granites: magmatic and metasomatic microcline granites. They differ from each other both by mineral and chemical content and geochemical peculiarities. They are distinguished by poor fluorine and high boron content. The high boron content should be considered as one of the petrographic signs of the investigated granites' crust formation.

Auth.

9.B3.17. Geology of Mushevani trachyriole extrusion and problems of its application for stained glass industry (South-East Georgia). /G. Nadareishvili, O. Machavariani, M. Tkemaladze, T. Cheishvili, S. Kavtaradze/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 72-77. – geo.; res.: geo., eng., rus.

The article deals with geology and contemporary structure of the Mushevani (South-Eastern Georgia, Bolnisi region) trachyriolite extrusion and its volcanogenic-sedimentary suite (Mashavera suite) of the Upper Cretaceous Age, with the enclosed map and profile, also the mineralogical-petrographic and petrochemical peculiarities. On the basis of trachyriolite, technological, physical and chemical parameters of experimental glass melted from tree and four-component charge are given. A view on the fitness of the raw material for using in stained glass industry is expressed.

Auth.

9.B3.18. Regularities of heavy toxic metals distribution in the Mashavera River and its tributaries. /U. Zviadadze, N. Poporadze, M. Mardashova, Kh. Avaliani, A. Qemoklidze/. Transactions of Technical University of Georgia. – 2010. – #3(477). – pp. 21-28. – geo.; res.: geo., eng., rus.

On the basis of an analysis of the results of eco-geochemical studies carried out in different time within the Kazreti ore zone, the ecological condition of the hydrographic net of the studied territory is characterized in terms of toxic heavy metals content in the river water; by comparing the atomic-absorption analysis data sampled at water points, the conclusion about the positive tendency of toxic concentration decreasing is made. The technological peculiarities of the impact of the water treatment method applied within the Madneuli mining area on the environment are also considered.

Auth.

9.B3.19. The role of underground water in genesis of Tbilisi closed depressions. /B. Zautashvili, T. Jajanidze/. Transactions of Technical University of Georgia. – 2010. – #3(477). – pp. 29-35. – geo.; res.: geo., eng., rus.

Closed depressions occupy a large part of the territory of Tbilisi. The depressions occur in thick lacustrine and lacustrine and boggy deposits of the quaternary origin of complex physical and mechanical properties, which complicates both the above-ground and underground construction projects. In this respect, the geotechnical conditions and the genesis of the closed depressions need to be studied. The genesis of the closed depressions is an active disputable issue of both scientific and practical interest. Studies show that the genesis of the depressions is directly related to boil in gypsum sediments of the Upper Eocene. Since the closed depressions within the Tbilisi area are frequently encountered below the erosion basis, represent stagnant basins, and contain gypsum and occasionally epsomite layers, while gypsum and mirabilite are being produced in salines, their genesis should be generally associated with the groundwater of upward circulation which, because of an inverse character of the hydrogeochemical zoning, are represented by ultra fresh sulfate-free waters with a high sulfate salt-solubility potential.

Auth.

9.B3.20. Petrological and geochemical peculiareties of late-Variscan potassium granites of Dzirula crystalline massif. /I. Mshvenieradze/. Transactions of Technical University of Georgia. – 2010. – #3(477). – pp. 44-47. – geo.; res.: geo., eng., rus.

Hypothetical versions of granite forming within the continental crust are considered with their weak and strong sides. It is the first attempt to design a completely new model of granite forming and development under conditions of the middle crust. The issue of the source of petrogenic elements of the said rocks is considered on the basis of the available factual data. The granite forming is found to take place under conditions of the continental crust for the last 3-3.5 milliard years of the Earth development. The granite forming was going on at the expense of granite itself according to the principle of self-generation of the petrogenic elements. This is evidenced by the hydrolysis process (kaolization) going under exogenic conditions, as a result of which a complete release of potassium, aluminum and of their compounds occurs. Based on the geochemical peculiarities, the granite petrogenic elements remain on the spot, facilitating thus the preparation of a source for these elements. It has been found that the upper mantle did not practically take any part in the granite forming process within the middle crust. According to the geochemical data, most of the late-Variscan granitoids are attributed to the upper crustal formations and mostly correspond to S-type granitoids.

Auth.

9.B3.21. Paleomagnetic investigations of some Mesozoic-Cenozoic rocks. /B. Asanidze, N. Odikadze, I. Tabaghua-Khaburzania, Gr. Abdushelishvili, T. Zuliashvili, M. Gamkrelidze/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 16-19. – geo.; abs.: eng., rus.

The results of paleomagnetic investigations of Mesozoic-Cenozoic rocks making up the Main Caucasian Ridge and Southern Slope of the Caucasus are considered. Samples were taken along the gorges (ravines) of the rivers Terek and Aragvi. Based on the lab testing, it has been concluded that the stable component of the vectors of natural remanent magnetization of these rocks, in stratigraphic (Jurassic, Cretaceous rocks) and geographic coordinate systems (Neogenic, Quaternary rocks) are close to each other, which is proved by their primary direction (position), but their secondary components under the temperature treatment (effect) and/or alternating field disappear.

Auth.

B4. Geography. Cartography. Astronomy

9.B4.1. Correlation between solar noise storms and optical phenomena of the photosphere. /Sh. Makandarashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 51-54. – eng.; abs.: eng., geo.

Long-term observations of the solar radio noise storms carried out at the Abastumani Astrophysical Observatory with the solar radio telescope at 210 MHz are presented. It is shown that there is a strong correlation between the amplitude of the noise storm and sunspot numbers.

Auth.

9.B4.2. The interpretation of geographic and archaeological facts on the establishment of the location of Phasis. /R. Papuashvili, Z. Janelidze/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 27-38. – geo.; abs.: eng., rus.

A comparative analysis of written sources about the ancient city of Phasis, archaeological materials and physical-geographic conditions of the r. Rioni leads to the conclusion that the territory, within which Phasis was located, stretches northeastwards from the central part of the city Poti, between the left bank of the r. Rioni and Paliastomi lake, at a distance of 2–5 km from the sea.

Auth.

C. TECHNICAL AND APPLIED SCIENCES. SECTORS OF ECONOMY

C1. Power Industry

9.C1.1. Solar energy and architecture in the 21st century. /L. Beridze/. Modern Problems of Architecture and Town Planning. – 2011. - # 1. – pp. 17-21. – geo.; abs.: geo., eng., rus.

The environmentally safe solar energy received by the Earth in a week exceeds the total energy budget of the global reserves of natural gas, coal, oil and radioactive uranium. In developed countries of the world,

there are state programs aimed at developing renewable energy sources. Georgia still lacks such programs. Any country claiming integration with the European Union should have 12% of non-conventional energy sources in its energy budget. Georgia has failed to comply with such a requirement up to now. Solar energy is very promising for Georgia. Our country's, as well as the mankind's, future depend on the maximum utilization of the alternative energy sources.

<div align="right">Auth.</div>

9.C1.2. Simulation of switching sequence generation at power system substations. /R. Kutateladze, A. Kobiashvili/. Transactions of Georgian Technical University. – 2011. – #1(479). – pp. 87-91. – geo.; res.: geo., eng., rus.
The article considers a possibility of creation of automatic switching sequence generation, as well as a corresponding expert system model. The necessity of designing such an expert model is discussed and the sequence of operator's actions is shown. The designed model is realized on the basis of an object-oriented programming language. The advantage of the used approach is demonstrated.

<div align="right">Auth.</div>

9.C1.3. An object-oriented representation of a power system. /R. Kutateladze, A. Kobiashvili, K. Kutateladze/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 130-135. – geo.; res.: geo., eng., rus.
The use of an expert system and the possibilities of use of knowledge engineering in process control are discussed. Several ideas for power systems are evaluated and small scale prototypes designed. An analysis based on real time operation planning models and event is shown.

<div align="right">Auth.</div>

9.C1.4. Educational program "power consumption management". /T. Mikiashvili, Sh. Nachkebia, G. Arabidze, I. Lomidze, M. Gudiashvili/. Transactions of Georgian Technical University. – 2010. – #4(478). – pp. 17-21. – geo.; res.: geo., eng., rus.
In order to cope with the problem of professional energy manager deficit in industrial, residential, commercial and public sectors, a concentration/module of masters' program "power consumption management" has been created. The module includes 4 training courses (energy consumption technologies, principles of energy management, energy consumer demands control, and renewable energy technologies) that would provide students with basic knowledge in energy consumption, production and conversion management technologies; it would develop skills for quantitative evaluation, analysis of energy issues, prognosis, calculation of investments and expenses, economic analysis of life cycle, evaluation of the environmental protection, effective planning and management. Employment of said skilled masters would facilitate effective development of industrial, commercial and public infrastructure of the country, effective utilization of the local renewable potential, the effective management of human resources and the correct management of energy consumption in general. The proposed masters program will undoubtedly interest educational centers of the South Caucasus region's countries.

<div align="right">Auth.</div>

9.C1.5. Methods of economic estimation of the environmental impact of heat-and-power engineering installations. /O. Vezirishvili, L. Papava, N. Kezheradze/. Transactions of Georgian Technical University. – 2010. – #4(478). – pp. 22-25. – geo.; res.: geo., eng., rus.
The environmental protection and energy conservation is currently the most urgent challenge. Its proper and comprehensive handling is the country's energy policy determining factor. The authors have generalized the best domestic and foreign practices of the development of environmentally friendly power systems. Methodological bases of structural optimization of an environmentally friendly power system have been elaborated and the limits of its effective utilization established. A formula to estimate annual environmental costs has been formulated with the development of a respective program algorithm and data flowchart. Computer calculations have been carried out and a nomogram for determining the specific ecological damage according to concrete energy enterprises in different geographical points has been drawn up.

<div align="right">Auth.</div>

9.C1.6. Estimation of landscapes in vulnerable areas on formation of erosion processes using space photography. /G. Gavardashvili/. Georgian Scientific News (GSN). – 2011. - #2(10). – pp. 12-15. – eng., abs.: geo., eng., rus.
In order to estimate vulnerable areas located in mountain landscapes on formation of erosion processes the Baku-Tbilisi-Supsa oil pipeline holding alley has been selected. At a distance of 273 km, 56 sensitive sites have been fixed by using space photography and field researches. In order to predict erosion on mountain slopes the methodology of the academician. Ts. Mirtskhulava, the Universal Soil Loss Equation (Wirschmeier) and soil erosion estimation model of by R. Morgan have been used. Jointly with the Geologic

Environmental Protection Agency, 274 environmental protection projects have been developed and implemented in the above mentioned oil pipeline holding alley in 2008-2009.

<div align="right">Auth.</div>

9.C1.7. Forecasting and prevention of catastrophic hydrodynamic impacts in waterworks facility areas ./T. Gvelesiani, G. Kipiani/. Georgian Scientific News (GSN). – 2011. - #3(11). – pp. 15-18. – eng., abs.: geo., eng., rus.
The method of a rapid forecast of the parameters of dam overtopping process by high extreme wave is developed based on the solution of two-dimensional boundary value problem of wave's motion and energy conservation law in a schematized waterworks facility. General recommendations for preventing the wave overflow impact on the waterworks facility environment are given.

<div align="right">Auth.</div>

9.C1.8. Aspects of Tkibuli-Shaori coal utilization in Georgia's heat-and-power engineering. /S. Makharadze/. Mining Journal. 2011. - #2(27). – pp. 68-73. - geo.; abs.: geo., eng., rus.
The article deals with different technologies for utilizing the Tkibuli-Shaori coal, in particular: burning of raw coal, coke and semi-coke production, coal brick production, underground gasification, water-coal suspension preparation and usage. Based on an analysis of their strengths and drawbacks, the expediency of realization of each of them under local conditions, given the deposit's specific mining and geological, coal working and processing conditions, is given.

<div align="right">Auth.</div>

9.C1.9. Global power engineering and prospects of Tkibuli-Shaori coal field. /Z. Gordeziani, T. Jishkariani, T. Pirtskhalava/. Mining Journal. 2011. - #2(27). – pp. 74-77. - geo.; abs.: geo., eng., rus.
The growing role of coal in today's power engineering, due to the development of innovative and environmentally friendly coal processing technologies, acquires a great importance in Georgia's economy as well. The reequipping of the Tkibuli-Shaori coal field- based coal producers with innovative and efficient technologies will solve the problem of environmentally safe production and utilization of the Tkibuli-Shaori coal.

<div align="right">Auth.</div>

C2. Electrical Engineering. Electronics. Radio Engineering. Communications

9.C2.1. Optical studies of physical properties of the materials for nanoelectronics. /A. Gigineishvili, Z. Jibuti, N. Dolidze, G. Iluridze, T. Minashvili/. Nano Studies. - 2011. - # 4. – pp. 55-58. - rus.; abs.: geo., eng.
Optical methods in investigation of physical properties of semiconducting materials have always been of importance. Optics has been found the most perfect and effective non-destructive method for its ability to obtain reliable information on the electric structure of nonomaterials without their disruption. The article presents examples of the invariability of the optical methods of nonomaterials research. The prospects of using such methods in research of micro- and nanoelectronics materials' properties are discussed.

<div align="right">Auth.</div>

9.C2.2. Method of estimation of the radiation spectral intensity of filament lamps used in photon annealing of nanostructures. / Z. Jibuti, N. Dolidze/. Nano Studies. - 2011. - # 4. – pp. 59-66. - rus.; abs.: geo., eng.
The algorithm for calculation of a number of photons radiated per second by a filament lamp within the given band of wavelengths in different regimes (for different temperatures of filament) is proposed.

<div align="right">Auth.</div>

**9.C2.3. Exciton-plasma resonance in hyperfine semiconductor layers*.* /Z. Jibuti, N. Dolidze, G. Eristavi/. Nano Studies. - 2011. - # 4. – pp. 67-72. - rus.; abs.: geo., eng.
The results of investigation of an interaction between exciton free charge carriers with plasma in superfine semiconductor layers are presented. It is shown that the concentration of free carriers strongly affects the exciton structure, enabling thus to estimate the concentration of free carriers, deformation stresses, local electric fields, and to identify the nature of the charging characteristics of an impurity.

<div align="right">Auth.</div>

9.C2.4. Photostimulated processes in nanoelectronic technologies. /Z. Jibuti/. Nano Studies. - 2011. - # 4. – pp. 73-78. - rus.; abs.: geo., eng.
It is demonstrated that the method of pulsed photon annealing always played an important role in technologies for micro- and nanoelectronics, such as the formation and crystallization of Si-nanoclusters in $SiN\_x:H$ films, modification of quantum dots in Ge/Si nanostructures, crystallization of hydrogenized films of

amorphous silicon, preparation of thin p-n junctions in Si, photostimulated crystallization and relaxation of internal mechanical stresses in epitaxial nano-structures of Si-on-insulator-type, doping of semiconductor nanoclusters, etc.

Auth.

9.C2.5. Scattering of current carriers in semiconductors with inhomogeneities of various types. / N. Kekelidze, E. Khutsishvili, L. Gabrichidze, D. Khomasuridze, B. Kvirkvelia, N. Kobulashvili/. Nano Studies. - 2011. - # 4. – pp. 95-102. - eng.; abs.: geo., eng.
The scattering of current carriers in inhomogeneous fields of different types in semiconductors has been analyzed using electrical measurements data. Considered were the types of inhomogeneous fields of technological origin connected with random space fluctuations of the composition, grain boundaries and structural defects and barriers at the crystalline boundaries in semiconductors. To explain the results, the respective models for inhomogeneous fields were used and found to be in fair agreement with the experimental data. Their comparison with the theoretical computations shows that the current carriers are scattered in nm-sized inhomogeneous fields. The share of such scattering in the shift of current carriers depends on the temperature range and the material's doping level.

Auth.

9.C2.6. Magnetic-impulse, technological and testing systems with the reversal switching dynistors. /Sh. Nemsadze, M. Giuashvili/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 44-48. – geo.; res.: geo., eng., rus.
A wide experience of high-duty switching by using semiconductor equipment exists at the GTU. A magnetic-pulse diagnostic unit has been designed here. It consists of three tandem pulse thyristors TU-3000 making possible 9 MVA power handling. The creation of big area conducting channels in the traditional thyristors and high-power handling is practically impossible. A significant growth of power in the semiconductor switching board is possible by using the reversal switching dynistor (RSD) that has no control electrode. The latter has been changed by controlling p-n plasma layer. This layer creates a plasma-conducting channel with the silicon plate area. The application of RSD enables to conduct the practically unipolar pulse current through the inductor that is especially important during diagnostics of piezoelectric converters, when the accuracy of measurements strongly depends on the power action duration. The RSD allows also improving the metrological characteristics of the diagnostic equipment.

Auth.

9.C2.7. Identification of dependence between amount of sand quantity and water requirement in a cement solution for cementing boreholes. /N. Meparishvili, N. Machavariani, V. Khitarishvili/. Transactions of Georgian Technical University. – 2010. – #4(478). – pp. 26-28. – geo.; res.: geo., eng., rus.
The article deals with the process of boreholes cementation and shows that for quality cementation a correct selection of a cement solution components and precise calculation of their amount are required. A special method has been developed for this purpose, the application of which makes it possible to identify the dependence between the cement solution components and to specify their characteristics by using a mathematical model.

Auth.

9.C2.8. Digital registration of wide-range seismometer transducer signals. /B. Mamikonyan, K. Sarkisyan/. Georgian Scientific News (GSN). – 2011. - #3(11). – pp. 38-47. – rus., abs.: geo., eng., rus.
The article gives the results of the development of a microprocessor digital module for processing and digital registration of signals of three-component speed and acceleration transducers. Electro dynamic seismic accelerators are used as speed transducers, while integrated circuits – as acceleration transducers. The primary objective of the study is expansion of the range of measurement of seismic waves.

Auth.

C3. Automation & Telemetry. Computer Engineering

9.C3.1. Quazioptimal control schemes. /T. Kapanadze, A. Tsintsadze/. Air Transport. - 2011. - #1(6). – pp. 32-38. – rus.; abs.: eng., geo.
The technology of construction of practical schemes of an automated quasioptimal control system is discussed that can be used for identifying compound real objects (systems).

Auth.

C4. Mining. Metallurgy. Chemical Industry

9.C4.1. Mineral processing for nano-scientists. / F. Habashi/. Nano Studies. – 2011. - #3. – pp. 25-40. - eng.; abs.: geo., eng.
In the past centuries pyrometallurgy was the only route to extract metals from ores and this required a large capital investment many countries could not afford to raise. This situation encouraged marketing of concentrates. Today, metallurgists have the option to use the hydrometallurgical route to process ores and concentrates at a reasonable capital investment. This opened the way to the possibility of processing ores locally. When need arises to increase production new units can be added economically. This is not possible with pyrometallurgical processes because one large furnace is more economical than a number of small furnaces with the same capacity due to heat radiation losses. In summary, mineral processing has made great progress in the past thirty years but there are still some standing problems that need to be solved.

<div align="right">Auth.</div>

9.C4.2. Pyrometallurgy for nano-scientists. / F. Habashi/. Nano Studies. – 2011. - #3. – pp. 41-62. - eng.; abs.: geo., eng.
Pyrometallurgical processes involve a preliminary step to render the ore or concentrate more amenable to further processing. This is then followed by a reduction or a conversion step to liberate the metal and finally a refining step to get the pure metal for the market. When the flotation process was introduced it permitted the utilization of low great ores which resulted in fine particles that cannot be introduced into shaft furnaces in use. As a result new unit operations were invented to cope with the situation. Although fine particles may be desirable because of the large surface area and the rapid rate of reaction they have the disadvantage of generating undesirable dust. Fine particles are crucial for roasting and flash smelting technologies.

<div align="right">Auth.</div>

9.C4.3. Hydrometallurgy for nano-scientists. / F. Habashi/. Nano Studies. – 2011. - #3. – pp. 63-90. - eng.; abs.: geo., eng.
Hydrometallurgy is a relatively recent subject. Major hydrometallurgical processes started at the end of the 19th century for the leaching of gold ores using a cyanide solution and for leaching of bauxite by sodium hydroxide to get pure aluminum oxide for the expanding aluminum industry. At the beginning of the 20th century leaching of low grade copper oxide ore and leaching of zinc oxide calcites by dilute sulfuric acid were introduced on large scale. It was, however, during World War II that new hydrometallurgical techniques such as ion exchange and solvent extraction were developed for the recovery of uranium for the manufacture of atomic bombs. These new technologies as well as others revolutionized hydrometallurgy. Hydrometallurgical processes are now competing with the ancient pyrometallurgical routes.

<div align="right">Auth.</div>

9.C4.4. Electrometallurgy for nano-scientists. /F. Habashi/. Nano Studies. – 2011. - #3. – pp. 91-114. - eng.; abs.: geo., eng.
Electrometallurgy is applied in three major industries: refining of copper, recovery of zinc, and production of aluminum. While copper and zinc are processed in aqueous solutions, the production of aluminum takes place from molten salt. Electrowinning of zinc and aluminum are energy intensive operations while electrorefining of copper is not. Electrometallurgy cannot be isolated from other areas of extractive metallurgy because of its dependence on the feed material as well the final processing of the products and the secondary products like anodic slimes. There is a competition between electrometallurgy and pyrometallurgy in connection with the production of reactive metals such as beryllium and magnesium.

<div align="right">Auth.</div>

9.C4.5. The impact of irradiation-induced metal nanoinclusions on silicon conductivity. /T. Pagava, N. Maisuradze, M. Beridze, N. Kharshiladze/. Nano Studies. – 2011. - #3. – pp. 169-176. - eng.; abs.: geo., eng.
n-Si single crystals produced by the floating zone method are studied. The concentration of electrons in the crystals is $6*10^{13}$ cm^{-3}. The samples are irradiated with 25 MeV protons at 300 K. The irradiation dose varies within the range $(1.8 – 8.1)*10^{12}$ cm^{-2}. The measurements are carried out by means of the Hall technique in the range of temperatures T = 77 – 300 K. In samples irradiated with different proton doses, a sharp increase in the experimental effective Hall mobility μ_{eff} or a deep minimum in the dependence μ_{eff} = f(T) in the region of phonon scattering of electrons is observed immediately after irradiation or after aging of the samples, respectively. The observed effect is attributed to the formation of high-conductivity – metal-like) – inclusions in the irradiated samples and to changes in the degree of screening of the inclusions by impurity–defect shells in relation to the irradiation dose, the time of natural aging, and the temperature of measurements. The impurity–defect shells are formed around metal-like inclusions during isochronal annealing or natural aging of the irradiated samples. It is suggested that metal-like inclusions formed in the n-Si crystals on irradiation with protons with the energy 25 MeV are atomic nanoclusters with an 80 nm radius.

<div align="right">Auth.</div>

9.C4.6. Regular gratings and threads of nanoparticles of metals in zeolite channels. /A. Kapanadze, G. Rtveliashvili, G. Tabatadze/. Nano Studies. – 2011. - #3. – pp. 181-182. - rus.; abs.: geo., eng.
It is experimentally shown that when filling zeolite (of types NaA, NaX and NaM) channels by molten metals under the pressure, regular gratings and single-atomic threads composed of 10–20 atoms can be produced.

<div align="right">Auth.</div>

9.C4.7. Nano-structural studies of ultra-hard coatings for titanium nitride obtainable by the plasma assisted ion-implantation method and deposition. /V. Shulayev, A. Vasilev, M. Zaporozhets/. Nano Studies. – 2011. - #4. – pp. 49-54. - rus.; abs.: geo., eng.
Periodic heat pulses at the front of coating deposition within the matrix of non-stochiometric cubic titanium nitride having columnar structure initiate appearance of nano-scale "dislocationless" single-crystals as a result of disorder–order phase transition due to redistribution of structural vacancies within non-metallic sub-lattice. Formation of such a nano-structural state provides achievement of ultrastrong hardness.

<div align="right">Auth.</div>

9.C4.8. Possibilities of micro-structural studies of ferro- and ferrimagnetics based on their magnetic properties. /J. Tsertsvadze/. Nano Studies. – 2011. - #4. – pp. 119-122. - rus.; abs.: geo., eng.
The possibility of investigation of the microstructure of ferro- and ferrimagnetics based on their magnetic properties is considered.

<div align="right">Auth.</div>

9.C4.9. Innovation technique of direct steel alloying and ways of its development. /G. Jandieri, D. Sakhvadze, G. Tavadze, T. Surguladze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #1. – pp. 84-88. – eng.; abs.: eng., geo.
The technology of direct alloying of steel envisages aluminium reduction of the alloying element from aluminothermic special briquettes, making use of the liquid steel heat. In order to diminish the anticipatory oxidation of reduced aluminium and vain melting loss the introduction of the more active reducing component than aluminium, i.e. of free carbon-forming organic compound – molasses – into a briquette is proposed. A mathematical model of the process of heat transfer from liquid steel to briquette has been developed and the optimization of technological parameters and the automation control system is presented.

<div align="right">Auth.</div>

9.C4.10. Development of technology of production of wear-resistant articles with long-term operating life. /B. Margiev, A. Oakley, M. Ratishvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #1. – pp. 89-91. – eng.; abs.: eng., geo.
The aim of the work was prolongation of the exploitation term of wear-resistant articles. For this purpose, a technology of production of wear-resistant manganese austenite steel of nano-oxide structure was developed. Durability, plastic and impact characteristics, Brinell hardness and wearability of nano-oxide structure steel produced by our technology were improved in comparison with an analogue Hadfield steel.

<div align="right">Auth.</div>

9.C4.11. High temperature interaction of chromium with air components. /O.Mikadze, N. Maisuradze, A. Gordeziani, G. Mikadze, R. Zekalashvili, G. Rtveliashvili/. Air Transport. - 2011. - #1(6). – pp. 56-62 – rus.; abs.: eng., geo.
Chromium scales formed on unalloyed chromium in air at high temperatures hinder its nitridation only at the initial stages of oxidation. The deep purification of chromium from incorporated impurities appreciably retards air component penetration into the metal and leads to reduction of the oxidation rates even at 1225 °C.

<div align="right">Auth.</div>

9.C4.12. Information of metals in old treaties of the 11th century Georgia. /G.Tsirekidze, R. Chagunava/. Air Transport. - 2011. - #1(6). – pp. 158-167 – rus.; abs.: eng., geo.
The Georgian scientific and technical literature lost due to the historical cataclysms, including the data on metals can be partially compensated by the "Incomparable Karabadini" of the Middle Ages. The tendency to apply the certain technique, the attempt to systemize metal properties and the related issues have been confirmed by the medical pharmacological activities. The available information in the Georgian language is the earliest source to give an idea of the application of metals in everyday life of the Georgians in the given period.

<div align="right">Auth.</div>

9.C4.13. Optimum technological parameters of development of a brachysynklinal form of coal-beds after the example of Tkibuli-Shaori Deposit. /I.Rekhviashvili, T. Pirtskhalava/. Mining Journal. – 2011. - #1(26). – pp. 33-39. – rus.; abs.: rus., geo., eng.

A modern coal industry of Georgia is characterized by low technical and economic indicators not so much because of difficult geological conditions of Tkibuli-Shaori deposit (TSD), the main base of the coal ndustry of Georgia, but for inconsistency of the existing concept of development with the mining and geological conditions of deposit development. At G. Tsulukidze Mining Institute, a new concept of development of TSD has been worked out, providing a profitable operation field by creating an enabling environment of mechanical complex – the only condition for concentration and intensification of mining operations, increasing productivity and reducing the cost of coal production.

<div align="right">Auth.</div>

9.C4.14. Few remarks on terms "development system" and "development method" for the underground development of ore mineral resources. /A. Mikeladze/. Mining Journal. – 2011. - #1(26). – pp. 40-43. – rus.; abs.: rus., geo., eng.
The paper gives a critical analysis and the author's definition of terms "development system" and "development method" for the underground development of deposits of ore mineral resources. These terms are used in the countries of the former Soviet Union. It is mentioned that in Western Europe and USA they use the term "method of extraction of minerals from the interior of the Earth" for referring to the final stage of extraction of minerals. The paper recommends to follow the western practice and use the term "method of extraction of minerals from the interior of the Earth" instead of terms "development system" and "development method" in order to avoid terminological chaos and ambiguities.

<div align="right">Auth.</div>

9.C4.15. The influence of Tkibuli-Shaori deposit mine fields on the Nakerala Ridge ecosystem. / I. Gujabidze, G. Javakhishvili , D.Kupatadze/. Mining Journal. – 2011. - #1(26). – pp. 44-46. – geo.; abs.: geo., rus., eng.
The issue of the influence of Tkibuli-Shaori deposit mine fields on the Nakerala ridge ecosystem appeared on the agenda at the beginning of commercial extraction of coal, but studies on this issue started only in the 80s of the last century. By that time, existing calculations failed to make valid conclusions. Today, powerful computers and more accurate modern methods of calculation are effective means of studying the given issue. The results of our calculations performed by means of numerical method reflect well the mechanical processes ongoing in the rock massifs when using the existing methods of coal extraction and roof stabilization, and reasonably explain the essence of the current destruction process on the Nakerala.

<div align="right">Auth.</div>

9.C4.16. Conditions of stability of open-cast mine dumps. /R. Mikhelson, A. Kikabidze, G. Shatberashvili/. Mining Journal. – 2011. - #1(26). – pp. 47-49. – geo.; abs.: geo., rus., eng.
After the example of the open-cast mine dump #2 of the JSC "MADNEULI" it is shown that the principal causes of landslide development on dumps can be the placing in them of great amount of slide-rocks/bridges, whose physicomechanical properties are lower than those of overburden, as well as loading of dumps with stacked heaps of leached gold-containing quartzite. Given the above factors, the dump parameters have been recalculated and recommendations for ensuring its stability developed.

<div align="right">Auth.</div>

9.C4.17. The optimization criteria of manganese ore jigging. /R. Enageli, M. Kitoshvili/. Mining Journal. – 2011. - #1(26). – pp. 50-53. – geo.; abs.: geo., rus., eng.
The issue of optimization of Chiatura manganese ore jigging is discussed in the article. The types of the process optimization technological criterion target and of functions of limitation, as well as the variation range of the control action are determined. Also established is the variation range of the perturbation actions, with account of which the optimal control system will regulate air supply in the first and third air chambers of the jigger, forming thus the maximum output of conditional concentrate.

<div align="right">Auth.</div>

9.C4.18. Determination of material constitutions of the copper-zinc ore threshing of the Madneuli ore deposit. /K. Kekelidze, Z. Arabidze, A. Abshilava/. Mining Journal. – 2011. - #1(26). – pp. 54-57. – geo.; abs.: geo., rus., eng.
Copper-zinc ore of the Madneuli ore deposit and its grading, chemical and mineral composition are revised and studied. The content of copper, zinc, sulfur and iron and forms of their distribution are determined in individual samples. The sizes of mineral impregnations and the necessity of fine grinding for their sufficient disclosure are determined.

<div align="right">Auth.</div>

9.C4.19. Determination of fragmentation size of Madneuli copper-zinc ore. /K. Kekelidze, Z. Arabidze, A. Abshilava/. Mining Journal. – 2011. - #1(26). – pp. 57-59. – geo.; abs.: geo., rus., eng.

Copper-zinc ores of Madneuli ore deposit as well as their material constitution have been revised and studied. It is established that the ore belongs to sulfur fine-ingrained minerals, which conditions the necessity of ultra fine grinding for their sufficient disclosure/liberation. Percentage distribution by classes of copper, zinc and sulfur elements has been studied. The grain size and composition of the 74 μm class during different grinding periods have been determined.

<div align="right">Auth.</div>

9.C4.20. The development of Paravan deposit perlite processing technology. /G. Samkharadze/. Mining Journal. – 2011. - #1(26). – pp. 60-61. – geo.; abs.: geo., rus., eng.
The application of both expanded perlite (Circulate) and of perlite products in various sectors of industry and agriculture is considered. The genetic, petrographic and technological analyses of criteria based on different conditions of the origin of various perlite rocks are given. A new process flowsheet of the Paravan deposit perlite fractionation has been designed and introduced at the mining company Paravan Perlite Ltd.

<div align="right">Auth.</div>

9.C4.21. The expert results of the strength calculation of the Baku-Tbilisi-Ersurum gas pipeline section going through Georgia. /L.Makharadze, N. Khundadze, B.Kokashvili/. Mining Journal. – 2011. - #1(26). – pp. 62-64. – geo.; abs.: geo., rus., eng.
The expert results of the strength calculation of the Baku-Tbilisi-Erserum gas pipeline section going through Georgia are discussed in the article. The expert calculations are made based on the standards of the former Soviet Union (Russian Federation) and the American Society of Mechanical Engineers (ASME). Despite a significant difference between the calculation results, the wall thickness of the said pipeline section is found to be calculated with a ≈25% margin of safety, which ensures its safe operation under normal steady-state conditions.

<div align="right">Auth.</div>

9.C4.22. Investigation of aerodynamic resistance of mining faces fixed by KM87mechanized complexes . /T. Kunchulia/. Mining Journal. – 2011. - #1(26). – pp. 65-66. – geo.; abs.: geo., rus., eng.
The main factors affecting the aerodynamic resistance of mining faces are considered. Based on an analysis of the results of laboratory tests carried out in a wind tunnel, new regularities of changes in the aerodynamic resistance of mining faces depending on the coal-bed thickness are established. The results of the laboratory tests enable to eliminate inaccuracies existing in mine aerodynamics upon determining the aerodynamic resistance of mining faces fixed by KM87 and its various modifications and they (the results) contain the facts for correct development of mine ventilation projects.

<div align="right">Auth.</div>

9.C4.23. Improvement of cement stone's bond with contact surfaces in walls cementing. /V. Khitarishvili, N.Machavariani/. Mining Journal. – 2011. - #1(26). – pp. 67-69. – geo.; abs.: geo., rus., eng.
The results of theoretical and experimental investigations are considered for selecting the effective composition of grouting mortars for the purpose of improving their bond with contact surfaces, casings and hole walls and better impermeability of the hole annulus and walls. The type of components are established: polymer resin ФР-12 and formalin; they increase moistening and adhesion and, as a result, the cement mortars bond with contact surfaces increases. Thus, the use of these grouting mortar compositions significantly raises the well cementing quality.

<div align="right">Auth.</div>

9.C4.24. Downhole hydraulic analysis of a new water delivery system in water seal packing of pumps of a hydrotransport unit of tailings of JSC «Madneuli". /V.Silagadze, L.Makharadze, M.Jangidze/. Mining Journal. – 2011. - #1(26). – pp. 70-73. – geo.; abs.: geo., rus., eng.
A water delivery system in water seal packing of dredging pumps of tailings transport conveyer is analyzed. It is established that the existing water delivery system does not meet established standards; in particular, the water delivered in hydraulic seals exceeds the standard rate. Consequently, it leads to excessive consumption of water and electricity. The developed and proposed hydraulically sound system will cope with the above problem.

<div align="right">Auth.</div>

9.C4.25. Calculated dependences of main parameters of hydrotransport systems operating under natural pressure and techno-economic indicators. /V. Silagadze, M. Jangidze, S. Steryakova/. Mining Journal. – 2011. - #1(26). – pp. 74-77. – geo.; abs.: geo., rus., eng.
The work shows the calculated dependences of the hydrodynamic parameters of hydrotransport systems operating under natural pressure for inclined, vertical and horizontal pipelines. The specificity of calculation of staged systems is considered. The values of these parameters and technical and economic indicators for a specific object are calculated.

9.C4.26. Problems of the third phase formation in heavy-loaded gearing of mining machines. /M. Tsotskhalashvili/. Mining Journal. – 2011. - #1(26). – pp. 77-80. – geo.; abs.: geo., rus., eng.

The article considers formulas for calculation of the lubricant film thickness deduced by various authors and compares their application results with the experimental research data. It is shown that the formulas that fail to take into account the thermal effects occurring in the contact zone fail to comply with the experimental study results. Also shown are the dependences of the lubricant film thickness, the constant of sliding friction, and the linear load of jamming on the rolling and slip velocities.

<div align="right">Auth.</div>

9.C4.27. Calculation of optimal parameters of curvilinear guiding of a vacuum drive pulley. /N. Molodini, R. Molodini/. Mining Journal. – 2011. - #1(26). – pp. 80-83. – geo.; abs.: geo., rus., eng.

The article deals with the methods of calculation of curvilinear guiding of self-reacting vacuum devices; the formulas and norms of SVDs (radius and other key parameters); the ways of making a compact vacuum drive with a high pulling effect. The key parameters of the vacuum drive pulley are calculated during dry and fluid friction, both at polytrophic and isothermal expansion of air. It is proved that during fluid, i.e. elestohydrodynamic operating mode, the pulling factors of the drive are much higher, while dimensions are considerably compact.

<div align="right">Auth.</div>

9.C4.28. Development of a plasmatron with laminar plasma flow designed for surface treatment of building materials. /Z. Batkhadze, D. Gelenidze, L.Batkhadze, Ts. Sichinava, S. Menteshashvili /. Mining Journal. – 2011. - #1(26). – pp. 83-87. – geo.; abs.: geo., rus., eng.

An air plasmatron of indirect action with interelectrode insert containing the anode with new intrachamber geometry is considered; laminar plasma outflow from the nozzle of plasmatron is carried out; an experimental study of fusion technology of surfaces of solid construction materials is conducted; the optimum process parameters are established; samples of synthetic and natural building materials with treated vitreous and decorative surfaces are prepared.

<div align="right">Auth.</div>

9.C4.29. On application of the New Austrian Tunnelling Method (NATM) in construction of permanent workings of Georgian mining enterprises/adventures. /A. Abesadze/. Mining Journal. – 2011. - #1(26). – pp. 88-92. – geo.; abs.: geo., rus., eng.

The basic mining-and-technical requirements of application of the NATM being spread widely in the practice of tunneling works are considered. The expediency of their use in construction of permanent workings of Georgian mining companies is justified. The article provides an analysis of the technologies of fastening material recommended by the given method, namely, the making of Sprayed Concrete Lining (SCL) and its application on the rock surface over the entry contour. Some features of operation of the "Fastener- Rock Mass" system created artificially around the workings are also considered. The results of the works regarding use of the SCL carried out in the last years by G. Tsulukidze Mining Institute of Georgia on various mining objects of Georgia as well as the indicators of deformation of the rock mass around the workings are analyzed *in vivo*. The application of the obtained results when developing the projects of fastening the main workings through the NATM is recommended.

<div align="right">Auth.</div>

9.C4.30. Investigation of seismic effect of blasting on Gelati and Motsameta monastic complexes. /S. Khomeriki, R. Mikhelson, N. Kukuladze/. Mining Journal. – 2011. - #1(26). – pp. 93-96. – geo.; abs.: geo., rus., eng.

The article considers the results of seismic measurements of ground oscillation in the foundations of Gelati and Motsameta monastic complexes' constructions during blasting at Kutaisi nonmetallic quarry. The dependence of the velocity of the maximum displacement of the ground from the mass of simultaneously blasted exploding charges is presented. The boundary values of seismically safe masses of these charges, taking into account the allowable displacement velocities for Gelati and Motsameta monastic complexes and the quarry faces, are calculated.

<div align="right">Auth.</div>

9.C4.31. Examination of the emulsion parameters of elementary slurry explosives. /T. Sharashenidze, V. Lortkipanidze, U. Kavtiashvili, A. Gotcholeishvili/. Mining Journal. – 2011. - #1(26). – pp. 96-98. – geo.; abs.: geo., rus., eng.

It is established that upon use of 3.7-4% CMC (carboxymethyl cellulose) to thicken the emulsion, the latter retains stability. At the same time, the emulsion becomes firm and its main principles are violated – since the oxidizing agent and fuel are no longer fluid. It should be mentioned that the KMC binds the emulsion in one

direction. Upon use of a high-polymeric flocculant "Magnafloc 10", the emulsion is bound from all the directions, becomes viscous, fluid and is capable of preserving the both phases in a liquid state. Under laboratory conditions, the testing of the emulsions made by us showed that no emulsion retains stability while passing a water column – the penetrating water divides the emulsion. The emulsion retains stability when the silicate sodium structure builder and the flocculant Magnafloc 10 makes are applied in the amount of 0.03 and 0.16%, respectively.

<div align="right">Auth.</div>

9.C4.32. Determination of parameters of new-type three-component explosives. /T. Sharashenidze, V. Lortkipanidze, U. Kavtiashvili, A. Gotcholeishvili/. Mining Journal. – 2011. - #1(26). – pp. 99-101. – geo.; abs.: geo., rus., eng.
The ammonium nitrate produced at high pressure, the grains of which are not porous, cannot retain the corresponding quantity of an inflammable that reduces the power indicators of the AN-DF (ammonium nitrate – diesel fuel) type explosive. At such high pressure, ammonium nitrate is produced at a chemical plant "Azot" in Rustavi. To increase power indicators of AN-DF, the possibilities of using 84% peroxide (MnO_2) as non-conventional oxidizer were studied. Under laboratory conditions by means of peroxide crushed to 10-30 microns, three-component trial explosives were prepared, in which, instead of diesel fuel, the diesel oil and ammonium nitrate were used. The trial explosives contained 2, 4, 6, 8 and 10% magnesium. The tests have shown that the addition of peroxide in the quantity of 4-8% in AN-DF increases the explosion effects.

<div align="right">Auth.</div>

9.C4.33. Study of the effect of quarry waters on the functional properties of ion-selective membranes. /N. Chkhubianishvili, Ts. Kurtskhalia, Z. Simonia, M. Kavtaradze/. Mining Journal. – 2011. - #1(26). – pp. 101-105. – geo.; abs.: geo., rus., eng.
The impact of quarry waters solution's composition on specific resistance, selectivity and total exchange capacity of membranes at 20 and 40°C is studied under static conditions. It is determined that the studied membranes are chemically and thermally stable in the solution media and can be used for electrodialysis.

<div align="right">Auth.</div>

9.C4.34. Dependence of currents flowing through charge materials on geometrical dimensions of ferro-alloy stove. /Z. Simongulashvill, M. Tsirdava, V. Kldiashvili, Sh. Nemsadze, N. Chikovani/. Transactions of Georgian Technical University. – 2011. – #1(479). – pp. 36-42. – geo.; res.: geo., eng., rus.
The dependence of electric parameters on its geometrical dimensions in a ferro-alloy melting stove was studied. On the basis of experimental research, the optimal dimensions of the diameter of an electrode, the diameter of disintegration and diameter of the bath for low-power electric stoves were determined. In order to attain high performance, it is necessary that currents be equally distributed around an electrode with the concurrent increase of electric resistance of the charge materials.

<div align="right">Auth.</div>

9.C4.35. New structures and properties of chromium oxides in the metal-oxide-semiconductor system. /O. Mikadze, G. Darsavelidze, N. Maisuradze, M. Darchiashvili/. Transactions of Georgian Technical University. – 2011. – #1(479). – pp. 42-45. – rus.; res.: geo., eng., rus.
A complex investigation of forming conditions, structure state and electrophysical characteristics of metal-oxide-semiconductor type stratified system formed by oxidation of mono and polycrystalline unalloyed chromium, as well as the low-alloyed chromium was carried out.

<div align="right">Auth.</div>

9.C4.36. Current issues of the Georgian mining industry structure. /G. Lomsadze, G. Lobjanidze/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 42-48. – geo.; res.: geo., eng., rus.
Developing a common structure of the various sectors of the Georgian mining industry is crucial to the economic growth of the country. Toward this end, it is important to give priority to the branches that define economic efficiency of the industry as a whole and put in place state policy geared toward supporting the industry.

<div align="right">Auth.</div>

9.C4.37. The hydrogeochemical pecularities of Chaladidi oil-prospecting area. /U. Zviadadze, Kh. Avaliani, M. Mardashova/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 48-53. – geo.; res.: geo., eng., rus.
Among the traditional methods of oil deposits prospecting the certain place belongs to hydrogeochemical method, in particular use of chemical – inorganic indicators as indirect exploratory criterion. There is considered question of possible availability of oil large deposit on Chaladidi area, coming out from positive results of spectral analysis, received from point of view of high contents in pressure waters of territory characteristic for oil typomorphic chemical elements.

9.C4.38. Water purification from phosphates by filtration on coal shales. /I. Baramidze, E. Shengelia, L. Gvasalia/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 78-83. – rus.; res.: geo., eng., rus.
The possibilities of removal of phosphates from water by using coal shales were studied. Also studied were the kinetics of adsorption of phosphates under dynamic conditions and their dependence on temperature and solution pH. It is established that adsorption of phosphates takes place on the surface of the sorbent with forming complex compounds. The studied adsorbent can be used for removal of phosphates from both natural and sewage waters.

<div align="right">Auth.</div>

9.C4.39. Production of pure metals by conversion of their respective oxides. /G. Mikadze, L. Rukhadze, N. Maisuradze, M. Tatishvili, O. Mikadze/. Transactions of Georgian Technical University. – 2010. – #3(477). – pp. 61-65. – geo.; res.: geo., eng., rus.
The peculiarities of new alternative technologies for creation of gaseous environments with ultra-low oxidizing potential, served as pre-condition for conversion of the wide spectrum of oxides are considered and the specific character of this process is determined.

<div align="right">Auth.</div>

9.C4.40. Filber materials and innovative technologies. /N. Abesadze, M. Gogoladze/. Georgian Scientific News (GSN). – 2011. - #3(11). – pp. 22-25. – rus., abs.: geo., eng., rus.
The work considers the use of fiber materials in modern technologies, in particular, in space industry. After the example of the space-suit, the use of polyurethane and carbon fibers for its design, as well as a number of safety requirements to said fibers are considered.

<div align="right">Auth.</div>

9.C4.41. Determination of forced fluid withdrawal in developing fractured rezervoirs. /G. Durglishvili, N. Maisuradze/. Mining Journal. 2011. - #2(27). – pp. 18-21. - geo.; abs.: geo., eng., rus.
Forced fluid withdrawal is one of the methods of increasing the oil recovery factor. At the late stage of field development, forced production allows to produce residual oil from the watered volume. The effectiveness of the method depends on determination of production rate limit of producing wells. For this purpose, it is important to accurately determine the flush production rate of forced method. Upon forced fluid withdrawal fluid production must exceed the flush production rate of oil in-place conditions. One of the limiting factors is the maximum differential pressure drawdown. Setting limits for drawdown will avoid the covering or closing of fractures in the bottomhole formation zone upon pressure reduction.

<div align="right">Auth.</div>

9.C4.42. The current state and development potential of Georgian mining. /D. Chomakhidze, M. Basiladze/. Mining Journal. 2011. - #2(27). – pp. 22-25. - geo.; abs.: geo., eng., rus.
The development trends of mining industry of Georgia in the years of independence (1990-2009) are characterized. The current state is compared to the period before 1990. An analysis shows that over the last 20 years most mining enterprises have completely stopped or were operating on a drastically reduced scale. In mentioned years production of mining industry reduced by 3.2 times, number of employees – by 6 times and the cost of fixed capital (funds) – by 1,7 times. Production of all kinds, except copper and gold mining, has been reduced. The article focuses on the characterization of mineral deposits on the territory of Georgia. It has been concluded that mineral resources of the country along with other factors (environmental conditions, labor resources, transport and geographic position, science and technological base, industry production demand, existing traditions) create favorable conditions for reconstruction and development of the mining industry of Georgia.

<div align="right">Auth.</div>

9.C4.43. Technological parameters of intensive model of development of Tkibuli-Shaori deposit. /Z. Gordeziani, T. Pirtskhalava, M. Basiladze, G. Sologashvili, S. Makharadze/. Mining Journal. 2011. - #2(27). – pp. 26-29. - geo.; abs.: geo., eng., rus.
The main fuel and energy resource to ensure energy security of Georgia and to reduce the existing significant shortage of basic facilities are coals of the Tkibuli Shaori deposit (TShD). The drift opening of a brachysynclinal form of occurrence of coal seams of the deposit enabled integrating the stocks of five mine fields in one mine, by transfer of the deposit into a profitable mode of operation. The length of twin lavas is adopted: on the eastern flank of the trough - 200-250 m and 3000-6000 m daily load, on the western, more damaged wing of the trough - 100-120 m, the daily loads - 1500-3000 m. In the case of construction and operation of a mine on the deposit coals with the output of 3.5 million tons per year, the cost of 1 ton of coal will not exceed $17; it will raise the competitive capacity of the coal in relation to imported gas and oil in the

production of the country's electrical energy and confirm expediency of using Tkibuli coals with high economic efficiency.

<div align="right">Auth.</div>

9.C4.44. Examination of hard-cleaned Chiatura manganese ores. /D. Talakhadze, R. Sturua, T. Rukhadze/. Mining Journal. 2011. - #2(27). – pp. 39-41. - geo.; abs.: geo., eng., rus.

The results of laboratory examination of dressing of hard-cleaned Chiatura manganese ores are considered. The Darkveti Range mixed ore were selected for examination. The examination was carried out under the existing scheme of technology which provides washing of the material (ore), reduction of grade 16-00 mm, screening of grades of 16-8 mm, 8-3 mm and 3-0 mm, stratification in heavy liquids of density <2700 kg/m^3, 2700-2800 kg/m^3,> 2800 kg/m^3. The experimental results enable to conclude that the large 16-8 mm grade belongs to hard-concentrated, being conditioned by its high content carbonate minerals. The 3-00 mm grade also belongs to hard-concentrated ores, since its tails considerable polluted by low-density and weak manganese products, such as manganese-saturated sandstones and loose manganese minerals. The best results have been obtained for the 8-3 mm grade, conditioned by good solubility of minerals and gobs.

<div align="right">Auth.</div>

9.C4.45. The method of improvement of technological parameters of dressing of mixed and acidic copper-pyrite ores in JSC "Madneuli". /B. Menabdishvili, A. Abshilava, N. Gugunishvili/. Mining Journal. 2011. - #2(27). – pp. 42-46. - geo.; abs.: geo., eng., rus.

Along with increase in the mining depth of an open quarry of JSC "Madneuli", the content of copper in the copper-pyrite ores has significantly decreased and varies within 0.3–0.5%. This has resulted in the worsening of the dressing works' technological parameters. Based on the results of laboratory examinations, an adjusted technological scheme is proposed, which envisages: reduction of the flotation concentrates to 74 μm (82–85 %), 30-minute airing with further concentration in a separate cycle; as a result, the concentrate's quality improves by 1.5–2.5%, causing thus a definite improvement of the extraction factor.

<div align="right">Auth.</div>

9.C4.46. Investigation of the flotation process of manganese ore slurry. /M. Gamtsemlidze, R. Enageli, A. Shekiladze, I. Samkharadze, N. Gugunishvili/. Mining Journal. 2011. - #2(27). – pp. 46-52. - geo.; abs.: geo., eng., rus.

Flow chart of manganese ore slurry enrichment by flotation method has been developed. For slurry, which is presented by carbonate and oxidized minerals, the flow chart has been developed, which provides two-step enrichment: carbonate roughing flotation and re-cleaning for receiving carbonate concentrate and main oxide flotation of tails and re-cleaning for receiving oxidized concentrate. The following reagents have been used for the process: liquid glass, heat and frost resistant oil and sodium carbonate. The experiments on a laboratory flotation machine have been carried out; process conditions have been established; enrichment parameters' values have been determined. The experimental data have been processed by mathematical statistics and enrichment optimizing identification methods; multiple and correlative relationships between quality and yield indices of carbonate and oxidized concentrate and controlling and perturbing variables have been established. Finally, a functional chart of the flotation process control system has been designed.

<div align="right">Auth.</div>

9.C4.47. Investigation of fire-safety of one and two-duct combined ventilation system. /O. Lanchava, I. Gventsadze/. Mining Journal. 2011. - #2(27). – pp. 56-59. - geo.; abs.: geo., eng., rus.

Tunnel ventilation plays a significant role for removing smoke and toxic substances or for reducing their distribution during fire in a tunnel. In terms of selection and development of a tunnel ventilation system, of great importance is the establishment of functional characteristics of ventilation systems in case of fire, both at the initial stage of development, as well as in the full operation mode. The work shows a systemic flaw of semi-transverse ventilation systems and transverse ventilation systems, consisting in that in the case of conflagration the direction of air and its consumption are determined by the fire-caused air draft rather than the fans/ventilators. The dynamic pressure of the draft is found to exceed the total draft of the most powerful ventilators by approximately 30 times. The said is generally also applicable to the ventilation systems containing more than one duct/tunnel.

<div align="right">Auth.</div>

9.C4.48. Determination of efficiency of modern explosives: problems and solutions. /R. Mikhelson, S. Khomeriki, V. Lortkipanidze, A. Khvadagiani, D. Supatashvili/. Mining Journal. 2011. - #2(27). – pp. 78-83. - geo.; abs.: geo., eng., rus.

The methods of efficiency estimation of coarse-dispersed explosives are discussed. It is experimentally established that the methods based on the measurement of explosion hole or camouflet cavity fail to provide reliable data on the efficiency of tested explosives. The measurement of metal indicator deformation as a result of blasting of tested explosives in heavy-wall steel pipes gives a possibility of a relatively objective

estimation. To ensure the operating safety, an amniotic sac is recommended for use instead of a heavy-wall steel pipe. The operability indices of some explosives established by this method are.

<div align="right">Auth.</div>

9.C4.49. The conditions of quality delineation of rocks by blasting linear charges. /R. Mikhelson/. Mining Journal. 2011. - #2(27). – pp. 84-87. - rus.; abs.: geo., eng., rus.
It is established that in the presence of 15-25 mm radial fissures formed near the borehole space at the stage of autonomous operation of a series of simultaneously blasted liner charges of explosives, the breaking point of rocks upon dynamic split makes 25-70%. Dependences of the optimal distance between the charges and the efficiency index of the dynamic split of the rocks are shown, as well as the experimental data on the effect of boundary conditions on the optimal distance between the charges. Designs of linear charges applicable to the facing stone blocks mining technology are recommended.

<div align="right">Auth.</div>

C5. Mechanical Engineering. Instrument-making

9.C5.1. Determination of the normal reaction of the soil to the wheels of adaptive self-propelled chassis. /Sh. Chalaganidze, R. Makharoblidze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 1. – pp. 92-97. – eng.; abs.: eng., geo.
The article considers the methods to define the normal reaction of the wheels of adapted self-propelled chassis in the case of balance suspension of the driving tandem wheels. The calculation formulae for the normal reactions of the front guide and rear driving wheels are deduced. It is established that the total normal reaction to the truck is distributed equally between the rear and front tandem wheels, thus having an impact on the traction characteristics of the running system. The normal reactions of the wheels are determined by considering the assembly of the operating equipment allowing to identify the optimal locations of the technological working organs along the girders of the chassis by considering the minimization of the pressure of the wheels on the soil.

<div align="right">Auth.</div>

9.C5.2. Upgrading excavating parts of ground-cutting machines. /T. Bukhnikashvili, P. Bukhnikashvili/. Transactions of Georgian Technical University. – 2011. – #1(479). – pp. 81-86. – geo.; res.: geo., eng., rus.
The article considers the methods of upgrading the excavating parts of ground-cutting machines that have been tested for novelty on the patented mechanisms, from the conception of invention to the testing and introduction of the pilot model.

<div align="right">Auth.</div>

9.C5.3. Optimization of the formation process of holes of a small diameter and big depth in monocrystals of tungsten by the method of electric-spark broaching. /M. Amiridze/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 111-114. – rus.; res.: geo., eng., rus.
A technological process of obtaining small-diameter deep holes in a tungsten monocrystal is given. The major tasks of the research was to construct a mathematical model of the process using the method of design of the experiment. On the basis of the conducted experiments, it was established that the maximal effect on the depth of broached hole and productivity of machining is rendered by oscillation frequencies of the electrode, then impulse frequency and electrode scanning.

<div align="right">Auth.</div>

9.C5.4. Circumference types in the orthogonal-involutory quadratic homology. /N. Abuladze, M. Chelidze, T. Shukakidze/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 115-120. – rus.; res.: geo., eng., rus.
The circumference types and their equations regarding the fundamental system of the orthogonal-involution quadratic homology of the transformable vertex of perspectivity are determined and studied. Among the derived forms many well-known curves were found: kappa, cissoid of Diocles, ophiurida and circumference, which, despite of difference in form, curve series and methods of construction, may be described by one equation (derived in this work. They and other types represent a particular case of the investigated transformation, when the point of origin of the fundamental system is located in any point inside the circumference.

<div align="right">Auth.</div>

9.C5.5. Design procedure of spray dryers. /T. Megrelidze, G. Gugulashvili, E. Sadagashvili, G. Megrelidze/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 110-113. – geo.; res.: geo., eng., rus.

Mathematical formulas determining the major design parameters – cylinder diameter and height – of spray dryers were theoretically derived. The dryer's dimensions were found to depend on the physical-mechanical properties of the dryable material, parameters of the working drying agent and the basic specifications of the drying process. At that, the physical-mechanical properties of the part determining the spray dryer's dimensions are the coefficient of aerodynamic resistance, the part's mass and effective cross-sectional area. Out of the working agent's parameters, the drying process is influenced by the airflow density, the initial and final humidity, the absolute temperature and pressure, as well as the product's initial and final humidity and the dryer's performance - out of the drying process specifications.

Auth.

9.C5.6. Dependence of the withering process on the working agent's humidity. /T. Megrelidze, E. Sadagashvili, V. Gvachliani, G. Gugulashvili/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 114-118. – geo.; res.: geo., eng., rus.
A device for preliminary drying of the working agent (air), using a refrigerating plant, necessary for tea leaf withering is described. The withering process driving force and hourly consumption of air necessary for the process are calculated for the proposed modes of tea leaf withering. Preliminary drying of the working agent was found to increase the withering process driving force by 2.13 times, twice reducing the consumption of the working agent. The use of the refrigerator-dried and further warmed air for the withering process was found to be much more effective and energy saving as compared with the existing method.

Auth.

9.C5.7. Mathematical apparatus to determine kinetic energy of the electric train motor car brake assembly with clearances. /M. Dolidze/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 126-129. – geo.; res.: geo., eng., rus.
The mathematical apparatus to determine kinetic energy provides compound movements of levers and rods, when during full braking time the instant centre of rotation of the vertical lever twice changes the position. The moments of inertia of levers concerning the centre of masses and rotation, also the basic characterizing indicators of movement are defined. The corresponding analytical expressions are received. The expression of kinetic energy is presented in a form, ensuring derivation of differential equations of movement in relation to generalized coordinates.

Auth.

9.C5.8. Analysis of stability of a self-loading skidder along the center of pressure coordinates. /D. Mosulishvili, P. Balamtsarashvili, P. Dundua, I. Gelashvili, M. Narimanishvili/. Transactions of Georgian Technical University. – 2010. – #3(477). – pp. 72-76. – geo.; res.: geo., eng., rus.
On the base of the tractor TT4, a self-loading skidder was designed. Operational analysis of the balancing axle of the tractor in the loaded and partially loaded positions was made under mountain conditions. The research enabled to obtain the pressure centre coordinates Lp, formulas to analyze load on the front and rear axle balancing journals, the horizontal component force acting on the tractor, as well as the formulas to analyze the stability factor under movement of the tractor on different slopes $\alpha=5^0 \div 40^0$.

Auth.

9.C5.9. Analysis of a modernized self-loading skidder by pressure centre coordinates. /D. Mosulishvili, P. Balamtsarashvili, P. Dundua, I. Gelashvili, M. Narimanishvili/. Transactions of Georgian Technical University. – 2010. – #3(477). – pp. 76-79. – geo.; res.: geo., eng., rus.
The stability analysis of a self-loading skidder depending on the pressure and load coordinates that influence the front and rear axles of the balancing journals was made. In the first turn, the analysis was made during movement of the self-loading skidder on a horizontal section of the road ($\alpha = 0^0$) with and without the load. Formulas to calculate the pressure centre coordinates, loads on the balance beams of the front and rear minor axles, the total traction force and the irregular load falling at the balance beam were derived.

Auth.

9.C5.10. Calculation of friction and reaction forces in hinged connections with clearances of the optimal brake rigging of a passenger car. /G. Sharashenidze, P. Kurtanidze, T. Dundua, S. Sharashenidze, D. Gogishvili/. Transactions of Georgian Technical University. – 2010. – #3(477). – pp. 85-89. – geo.; res.: geo., eng., rus.
The rising friction and reaction forces in hinged connections caused by clearances are determined under the developed by us dynamic model of the brake rigging. A transmission with clearances in four hinged connections is considered. The design analytical expressions, containing all the geometrical parameters of transmission and acting forces are obtained. A dependence between the friction and reaction forces in the hinged connections with clearances is established. The sequence of calculation is acceptable for brake rigging of any complexity.

9.C5.11. Analysis of generalized forces of additional motion of the brake rigging with clearance of a motor car. /G. Sharashenidze, M. Dolidze, S. Sharashenidze, P. Kurtanidze, L. Kuparashvili/. Transactions of Georgian Technical University. – 2010. – #4(478). – pp. 59-62. – geo.; res.: geo., eng., rus.

The generalized forces of a developed by the authors improved brake rigging, taking into account the swing joints degradation are analyzed. For the purpose of calculation of these forces and other dynamic parameters the dynamic model of rigging is used. Analytical expressions of the generalized forces for all additional motions of the rigging are obtained. The form of recording the generalized forces provides for their use for deriving differential equations of motions and for the purpose of a follow-up dynamic study.

Auth.

9.C5.12. The effect of deterioration of swing joint elements on the value of generalized forces of a brake rigging. /G. Sharashenidze, P. Kurtanidze, M. Dolidze, L. Kuparashvili S. Sharashenidze/. Transactions of Georgian Technical University. – 2010. – #4(478). – pp. 63-66. – geo.; res.: geo., eng., rus.

Under a dynamic model of the optimum brake rigging of a rail-car, where the non-technological clearance caused by the deterioration of swing joint elements, the generalized force of each additional motion is investigated. The corresponding analytical expressions are given. The obtained values of the generalized forces are given depending on values of the non-technological clearance, normal reaction, friction, moments of inertia of levers, geometry as well as the values of generalized coordinates of the joint elements.

9.C5.13. Selection of a material for a cup-tip tool for working shoe lasts. /M. Amiridze/. Transactions of Georgian Technical University. – 2010. – #4(478). – pp. 67-71. – geo.; res.: geo., eng., rus.

The article deals with the study of the stability and wear of a cup-tip tools made of tool material of various brands. The optimum cutting modes and the effect of cutting speed and feed on the tool stability are determined With the use of a mathematical design of experiments the optimum cutting modes are selected and the influence of cutting speed and feeding on stability of tool is determined.

Auth.

9.C5.14. Estimation device of jigging machine's bed dilation. /R. Enageli, M. Gamtsemlidze, D. Abzianidze, G. Chkareuli/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 56-61. – geo.; abs.: eng., rus.

In the article the device, estimated operating condition of manganese ore jigging process in a Baum jig washer – bed dilation, is described. On the basis of testing results, double and multiple dependences of sensor pickup signal on process control and perturbation actions have been built. The mentioned analysis has shown that the developed device can be used in automatic stabilization system of bed dilation for estimation of controlled parameters – bed dilation, and for estimation of the main perturbation action – content of useful components in concentrated ore.

Auth.

C6. Light Industry

9.C6.1. "Smart textile" and nano-technology. /E. Buadze, N. Pailodze, I. Khurtsilava/. Georgian Scientific News (GSN). – 2011. - #3(11). – pp.26-38. – rus., abs.: geo., eng., rus.

It is shown that the use of photo-, thermo and hydro-chromium dyes can change a fabric's color on contact with water, heat and light, like chameleons. Changes can have a local character of indefinite form. "Smart" fabrics should be able to "follow" the human heart rhythm, so that, where necessary, appropriate medication be administered to arrest the attack. etc.

Auth.

9.C6.2. Using Paravani perlite in papermaking. /R. Sturua, G. Samkharadze, G. Iakimenko/. Mining Journal. 2011. - #2(27). – pp. 36-38. - geo.; abs.: geo., eng., rus.

The article considers the possibilities of using perlite and obsidian in papermaking to give paper some specific qualities, such as: opacity, whiteness, mechanical durability, etc., as an alternative to titanium dioxide fill. Laboratory researches and the results of industrial experiments conducted at Weidman – Malin Paper-mill established that the Paravani perlite and obsidian powders cab be used as fill in manufacture of KO-20 carbon paper. The best results gave been obtained in the case of expanded perlite (Circulite) powder (fraction - 0,140μm), which can successfully replace the traditional and expensive titanium dioxide fill.

Auth.

C7. Food Industry

9.C7.1. Experimental research of water-holding capacity of wheat flour. /E. Sadaghashvili/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 104-107. – geo.; res.: geo., eng., rus.
The work's objective was to study the water-holding capacity of starch and gluten. The research results show that in the case of strong flour, water-holding capacity is conditioned by the gluten's water-holding energy. The empirical formula is derived, demonstrating the dependence of hygroscopic features of the bread on the properties of flour starch and gluten. The sorption properties of starch and gluten are found to significantly influence the water-holding capacity of flour and ready-made bread quality.

Auth.

9.C7.2. Experimental study of the process of freezing out water from some food products. /T. Megrelidze, E. Sadagashvili, G. Gugulashvili/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 108-110. – geo.; res.: geo., eng., rus.
The process of freezing biological systems differs the freezing of physical solutions. It can be explained by the fact that during freezing of biological organisms their biological processes are still active. Therefore, together with the processes ongoing in physical solutions, the tissue structure destruction and retardation of biological processes are additionally taking place therein. For the purpose of studying the process of freezing in some food products, experimental research of Caucasian mutton and lamb was carried out. The experimental results show that in the process of freezing these products the amount of frozen out water depends on the product's final temperature rather the freezing length. At high water content, the change of specific heat of the meat has the characteristic peak, while is of practically linear character at low water content. At the $-30\ ^0C$ temperature, the free water in the meat is practically completely frozen out, whereas the water of hydration is fully retained.

Auth.

9.C7.3. The technology of production of biologically active additives of laurel and eucalyptus and research of their content. /N. Baghaturia, N. Begiashvili, L. Kajaia, L. Kotorashvili, M. Demeniuk/. Agrarian-economic Science and Technologies. 2011. - #1. – pp. 32-37. - geo.; abs.: eng.
The purpose of the research was to establish the optimal parameters of producing concentrated biologically active additives (BAA) from the laurel and eucalyptus raw material. Based on the research results, the optimal technological regime of producing the concentrated BAAs was studied and established and the respective production technology was worked out, which consists of two technological processes. The first technological process yields biological extracts, while the second one produces concentrated BAAs from the biologically active extracts. The physical-chemical composition of the laurel and eucalyptus concentrated BAAs was studied and their limiting value was established.

Auth.

9.C7.4. The technology of production of biologically active extracts from the laurel and eucalyptus raw material. /N. Baghaturia, N. Begiashvili, L. Kajaia, L. Kotorashvili, R. Bziava/. Agrarian-economic Science and Technologies. 2011. - #1. – pp. 38-45. - geo.; abs.: eng.
The effect of technological parameters (extragent's concentration, temperature conditions, the length and ratio of extraction) on the extraction of biologically active substances from the laurel and eucalyptus raw material is studied. The optimal technological parameters of producing biologically active extracts from both the raw and dry stock of laurel and eucalyptus are investigated and established. The basic physical and chemical characteristics of the laurel and eucalyptus biologically active extracts are studied.

Auth.

9.C7.5. Effective technology of manufacturing natural dyes from grapes. /N. Baghaturia, N. Begiashvili, L. Kotorashvili, M. Ormotsadze, B. Baghaturia/. Agrarian-economic Science and Technologies. 2011. - #1. – pp. 46-53. - geo.; abs.: eng.
In 2007, European Parliament and Commission passed directives on restriction of use of artificial food colors beginning from 2012, due to their negative action on infants and little children. Thus, a significant growth in demand for natural food colors to be used in alcoholic and non-alcoholic beverages and confectionary productions is expected in the near future. The Food Industry Institute has developed an effective technology of manufacture of a natural red color from red grape varieties.

Auth.

9.C7.6. Eggplant's peculiarities and significance. /K. Archvadze/. Agrarian-economic Science and Technologies. 2012. - #1. – pp. 42-51. - rus.; abs.: geo., eng.
The article proposes drying of eggplant – the product known for its curative properties in treating cardiac diseases, hypertension, arthrosis, disorders of stomach, liver, pancreatic gland, biliary tracts, gallbladder

inflammation, pancreatitis, and many other diseases. A labor- and energy-saving solar dry kiln is proposed for drying fruit, vegetables and other farm products that ensures quality and nutritive value of the dried products. As investigations show, the drying of eggplants in the sun dry kiln takes 5.4 times less time than in the case of drying under the open air conditions.

<div align="right">Auth.</div>

C8. Construction. Architecture

9.C8.1. Does modern ideology of earthquake engineering ensure the declared levels of damage of structures at earthquakes? /G. Gabrichidze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #1. – pp. 60-63. – eng.; abs.: eng., geo.
The basic position of the modern ideology of earthquake engineering is based on the idea that a structure should be designed so that it suffers almost no damage at an earthquake, the occurrence of which is most probable in the given area during the lifetime of the structure. This statement is essentially based on the so-called Performance Based Design, the ideology of the 21st century. In the article attention is focused on the fact that the modern ideology of ear defined by processes of damage and destruction of materials, which is a non-equilibrium process and demands application of special refined methods of research. In such conditions use of ratios that correspond to static conditions of loading to describe the process of damage of materials appears to be unfounded. The article raises the question of the necessity of working out a new mathematical model of behavior of materials and structures at rapid intensive impacts.

<div align="right">Auth.</div>

9.C8.2. Priorities of development of building science in transition to a market economy. /L. Makhviladze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #2. – pp. 51-53. – eng.; abs.: eng., geo.
The declared strict demand for the saving of building materials and accordingly restriction of standards yielded a paradoxical result. The height of floors, floor space, auxiliary premises, etc. were reduced. It was a wrong policy that led to discomfort and loss, bestowing doubtful benefits on industrial building. This article is devoted to the solution of this problem.

<div align="right">Auth.</div>

9.C8.3. Urban system's sustainability, structural changes and chaos. /M. Akhobadze/. Modern Problems of Architecture and Town Planning. – 2011. - #1. – pp. 11-16. – geo.; abs.: geo., eng., rus.
Modern science tends to integrate various different scientific disciplines and knowledge to study a range of events as one system. A mathematical model of urban system as a macro system is developed based on the theories of chaos, catastrophes and fractals. The disasters that can be caused by insignificant changes in an urban development plan even if only the planned objects implementation sequence is changed are demonstrated. The urban system is considered as a geometric structure, with the features defined by a combination of separate systems connectivity. The proposed method allows predict the characteristics of the urban system and reveals the sequences during which catastrophes will be avoided.

<div align="right">Auth.</div>

9.C8.4. The problem of spatial forming of a riverside town's embankment. /K. Berekashvili/. Modern Problems of Architecture and Town Planning. – 2011. - #1. – pp. 22-25. – geo.; abs.: geo., eng., rus.
The article considers the compositional features of development of riverside towns. It is established that the contour and sizes of the riverside territories (Mtkvari in particular) are changeable and, therefore, during design spatial-planned structures the primary importance shall be given to the correctly found scale in compliance with the existing natural relief.

<div align="right">Auth.</div>

9.C8.5. Some reflections on the underground urban development in Tbilisi. /V. Vardosanidze/. Modern Problems of Architecture and Town Planning. – 2011. - #1. – pp. 30-36. – geo.; abs.: geo., eng., rus.
Underground urban development, as a significant resource of contemporary cities, long ago turned out to be in the center of interests for architects and urban planners, developers, and municipal authorities in advanced countries. Both theoretic-conceptual principles as well as specific successful examples of this urban development direction are well known. Against such background, obvious is the lagging of our reality, which is conditioned by many factors – lack of urban thinking, unilateral development strategy of Tbilisi, unlimited above-ground construction, etc. From this standpoint, even Land-Use Master Plan of Tbilisi is of 2D format. The capital's underground stays beyond its interest. The absence of relevant legislative basis the key factor interfering with the underground urban development in Georgia. The report focuses on this issue. Some principal reflections are given below, among which the most principal are: adjustment of the legislative base, including its conceptual and terminology apparatus; investigation, registration, inventory of underground constructions of Tbilisi and compiling a General Master Scheme; elaboration of "Underground

Space Use Conception of Tbilisi"; stage-by-stage transfer to the 3D format of "Land-Use Master Plan of Tbilisi"; elaboration of a Development Regulation Plan for the territory vacated as a result of transfer of the railway transit line from the center of Tbilisi with due regard for the underground infrastructure.

<div align="right">Auth.</div>

9.C8.6. Methodology of presenting a city with complex relief. /M. Melkadze, N.Tevzadze/. Modern Problems of Architecture and Town Planning. – 2011. - #1. – pp. 37-41. – geo.; abs.: geo., eng., rus.
After carefully analyzing and systemizing the historical, cultural, legislative, seismic and bioclimatic aspects, we have come up with an answer to the question: should the presence of a river be vital in a city with complex relief and should the perimetric development be natural. We have underlined the rightfulness of this type of approach, hence, the necessity of including this tendency in the normative literature. This approach would become the grounds for eradicating the defects in building process that are created by automatic overlaying of rectangular grid of streets over complex relief of a city. We are offering a research that can be carried out by creating a corresponding virtual environment using the algorithms in CAD systems.

<div align="right">Auth.</div>

9.C8.7. The issue of revitalization of former industrial buildings and territories in Tbilisi. /V. Mchedlishvili, M. Milashvili/. Modern Problems of Architecture and Town Planning. – 2011. - #1. – pp. 42-49. – geo.; abs.: geo., eng., rus.
The article discusses such an urgent for Tbilisi issue as the reactivation and revitalization of former industrial territories and buildings. The successful and interesting examples of revitalization of industrial buildings and territories from international practice are analyzed. The solution of problem consists in replacing industrial buildings from the central parts and giving a new function to the former industrial territories. The future use of these territories needs a special approach to the environment, rationalization, zoning, reconstruction, rehabilitation and revitalization. Hence we believe that the future revitalization of these areas and buildings should be based on a professional and comprehensive analysis and solutions.

<div align="right">Auth.</div>

9.C8.8. City-building asphyxia-conditionality factors, objectives for overcoming the crisis. /G.Shaishmelashvili/. Modern Problems of Architecture and Town Planning. – 2011. - #1. – pp. 50-61. – geo.; abs.: geo., eng., rus.
The current process of disregard for the role and importance of town-planning is discussed in the context of the requirements to sustainable development. The key issues of evolution of the introduction of the sustainable development principles and factors of transition to a market economy that influence the urban development process are considered. The tasks of overcoming the crisis are outlined.

<div align="right">Auth.</div>

9.C8.9. Peculiarities of urban development of "twin cities". /L. Khvedelidze/. Modern Problems of Architecture and Town Planning. – 2011. - #1. – pp. 62-68. – geo.; abs.: geo., eng., rus.
The results of a study of the so-called "twin cities" are described. The peculiarities and definitions of 'twin cities' are presented. Recommendations for joint elaboration of a comprehensive urban development strategy and Master Plan for such cities are given.

<div align="right">Auth.</div>

9.C8.10. Integrated reconstruction and rehabilitation of the historic town Sighnaghi. /G. Mikiashvili/. Modern Problems of Architecture and Town Planning. – 2011. – #1. – pp. 69-79. – eng.; abs.: geo., eng., rus.
The aim of the work is to familiarize the international architectural society with the experience of reconstruction of the historic town Sighnaghi in Eastern Georgia. The reconstruction program of Sighnaghi launched in spring of 2007 actually constitutes a socially important large-scale project implemented by governmental structures and the Georgian Fund of Preservation of Cultural Heritage in collaboration with the private and public sectors. The significance of research is determined by the principles and recommendations for the reconstruction of small historic towns, which can be considered as the principal outcome of the work.

<div align="right">Auth.</div>

9.C8.11. Shell foundations. /A.Sokhadze, G.Maisuradze/ Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 21-25. – geo.; res.: geo., eng., rus.
The work deals with the application in civil engineering of innovative methods of construction of stable and earthquake-proof structures. Based on the above, the authors propose to replace plate foundations with more innovative, structurally more stable and less costly shell ones. The available experimental data found the proposed shell foundations to be technologically and economically more reliable and profitable than the plate foundations.

<div align="right">Auth.</div>

9.C8.12. Variant design of construction processes. /Sh. Bakanidze/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 26-33. – geo.; res.: geo., eng., rus.
For the purpose of finding optimal technology solutions during design of structures and buildings, variant design is applied. To erect a building, a lot of construction processes are to be carried out, using various technologies and materials. The article proposes and discusses over 4 variants for each construction process, based on technological criteria calculated on the basis of consumption of local resources given the locally operating prices of building materials. In addition to the technological criteria, advantages of individual variants are compared and justified.

Auth.

9.C8.13. Choosing optimum scheme of erection crane movement. /Sh. Bakanidze/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 34-38. – geo.; res.: geo., eng., rus.
For erection of precast constructions erection cranes are chosen by variant design. At the first level, erection crane variants are set out (2, 3 or more variants) according to main assembly indicators of erection members. At the second level, a technical and economic comparison of the set out erection cranes is carried out according to their main indicators. When determining the mentioned indicators, a significant importance is given to the length of operation of a crane on the given project, which is the total of manually or mechanically performed operations. Since the total of the length of works manually executed in the specific project is the same in the set out variants (because of the same type and number of the members, they can de disregarded in comparing the variants and only the time spent on the mechanical erection of members be taken into account, which will, certainly, depend on the optimal scheme of crane movement. The specific example, in particular the erection of members of the set I (columns and crane beams) of the precast frame of one-storey industrial building, is considered by two possible schemes of the erection crane movement: lateral and longitudinal. The erection machine time is computed and the optimal crane movement scheme is identified.

Auth.

9.C8.14. Design logic of deployable large-span assault bridges. /A. Sokhadze, G. Medzmariashvili/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 39-43. – geo.; res.: geo., eng., rus.
All the schematic diagrams of assault military bridges with their positive and negative aspects are considered. On the basis of the above, conclusions on the design of a deployable assault bridge with a 48-meter span have been drawn.

Auth.

9.C8.15. Lighting in interior. /M. Milashvili, V. Mchedlishvili/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 66-70. – geo.; res.: geo., eng., rus.
Lighting is considered as an important characteristic of comfort and artistic and architectural quality of the interior. The role of the interior's lighting in creating the desirable psycho-emotional state and mood of a person is stressed. The types and forms of artificial lighting, their designation in forming an artistic and decorative image of the interior are considered. Specific recommendations and proposals on the selection of artificial lighting of interiors in accordance with their functional designation are given.

Auth.

9.C8.16. The organization of recreation in the suburban area of a city (after example of the cities of Azerbaijan). /T. Nagiev/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 71-74. – rus.; res.: geo., eng., rus.
The article deals with the organizational problems of recreation under conditions of cities. Given the increased rates of industrialization and urbanization and dramatic decrease of natural landscapes (deforestation, chaotic individual building up, etc.), the necessity of protection of the suburban areas is stressed. The issues of creating national parks in line with modern economic requirements and controllable environment are analyzed.

Auth.

9.C8.17. Basic properties of modern glass. /G. Rokva, M. Milashvili/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 75-80. – geo.; res.: geo., eng., rus.
The article outlines the peculiarities of modern building glass and gives an analysis of the characteristics that significantly determine the performance and design features of glass as building material. Such knowledge will enable an architect to select glass made of various material, color, transparency and quality in order to impart to a building airiness, lightness, transparency and elegance, as well as to create special and unique architectural objects. The coefficients of light reflection, transparency, absorption, as well as impact, thermal shock resistance and other characteristics of glass are discussed. The article lists a range of fancy glass,

specifies the criteria for evaluating aesthetic characteristics of building glass and other glassware that determine their decorative features.

<div align="right">Auth.</div>

9.C8.18. Characterization of optimal features of a built-up flanged beam. /B. Gvasalia/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 11-17. – geo.; res.: geo., eng., rus.
A method of characterization of optimal features of a compound I-beam is developed. The assigned task is formed as a problem of nonlinear mathematical programming. The random search algorithm is used for a finding the global extremum of the criterion function. The obtained results enable to establish the optimal geometry of the wall and horizontal flanges ensuring the minimum weight of the beam.

<div align="right">Auth.</div>

9.C8.19. Mathematical model of alkali-aggregate reaction in dam concrete. /A.Motsonelidze/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 18-21. – geo.; res.: geo., eng., rus.
More and more operating concrete dams are affected in the world by the Alkali-Aggregate Reaction (AAR). This reaction may result in a damaging expansion and cracking of the dam concrete. AAR is a chemical reaction between certain types of aggregates and hydroxyl ions associated with alkalis in the cement. Usually, the most of alkalis come from the Portland cement. A new technique to take into account the impact of AAR in concrete on the stress-strain state of dams is presented in this paper. Specifically, the equation for calculating the AAR induced strains is presented.

<div align="right">Auth.</div>

9.C8.20. Constitutive model of concrete in the plane strain condition /A. Motsonelidze, B. Abuladze/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 21-24. – eng.; res.: geo., eng., rus.
Both the in-situ data obtained from the observation over the dam concrete and long-term laboratory tests of the concrete samples clearly indicate that the effect of ageing and fatigue of concrete due to external static cyclic loading have significant impact on the stress-strain state of the dam-foundation system. In this article the constitutive model of concrete in plane strain condition is modified in order to take into account the effect of material fatigue under static cyclic loading and the effect of ageing of concrete. More emphasis is placed on material response, which simulates a realistic behaviour of a dam under actual operating conditions. This approach will be used later during the strong analysis of AAR-affected concrete dams.

<div align="right">Auth.</div>

9.C8.21. Large deployable space reflectors of new generation. /A. Sokhadze, V. Medzmariashvili/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 25-33. – geo.; res.: geo., eng., rus.
Systematically discussed and presented are the existing large deployable reflectors, which have moved on space orbit or have undergone the preflight test. With it, also is estimated its requirements and future perspectives.

<div align="right">Auth.</div>

9.C8.22. On the improvement of the offshore strip stability at the river Rioni confluence by the town canal. /I. Kadaria/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 33-37. – geo.; res.: geo., eng., rus.
A particular case of the offshore strip stability at the confluence of the river Rioni and the shore protection are considered, when the river flows into the sea with at a controlled sediment-bearing flow rate. Wave action processes are also described and expected results are shown by numerical examples. Recommendations for improving the coastal protection activities in the offshore strip at the river-sea confluence.

<div align="right">Auth.</div>

9.C8.23. Eco-city in the Regional Development Plan of Big Baku. /E. Huseynov/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 88-91. – geo.; res.: geo., eng., rus.
The creation on the Apsheron peninsula of a new eco-city-type town-planning system is proposed. The author believes that the system will ensure sustainable development of the capital city Baku and the region' populated places. Eco-city - or sustainable development of new cities - in the Regional Development Plan of Big Baku is to be carried out at the expense of ecological corridors and the uniform 'linear-stripped' communication structure uniting all the peninsula settlements into a uniform interrelated connected moving system.

<div align="right">Auth.</div>

9.C8.24. Modern gardens on manmade foundation and their typology. /E. Tevzadze/. Transactions of Georgian Technical University. – 2010. – #4(478). – pp. 51-58. – geo.; res.: geo., eng., rus.
The basic social aspects of arrangement of roof gardens on a manmade foundation, their typology and environmental effect are presented. The historical stages of development of roof gardens, their evolution as

well as the available relevant European and American experience are considered. The structural layouts of roof gardens and the expediency of their arrangement in Tbilisi, due to favorable climatic conditions of the city are discussed.

<div align="right">Auth.</div>

9.C8.25. The calculation model of the constant fastening, which reflects the modern technologies. /M. Tananashvili, M. Grdzelishvili, K. Goletiani, L. Tskvitinidze/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 73-80. – geo.; abs.: eng., rus.
The article stresses the necessity of making national guidelines aimed at the application of innovative technologies in tunnel engineering with due regard for local conditions, such, for example as the New Austrian Tunnelling Method (NATM). Also considered are the engineering methods of structural behaviour of a circular constant tunnel line in terms of the tunnel face movement. The spatial character of the task is taken into account by means of the face's influence function. The application of the mentioned method theoretically confirms the expediency of using light instead of heavy concrete in transport tunnel lines.

<div align="right">Auth.</div>

9.C8.26. Analysis of international standards of design calculation of reinforced-concrete bridges. /B. Chigvaria/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 81-83. – geo.; abs.: eng., rus.
The article provides an analysis of international standards of design calculation of the reinforced-concrete bridges, It demonstrates that in Russia, USA, Great Britain, China, and other foreign countries, in contrast to the FSU standards, the 'collective' (joint) work effect is taken into account in calculations of working loads based on the practice of design calculation of pre-stressed reinforced-concrete girder bridge structures. An analysis of some principal requirements to reinforced-concrete ferroconcrete structures (predominantly pre-stressed flexible bridges) shows the necessity for adjusting the relevant local standards and their harmonizing with the international ones. Such an approach will ensure the problem-free traffic of international transport on local roads and the local transport on the international roads.

<div align="right">Auth.</div>

9.C8.27. Research of the utilization of slow-cooled activated early slag in cement making. /E. Shapakidze, V. Maisuradze, M. Nadirashvili, I. Gejadze, G. Gigineishvili/. Mining Journal. 2011. - #2(27). – pp. 88-92. - geo.; abs.: geo., eng., rus.
The importance and technical and economic expediency of utilizing slow-cooled blast-furnace slag in Portland blast-furnace cement making are considered. Based on the carried out research, it may be concluded that that the slow-cooled blast-furnace, so-called non-utilized waste slag of Rustavi Metallurgical Works, as a result of processing by a new technology, undergoes activation, being expressed in the improvement of the hydraulic ability of its mineral phases and a decrease in its iron content. All this enables to make a wider use of the slow-cooled activated blast-furnace slag in cement making, widen the range and improve quality of cement production.

<div align="right">Auth.</div>

C9. Agriculture and Forestry. Fishery

9.C9.1. The effect of a new natural zeolite and brown coal-based substrate of durable action on the growth of agricultural crops. /T. Andronikashvili, M. Zautashvili, L. Eprikashvili, N. Pirtskhalava, M. Dzagania/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #2. – pp. 101-105. – eng.; abs.: eng., geo.
On the basis of brown coal and natural zeolite (heulandite-clinoptilolite containing tuff) modified by ammonium and potassium cations a substrate has been developed; the bio-production of plants grown on this substrate is 2.9 times higher than that of soil-grown plants. The substrate is characterized of a durable action in plant growing.

<div align="right">Auth.</div>

9.C9.2. Global climate change effects on soils. /Hans-Peter Blume/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #2. – pp. 106-112. – eng.; abs.: eng., geo.
With progressing earth history temperatures and precipitation have globally, regionally and locally changed. In addition to extraterrestrial reasons also terrestrial reasons like volcanism, forest fires, changes of global ice, snow and vegetation cover have caused such changes. For the last 100 years the global mean temperature has increased to actually more than 15°C, which is widely assumed to have not only natural but anthropogenic reasons: A reduced water evaporation from agricultural land in contrast to natural forest, emissions of warmth and carbon dioxide especially in urban-industrial agglomerations, and the release of methane and nitrous oxide in agriculture are the most important impacts. It is assumed that in the 21st century the global mean temperature will rise by another 2-3 C, mainly caused by a higher use of fossil fuels

and an intensified conventional agriculture. Increased temperatures, higher CO_2-concentrations near the soil surface and higher precipitation rates lead in principle to a higher formation of biomass. More crop residues and higher temperatures also stimulate the activity of soil organisms. Higher soil temperatures also stimulate chemical weathering. On the other side higher rainfall can wash out more solved nutrients. But the expected climate changes and their effects on soils can vary to a large extent. The predicted rising sea level will increase the flooding of coastal soils, so that dikes have to be built or heightened. Higher temperatures in coastal soils will intensify the microbial formation of green house gases. Permafrost soils will melt so that their agricultural use may be partly possible.

<div align="right">Auth.</div>

9.C9.3. Starting material for selection of mulberry varieties tolerant to leaf dwarf in natural populations of Kartli. /P. Naskidashvili, L. Mdzeluri, T. Dalalishvili, K. Mchedlidze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - # 2. – pp. 113-117. – eng.; abs.: eng., geo.
Among the integrated methods of struggle against mulberry leaf disease – leaf dwarf – the most efficient and economically justified one is diversity of varieties – obtaining and identification of new starting selection material, which, , according to their preliminary diagnostic and correlation indices, would be characterized by high potential for resistance. The present paper offers structural-anatomical characteristics of the mulberry hybrid forms revealed in the zone free from infection, in Kartli region, on the basis of morphological description, which to a certain extent, condition their resistance to extreme environment conditions and are in positive correlation with leaf nutritive values.

<div align="right">Auth.</div>

9.C9.4. Target wood plantations - the major factor of rescue and revival of woods of Georgia. /R. Oboladze, T. Cherkezishvili, B.Tavadze, L. Chochua/. Wood Bulletin. – 2011. - #4. – pp. 7-12. – geo.; abs.: geo., rus., eng.
The catastrophic condition of woods of Georgia is analyzed. The reasons of degradation and fall in productivity of forest stands are established. Under conditions of continuous growth of consumption of local wood resources, the necessity of creation of fast-growing target wood plantations on the covered with bushes eroded and degraded forest lands is corroborated.

<div align="right">Auth.</div>

9.C9.5. Energy forestry: objectives and purposes. /T.Kandelaki, M.Bachilava/. Wood Bulletin. – 2011. - #4. – pp. 13-17. – geo.; abs.: geo., rus., eng.
Nowadays, a growing interest in the use of biomass for the purpose of energy generation conditioned by the necessity of environment protection and depletion of fossil fuel is observable. One of the effective solutions of these problems is the establishment of energy plantations with fast growing woody species, which already play an important role in the energy supply of different countries. In our opinion, similar plantations can be effectively used in the future to meet demand for fuel wood in our country, and consequently favorable conditions for the development of energy forest in Georgia are to be created.

<div align="right">Auth.</div>

9.C9.6. Disquisitions of international organizations. Wood Bulletin. – 2011. - #4. – pp. 21-54. – geo.; abs.: geo., rus., eng.
In order to achieve more sustainable management of forests in Georgia, the regional program "Improving Forest Law Enforcement and Governance in the European Neighborhood Policy East Countries and Russia" (ENPI FLEG) was launched in 2008. This Program is implemented by the World Bank in partnership with the International Union for Conservation of Nature (IUCN) and World Wide Fund for Nature (WWF) and with the financial support of EU and other donors. In the framework of the presented Program, WWF-Caucasus Programme Office has developed recommendations on the methods and guidelines for sustainable and integrated management of forest ecosystems based on functional zoning of Georgian forests. During the implementation of these recommendations, the natural-historical and socio-economic peculiarities of the country were taken into account. The national and international experience was also used.

<div align="right">Auth.</div>

9.C9.7. Ecology-space-economic aspects of wood use and reproduction. /L. Gvazava, T. Gvazava/. Wood Bulletin. – 2011. - #4. – pp. 58-62. – geo.; abs.: geo., rus., eng.
The article analyzes the principles of international relations concerning the utilization of wood resources under conditions of globalizations. According to the authors, these market demand-based relations are not ideal and need to be adjusted in line with the interests of local population. The authors propose a new approach to the sue of forest resources consisting in the circumstance that the concerned companies must primarily offer to forest holders a forest restoration program and ensure its stage-by-stage implementation with the participation of the local population.

<div align="right">Auth.</div>

9.C9.8. Peculiarities of fruit bearing of cornel (*Cornus mas* l.) bushes and forest reclamation under mountain conditions of Georgia. /M. Zedelashvili, L. Kobakhidze, N. Labadze/. Wood Bulletin. – 2011. - #4. – pp. 63-67. – geo.; abs.: geo., rus., eng.

In Georgian forest, cornel is found up at to 1300 m above sea level. The locals use cornel to prepare a wide range of ecologically safe products. The country's cornel resources are sufficient to meet local demand and ensure the development of SMEs in almost all regions of Georgia. Given the well developed root system of the plant, it can serve as an effective soil-fixing agent on shallow soils of steep slopes.

<div align="right">Auth.</div>

9.C9.9. Century old wood of Siberian larch (*Larix sibirica* Ladeb) - structure, property, firmness. /E. Lobzhanidze, B.Tavadze, A. Supatashvili, T. Berozashvili/. Wood Bulletin. – 2011. - #4. – pp. 82-85. – geo.; abs.: geo., rus., eng.

The Siberian larch wood used in cover timbering of an art gallery building was experimentally found to have preserved its structure and resistance to bacterial and fungal action even after over a century-old use. Hence, the wood is recommended for further use on bearing structures.

<div align="right">Auth.</div>

9.C9.10. Analysis of economic performance and technical-and-economic indices of small enterprises of woodwork and timber industry. /M. Khuskivadze/. Wood Bulletin. – 2011. - #4. – pp. 93-104. – geo.; abs.: geo., rus., eng.

Average labor productivity of a worker engaged in a small enterprise has been found to significantly fall behind the labor productivity of a worker engaged in a medium enterprise. The level of scientific organization and technical equipping of labor in small enterprises of woodwork and timber industry is low, which naturally affects the labor productivity. To make an enterprise successful and operable, the necessary macro-environment needs to be created. Owing to the deranged statistical reporting and many bureaucratic barriers, which are characteristic of the transition period, the finding of some technical-and-economic indices of small woodwork and timber industry enterprises is complicated. In spite of all this, the indices found by us enable to conclude on the activities of small enterprises engaged in the sector.

<div align="right">Auth.</div>

9.C9.11. On the issue of natural meadow herbage use. /I. Sarjveladze, J. Jincharadze, N. Mikava/. Agrarian-economic Science and Technologies. – 2011. - #3(12). – pp. 50-56. – geo.; abs.: geo., eng.

The existing system of extensive utilization of forage grasslands significantly deteriorates the botanical and farming condition of the green mass, facilitating every year the propagation of poisonous plants and weeds. The yield dynamics of grass-brome sub-alpine meadows of the central part of the Great Caucasus Range was studied during the vegetation period, as well as a change in the amino-acid composition of the green mass under natural conditions and against the background of different rates of fertilizers. The data on the main yield of green mass and productivity of meadows make it possible to compile a scheme of alternate pasturing a pasture schedule.

<div align="right">Auth.</div>

9.C9.12. Modern technologies - the best method of soil protection. /M. Kvartskhava/. New Agrarian Georgia. 2012. - #1(9). – pp. 23-26. - geo.; abs.: eng.

The article deals with the essence of a soil cultivation system and the principal objective reasons for using a resource-saving technology. The positive aspects of the technology (minimum and zero tillage) are compared with the traditional soil tillage technologies and the obtained tentative indices of economic efficiency are considered.

<div align="right">Auth.</div>

9.C9.13. The effect of conservation of pastures on natural herbage. /I. Sarjveladze, J. Jincharadze, N. Mikava, M. Sarjveladze/. Agrarian-economic Science and Technologies. 2011. - #1. – pp. 15-19. - geo.; abs.: eng.

Unrestricted grazing on pastures not only affects the growth and development of fodder grasses but also significantly reduces their productivity. The regular accumulation of necessary for plant plastic substances essentially ensures the current and the future yield, facilitates durable use of fodder pastures. The observation of optimal periods of haymaking or grazing and their alteration during years enable to preserve valuable fodder grasses and provide cattle with protein-rich quality greed fodder and hay during stabling. The introduction of rotation of pastures and grasslands is the best way to achieve the above.

<div align="right">Auth.</div>

9.C9.14. Determining efficiency of new complex fertilizers on maize crops under conditions of alluvial soils of West Georgia. /I. Burchuladze, N. Kiknadze, Ph. Chanukvadze, N. Mchedlidze/. Agrarian-economic Science and Technologies. 2011. - #1. – pp. 20-27. - geo.; abs.: eng.

In a field trial conducted on alluvial soils of West Georgia, the efficiency of a new complex fertilizer 'Superargo' was tested in maize crops. It was found that upon application of the fertilizer together with simple fertilizers at equivalent (agronomical) rates, an increase in yield (stack, cob, kernel) makes 7-11%. According to the basic stages of development, the period of maximum assimilation of the said element falls on the second and third stages of vegetation.

<div align="right">Auth.</div>

9.C9.15. Formation of cultured phytocoenosis and its importance in the creation of a forage reserve. /J. Sarjveladze, J. Jincharadze, N. Mikava/. Agrarian-economic Science and Technologies. 2011. - #1. – pp. 28-31. - geo.; abs.: eng.

The breeding of animals by man has increased the role of pastures and enhanced the demand for forming pasture phytocoenoses. The direct human impact on phytocoenoses led to a change (limitation) of the range of plants, introduction of new plants and annihilation of some plant species that changes or annihilates the composition of coenosis. The indirect impact is rendered by soil re-plowing, sowing of grasses, burning of vegetation, deforestation, action of foul gases, etc. The human impact may change the natural phytocoenosis through incomplete extermination of grasses (grass surface alteration) and complete change of natural phytocenosis by seeded pasture (grass regeneration).

<div align="right">Auth.</div>

9.C9.16. On some issues of agriculture development. /A. Meskhishvili/. Agrarian-economic Science and Technologies. 2012. - #1. – pp. 34-41. - geo.; abs.: geo., eng.

The main source of replenishment of the budget of Georgia in the future should be agriculture, export of water resources, wildlife (mountain) and medical tourism. Georgian agriculture should be advertised on a par with tourism promotion in Georgia. Georgia should produce only organic (fertilizer-free) farm products. This requires special farmer training and promotion of their products. The international community should be informed that Georgian farm products are ecologically safe (the level of radiation in Georgia is considerably low as compared to the central Europe). Many locals and foreigners are unaware that Georgian tea (e.g., Tkibuli-Orpiri tea) is completely organic as compared with Chinese, Indian, and Ceylon teas that grow in tropical areas. It is necessary to cause a boom for Georgian tea on the world market. We should promote unique brands of Georgian wines rather than all of them on the world market (for we cannot yet compete with French, Italian, Spanish, Chilean, or Australian wines). This objective can be attained by increasing the areas under unique Georgian wine varieties. Georgian agriculture requires radical restructuring. This article outlines the ways and means of achieving this objective.

<div align="right">Auth.</div>

9.C9.17. Results of an experimental study of animal bones drying. /D. Tavdidishvili, SH. Rukhadze/. Georgian Scientific News (GSN). – 2011. - #3(11). – pp. 48-52. – rus., abs.: geo., eng., rus.

The work deals with the technology of making a veterinary preparation containing animal bone calcium and phosphorus. The bone drying process is experimentally studied. The thermograms of bones treated with an organic solvent and steam are obtained. The rational parameters of the drying process are established.

<div align="right">Auth.</div>

9.C9.18. Studying karyotypes of some woody plants. /N. Goginashvili, K. Goginashvili, T. Nachkebia, I. Tvauri/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 103-105. – geo.; abs.: eng., rus.

The article presents the result of a study of karyotypes of rare and endangered wood species: *Pyrus demetrii* Kuthath., *Pyrus ketzkhovelii* Kuthath., *Amigdalus georgica* Desf. The said species are Georgian endemics. The diploid number of their chromosomes is established: *Pyrus demetrii* 2n=34; *Pyrus ketzkhovelii* 2n=34; *Amigdalus georgica* 2n=32.

<div align="right">Auth.</div>

C10. Water Industry. Melioration

9.C10.1. Quality monitoring of Borjomi-Kharagauli Valley mineral spring-water "Dobilo". /N. Dzidzikashvili, N.Kutsiava , N.Eristavi, M. Demetradze/. Mining Journal. – 2011. - #1(26). – pp. 19-23. – geo.; abs.: geo., rus., eng.

An eco-chemical examination of Borjomi-Kharagauli Valley mineral spring-water "Dobilo" was carried out. The water was found to comply with the mineral water standards and belong to the type of hydrocarbonate chloride calcium-sodium carbonic acid waters. The index of ecological and microbiological purity complies

with the current standards. On the basis of the mentioned research, the water was compared to Borjomi and Zvare mineral waters. As a result, these waters were found to be of the same type, with insignificant difference in pH, mineralization and content of microelements.

<div align="right">Auth.</div>

9.C10.2. Peculiarities of hydro geochemical and hydro geophysical zoning of Kolkheti artesian basin. /B. Zautashvili, Kh. Avaliani/. Mining Journal. – 2011. - #1(26). – pp. 24-26. – geo.; abs.: geo., rus., eng.
In the article, two varieties of hydro geochemical zoning of Kolkheti artesian basin are considered: normal zoning and inversion zoning. The normal zoning is represented in submersed western part of the basin in the form of – А Б35 В350, in northwestern part – А Б35 and on the eastern periphery of basin – А Б3 Б35 В140. The inversion zoning is represented in the central part of the basin in the form of А Б35Б3 В140.The character of hydro geophysical zoning of the Earth is described, according to which the border between the zones of saturation and supercritical one is submersed toward the continent at the depth of 19.5 km to 23 km and rises at the side of the Caucasus mountains (Ialbuzi district) nearly at a 8- km depth.

<div align="right">Auth.</div>

9.C10.3. Monitoring of ground waters on the oil prospecting ranges of Dedoplistskaro District. /Z. Gaganidze, M.Mardashova, N.Kitiashvili/. Mining Journal. – 2011. - #1(26). – pp. 27-29. – geo.; abs.: geo., rus., eng.
In the article, the results of running from 2006 monitoring on oil prospecting ranges (Upper Range - Arkhiloskalo) are considered. The object of monitoring is to describe the ecological problems connected with the drilling of a deep (2000 m) oil prospecting borehole (Lloyd-1) on the mentioned area, namely the problem of safety placement of the formed during drilling big masses of wastes enriched by hydrocarbons in order to avoid pollution by organic waste spread ground waters on this territory, since the springs of high discharge associated with ground waters are used by the local population as potable water.

<div align="right">Auth.</div>

9.C10.4. The investigation of deformations of river banks with alluvial river-beds with the one reinforced bank. /V. Mamasakhlisi, J. Noselidze, D. Kaladze/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 47-51. – geo.; abs.: eng., rus.
The questions of the river-bed critical narrowing and the banks deformations in the presence of the transversal barrier on the alluvial bottom are determined and studied. By using the mentioned dependence and based upon the experimental researches, the calculation formulas are derived; with their help the coefficient defining the river-bed critical meaning of the narrowing and maximal drift depth for the alluvial bottom, transversal meanings for the alluvial bottom at the 90° angle are calculated. The obtained results are tested specifically on the River Chorokhi.

<div align="right">Auth.</div>

C11. Foreign and Domestic Trade. Tourism

9.C11.1. Globalization and transnational companies in hotel industries. /S. Tevdoradze/. Scientific Proceedings of G. Tavartkiladze Teaching University. – 2011 – #1. – pp. 69-72. – geo.; abs.: geo., eng.
Globalization is a systematic and complex process that successively alters the social structure of community. Internationalization of the world economy is considered to be the basis for the globalization process. In international tourism, transnational companies are the clear example of internationalization; they are analyzed after the example of location sector. Development of transnational companies in hotel industry strengthens the world economy globalization and trans-nationalization tendencies.

<div align="right">Auth.</div>

9.C11.2. Planning of tourist centers on Lake Nasser in southern Egypt. /N. Katari/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 92-96. – geo.; res.: geo., eng., rus.
The development of tourism in southern Egypt is given particular attention, given its great tourist potential. This work is a study and analysis of available tourist potential of Lake Nasser in southern Egypt. The planning of tourist centers to appear on Lake Nasser and on other Egyptian lakes is discussed.

<div align="right">Auth.</div>

9.C11.3. Health resort locality „Gundauri". /I. Tarkhan-Mouravi, N. Saakashvili, N. Kakulia, N. Jakobia, M. Tabidze, N. Malania, I. Kvinikadze, M. Shelia, E. Khelashvili, N. Kvinikadze/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 34-39. – geo.; abs.: geo., eng., rus.
Gundauri village is located in Keda municipality of Adjara. After creation of an appropriate infrastructure, Gundauri will become a promising tourist and resort facility, where different types of tourism can be developed, including health and medical tourism, climatic treatment and balneotherapy.

<div align="right">Auth.</div>

9.C11.4. How to manage tourist companies in Georgia. /D. Katamadze/. Business-Courier. – 2011. - #1/3. – pp. 30-33. – geo.; abs.: geo., eng.

Tourist business is one of the rapidly developing and growing branches in the modern world. The situation in Georgia indicates that there is really much to do in this sphere. Management activities in firms differ according to the spheres of tourist firm activities and sizes. For the growing tourist industry the human resource development process is of urgency.

<div align="right">Auth.</div>

C12. Transport

9.C12.1. On the use of expert systems of civil aviation. /D. Vepkhvadze/. Air Transport. - 2011. - #1(6). – pp. 10-18. – rus.; abs.: eng., geo.

The static and dynamic expert systems of the first and the second generation are analyzed in the article. Advantages of the second generation expert systems, as hybrid systems, are outlined in comparison with the first generation expert systems. The necessity of transfer to the third generation experts system as to intelligent, integrated simulation complexes is stressed. A possible general structure chart of such perspective system and its constituent components are proposed. The possibility of introduction of the expert systems in civil aviation airplanes is discussed as well as of the decision-making information support system as the possibility of the expert systems' inclusion in the structure chart of the airborne management-information system.

<div align="right">Auth.</div>

9.C12.2. Expert systems. /D. Vepkhvadze, M. Ediberidze/. Air Transport. - 2011. - #1(6). – pp. 19-31. – rus.; abs.: eng., geo.

The structure, classification and processing technologies of expert systems are discussed in the article. The basic concepts and definitions related to the constituent components of the general structure of the expert systems are given with their classification by different criteria and presentation of the processing circuit with the tasks that to be solved at each stage of their processing. Also shown is the iterative nature of the expert systems' processing, with the aid of which their improved (industrial) embodiment is developed.

<div align="right">Auth.</div>

9.C12.3. Determination of parameters of a generalized model of complex techno-dynamic systems' functioning, in case of the system's decomposition. /T. Kapanadze, A. Tsintsadze/. Air Transport. - 2011. - #1(6). – pp. 39-47. – rus.; abs.: eng., geo.

The article deals with the decomposition principle, which consists in the following. First, artificial division of a complex system into individual subsystems (elements) takes place with the preservation of autonomy. Then the simulation of the autonomous subsystems (elements) and their interlinking is carried. Based on the identification and systems simulation theory, the procedure for finding the coupling parameters is discussed, in the case of linear models.

<div align="right">Auth.</div>

9.C12.4. Determination of the air transport competition level. /V.Kakabadze/. Air Transport. - 2011. - #1(6). – pp. 63-69. – rus.; abs.: eng., geo.

In the contemporary business environment, the concept of competition has assumed a new meaning. In particular, competition is a relative characteristic of goods, which includes the totality of demonstrated demands of the market at a given moment and for given goods, or a relative complex assessment of the totality of quality and economic characteristics (parameters) in relation to the characteristics of similar goods. The article introduces the optimal benefit indicator of commercial activity of air transport. It also determines the coefficient of correlation of the interests of consumers and producers (sellers) and, accordingly, the sale (ration) price of goods.

<div align="right">Auth.</div>

9.C12.5. Research of the world air transportation booking and sales systems and their development prospect. /Y. Sukhitashvili, M. Sukhitashvili/. Air Transport. - 2011. - #1(6). – pp. 70-82. – rus.; abs.: eng., geo.

The subject of research in the given article is the analysis of world air transportation booking and sales systems and their influences on the services of air carriers engaged in regular international passenger transportations, also on the maintenance of stability and increase of efficiency of performance under conditions of a market economy. On the basis of the made analysis, recommendations on the perfection of the methods and forms of up-to-date computer-based air transportation booking and sales.

<div align="right">Auth.</div>

9.C12.6. The importance of benchmarking for the efficient development of national airlines of Georgia. /Y. Sukhitashvili, S. Papashvili/. Air Transport. - 2011. - #1(6). – pp. 83-99. – eng.; abs.: rus., geo.
The article aims to explore the application of benchmarking techniques implemented by airlines in Europe and USA. It also focuses on the potential benefits of benchmarking application for further development of Georgian air companies.

<div align="right">Auth.</div>

9.C12.7. Marketing of air-fright operations /Z. Kandelaki, S. Papashvili/. Air Transport. - 2011. - #1(6). – pp. 100-111. – rus.; abs.: eng., geo.
The work presents a general survey of air-fright operations' marketing, including strategic planning of activities of air companies, main client demands and kinds of transportation goods, classification of cargo convertible aircraft in terms of marketing. An attention is given to the price formation policy, given that this policy may vary depending on the strategy of a specific company.

<div align="right">Auth.</div>

9.C12.8. Major factors influencing the volume and distribution of passenger transportation between railway and air transport of Georgia. /N. Dumbadze, A. Noniadze, N. Khuchua/. Air Transport. - 2011. - #1(6). – pp. 112-120. – rus.; abs.: eng., geo.
At present, upon determination of the perspective volumes of passenger transportation and turnover, a number of the factors connected with the natural-geographical and socio-economic features of different regions of Georgia are not fully taken into account. The article presents proposals for eliminating the above shortcomings.

<div align="right">Auth.</div>

9.C12.9. Differential equations of additional free motion of optimum brake rigging. /G. Sharashenidze, P. Kurtanidze, N. Mghebrishvili, T. Dundua, S. Sharashenidze/. Transactions of Georgian Technical University. – 2011. – #1(479). – pp. 67-71. – geo.; res.: geo., eng., rus.
For the purpose of researching real dynamic parameters of an optimum brake rigging of passenger cars, the work developed differential equations of additional free motion of this rigging. A dynamic model of optimum transmission with clearances in swing joints was used. The differential equations of additional motions are derived in relation to the variable angular and linear generalized coordinates. A system of differential equations of additional movement with account of operating external forces, deterioration and shocks of the elements of swing joints, also the variable kinematic parameters is produced.

<div align="right">Auth.</div>

9.C12.10. On the solution of straight geometrical problem for a five-link leverage with two degrees of freedom. /D. Tavkhelidze, Z. Mchedlishvili, Z. Kublashvili/. Transactions of Georgian Technical University. – 2011. – #1(479). – pp. 72-77. – eng.; res.: geo., eng., rus.
The article offers the solution of the straight geometrical task for five-link leverage with two degrees of freedom. The solution of the given problem is based on the use of a homogenous system of coordinates, where a set of couplers of curves is produced. On the basis of equations of trajectories, also obtained are the equations for calculation of values of speed and acceleration of the links of the leverage. The calculations differ from the known methods by their simplicity and high performance, which would be useful for programming actuators mounted on the leverage joints.

<div align="right">Auth.</div>

9.C12.11. Analysis of field operation of brake rigging elements of a car taking into account deterioration. /G. Sharashenidze, T. Dundua, N. Mghebrishvili, P. Kurtanidze, S. Sharashenidze/. Transactions of Georgian Technical University. – 2011. – #1(479). – pp. 78-81. – geo.; res.: geo., eng., rus.
Based on a statistical analysis of the elements of the brake rigging swing joints, a mathematical method of analysis of dependences of deterioration on car travel is worked out. The probability of failure-free operation of the elements is considered according to the hypergeometric distribution spectrum and the binomial distribution formula. The upper limit of reliability and failure-free operation probability are determined. The received results graphically represent the dependence of elements' deterioration on the car travel in case these elements are made of different materials.

<div align="right">Auth.</div>

9.C12.12. Building of model of logistic system "ecological safety of motor vehicles - properties of Diesel oil". /J. Iosebidze, G. Abramishvili, T. Apakidze, L. Zurabishvili, N. Diasamidze/. Transactions of Georgian Technical University. – 2010. – #1(475). – pp. 95-103. – geo.; res.: geo., eng., rus.
Based on the available research results, conceptual dependences between the quantity of harmful products exhausted by automotive diesel engines and such indices of diesel oil as distillation, cetane number,

viscosity, density, coking ability, acidity, content of sulfur, soluble gums, etc. are determined. A significant impact of the basic indices of fuel (temperatures corresponding to 50, 90 and 96% evaporation, cetane number, etc.) on the mentioned ecological index of motor vehicle is confirmed. Regarding the discovered regularities, a model of logistic system of dependences of motor vehicle ecological safety index on the diesel fuel properties is built, where the regulation of quantities of its components will guarantee the preservation of the vehicle's designed level of ecological safety as well as a possibility of identification of perspective ways am methods of its increase.

Auth.

9.C12.13. Research of the self-excited oscillation process of electric train motor car brake linkage shoes taking into account clearances in swing joints. /G. Sharashenidze, M. Dolidze, S. Sharashenidze, L. Kuparashvili/. Transactions of Georgian Technical University. – 2010. – #2(476). – pp. 118-122. – rus.; res.: geo., eng., rus.
The parameters of relaxation oscillations of the motor car brake shoe unit are studied. Differential equations of self-excited oscillations are derived. Formulas of the friction force given the suspension elasticity are obtained. For the purpose of determining the actual parameters of self-excited oscillations, the joint "suspension – cross-arm" is presented with an increased clearance. The effect of the normal reaction force of the corresponding clearance on the pressing force of the shoe and on the self-excited oscillation parameters is studied. The effect of linear rotation of a wheel on the friction force, as well as the effect of the friction force on the frequency of mechanical self-excited oscillations are investigated. The obtained results are presented as formulas and charts.

Auth.

9.C12.14. The effect of increased clearance on the accuracy of output parameters of an electric train car brake rigging. /G. Sharashenidze, A. Sharvashidze, M. Dolidze, P. Kurtanidze, S. Sharashenidze/. Transactions of Georgian Technical University. – 2010. – #3(477). – pp. 79-84. – geo.; res.: geo., eng., rus.
The problem of dynamic and kinematic accuracy of some output parameters of the motor car's improved brake rigging is solved. According to the ideal and real dynamic models of brake rigging, formulas of accuracy of the friction and reaction forces, as well as of the kinematic parameters in joint connections with clearances are obtained. The accuracy formulas take into account the breaking force developed by the brake cylinder rod, as well as the pressing force of brake shoe against the car wheel tread.

Auth.

9.C12.15. Estimation of the ECS influence on the car safety. /M. Ben Chaim, J. Iosebidze, G. Abramishvili, Sh. Yanetz/. Transactions of Georgian Technical University. – 2010. – #3(477). – pp. 89-96. – eng.; res.: geo., eng., rus.
Determining which of the road-conditions parameters are directly associated to road accidents recurrence is of importance in the field of road-accident prevention. Given an accident scenario, it is a common practice to evaluate road-accidents related parameters via deterministic dependencies such as the driver's accuracy of the subjective assessment, his ability to implement a given task and car dynamics. Still, it is better to take into account also the statistical nature of such processes. The main advantage of a probable evaluation is the synthesis between deterministic and stochastic characterizations. These may provide an answer for the vehicle motion, enabling, in turn, a scheme for accident prevention. In this paper, we made an attempt to define probable characterizations of road accidents, in which an obstacle appeared in use of ECS. To these end previous incident parameters were also taken into account (parameters associated to the vehicle, the obstacle, the road and the dynamic characteristics of the vehicle etc.). Our main result is calculation of a car-obstacle collision probability based on Monte-Carlo method. Furthermore, we were able to extract some analytical dependencies, relating to the avoidance probability of incidents with several influence arguments. Finally, these provided us with a platform for solving some practical problems in the field of road safety.

Auth.

9.C12.16. Method of preventive maintenance modes of vehicles. /M. Ben Chaim, J. Iosebidze, G. Abramishvili, N. Navadze/. Transactions of Georgian Technical University. – 2010. – #3(477). – pp. 97-102. – eng.; res.: geo., eng., rus.
This work deals with the methods of preventive maintenance modes that take into account constructional elements (CE) of the car life cycle reduction (LCR), on the basis of operating reliability data. This Paper presents a model, describing the basic relationships between the LCR of the vehicle CE and the rational periodicity of scheduled (preventive) maintenance. This model describes in detail the possibilities and conditions of performing the CE preventive maintenance. Practical application of the proposed method is demonstrated in an example of the CE preventive maintenance periodicity optimization. The presented method indicates, that data from observation of vehicle operational reliability can be employed successfully for optimization of their maintenance conditions. By means of the proposed model, it is easy to illustrate the

possibilities of significant savings in maintenance by setting an optimal preventive maintenance periodicity of CE, which are subject to LCR.

<div align="right">Auth.</div>

9.C12.17. System of differential equations of additional contact motion of optimal brake rigging taking into account clearances. /G. Sharashenidze, A. Sharvashidze, P. Kurtanidze, G. Usanetashvili/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 88-92. – geo.; abs.: eng., rus.
In this article, the differential equations of additional contact motion of car's optimal brake rigging are given. The dynamic model of the rigging and functional dependencies between the forces of reaction and friction are used. By solving the differential equations derived in relation to the angular generalized coordinates, the output parameters of the rigging upon turn of the driving lever at any angle are determined.

<div align="right">Auth.</div>

9.C12.18. Recommendations on the reduction of deterioration of car wheel pairs /G. Shavidze, T. Grigorashvili/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 93-96. – geo.; abs.: eng., rus.
The article discusses the issues of deterioration of car wheel pairs. In particular, based on existing formulas, a new mathematical formula is worked out making it possible to determine the rate at which trains should move on the sections with different radius in order to reduce deterioration of car wheel pairs.

<div align="right">Auth.</div>

9.C12.19. Intensification of operation of train make-up technological complex in technical railway stations. /G. Telia, G. Mchedlishvili/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 97-100. – geo.; abs.: eng., rus.
Thee article analyzes the existing layouts of train make-up technological complex and their operation technologies. Given are the ways of their operation improvement and rational layouts of the mentioned complex that provide acceleration of trains make-up and sharp improvement of station's performance. Refined formulae to calculate the processing ability of make-up dead-end sidings are recommended.

<div align="right">Auth.</div>

9.C12.20. Investigation of the dynamic mode of an elastically connected two-mass system by the example of an overhead ropeway. /M. Tsereteli, N. Makharashvili, I. Tsereteli/. Mining Journal. 2011. - #2(27). – pp. 60-63. - geo.; abs.: geo., eng., rus.
A transient of an electric motor startup, where two masses are elastically connected is considered. As a specific example, an overhead ropeway is discussed. In order to simplify calculations, it is assumed that in the transient the cabin was swaying along the throw rather than the span. Given such an assumption, the "reduced" suspension rate is determined as a ratio of the cabin mass to the suspension length. A mathematical model developed to derive a series of differential equations describing the transient of the startup is built. To exclude vibrations in the transient, a method successfully used in metallurgy (pouring cranes) is considered.

<div align="right">Auth.</div>

9.C12.21. On the methods of obtaining the motor road microprofile characteristics. /G. Shilakadze, S. Esadze/. Transactions of Georgian Technical University. – 2010. – #3(477). – pp. 9-13. – geo.; res.: geo., eng., rus.
The use of a static method as the most acceptable, convenient and accurate for the particular task is proposed and justified. The paper shows the sequence of microprofile characteristics obtainment and reviews specific examples.

<div align="right">Auth.</div>

C13. Medicine. Healthcare

9.C13.1. Nanoparticles – new medical potential – today and tomorrow. / T. Chachibaia/. Nano Studies. - 2011. - #3. – pp. 5-12. - eng.; abs.: geo., eng.
A thorough analysis of scientific achievements in exploring divergent features of gold nanoparticles negates the view that the production of gold nanoparticles are allegedly harmful to human health. Experiments have shown that gold nanoparticles can result in uptake via the relevant exposure routes. The gold nanoparticles and the cell types used for their exposure are likely to influence the uptake, sub-cellular distribution, and toxicity of gold nanoparticles. However, investigations of metal particulates are still in their infancy at this stage and are concentrated on revealing the toxicity, safety, tissue distribution, antibacterial properties and cellular uptake of gold nanoparticles. Consequently, more comprehensive studies are required to more fully

understand the toxicity versus safety associated with metal particulate exposure. Inevitably, any emerging technology requires extensive safety assessment before coming to market, including diagnostics, medications and cosmetics. While comparing and evaluating newly established properties at nano-scale, consumers may experience confusion concerning the safety issues. Lately, responsibilities for the control and regulatory mechanisms have also applied to the safe utilization of nano-particles in cosmetics.

Auth.

9.C13.2. Wavelet technologies in nanomedicine. /I. Chkheidze, L. Tokadze/. Nano Studies. - 2011. - #3. – pp. 163-168. - geo.; abs.: geo., eng.
Wavelet technology is considered as an example of the application of information technologies in the HealthGrid and nanomedicine. Digital image processing and signal-computing tomography studies provide the unique properties of wavelet transforms: data compression, allocation of the image contours and objects of interest, as well as cleanup of signals from random errors. It is shown that the implementation of the algorithm of discrete wavelet in MathCAD program is characterized by simplicity, speed and accuracy, and the results of such experimental investigation will help doctors in establishing the correct diagnosis of brain disease and be useful in automation of the diagnosis process.

Auth.

9.C13.3. Pneumographic imaging of potential cleavage planes within the ventricular myocardium in histology and computed tomography. /Klaus Redmann, Paul Peter Lunkenheimer, Sandra Stöppeler, Ulrich Spiegel, Morten Smerup, Peter A. Nielsen, Peter Niederer, Stephan Weiss, Randas V. Batista/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #1. – pp. 108-120. – eng.; abs.: eng., geo.
We distended the relaxed porcine left ventricular myocardium by inflating the coronary arteries with compressed air, using rising pressures between 1 and 3 atmospheres. Computed tomographic analysis revealed a feathered arrangement of the myocardium aggregated together within the walls, with an overall system of spatially netted lamellar structures. Histological examination in orthogonal planes revealed the lamellas themselves to be made up of endless chains of myocytes, which show the well recognized systematic change in helical angle when traced through the thickness of the walls. The pneumatic distension had opened clefts between the lamellas, with sparse and loosely aligned fibrous tissue present within the clefts. The lamellar structure itself is continuous through the walls via a system of interlamellar connections from epicardium to endocardium, and from the ventricular base to the apex. The ventricular walls, therefore, which appear compact when sectioned without pneumatic distension, are shown by distension to be composed of a system of three-dimensionally curved and nested blades, with the individual blades taking their origin from a central circular myocardial collar, Krehl´s Triebwerkzeug, and then extending with opposing curvatures towards the endocardium and epicardium.

Auth.

9.C13.4. Novel approaches to prevention of chronic kidney disease in patients with metabolic syndrome. /N. Khipshidze, T. Gamezardashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #1. – pp. 121-125. – eng.; abs.: eng., geo.
Metabolic syndrome (MS) is a major public health threat. Individuals with MS are at increased risk for development of chronic kidney disease (CKD). Despite effective medical interventions that have targeted vascular renin-angiotensin system (RAS) blockade the prevalence of CKD remains considerably high. Few studies have directly compared the reno- protective effects of Angiotensin II-receptor blockers and Angiotensin-converting-enzyme inhibitors (ACE) in patients with MS. The aim of the present study was to compare the renoprotective effects of Angiotensin II-receptor blockers and Angiotensin-converting-enzyme inhibitors (ACE) in patients with MS and early nephropathy. In this prospective three year study, we randomly assigned 123 patients (mean age 45.8±11.7 years, range 31-57 years, 72 male and 51 female) with metabolic syndrome and early nephropathy to receive either the ACE inhibitor Quinapril (Accupro, Pfizer International, 20mg daily, 43 subjects) or Angiotensin II- receptor blocker Valsartan (Diovan, Novartis, 160 mg daily, in 41 subjects) or in combination Valsartan /Quinapril (160 mg/20 mg daily, in 39 subjects). The endpoint was the change in the glomerular filtration rate (GFR) (determined by measuring the plasma Clearance of Creatinine) between the baseline value and the last available value during the three-year treatment. After three years, indices of GFR increased by 4.2 ml/min/1.73m² in Quinapril-treated patients, compared with - 4.7 ml/min/1.73m² in Valsartan-treated subjects, and - 7.1 ml /min/1.73m² in Valsartan /Quinapril group (p<0.01). The results indicated that Valsartan was not superior to Quinapril,but the renoprotective effects of the combined therapy with Valsartan/Quinapril significantly improved after three years.

Auth.

9.C13.5. Effects of DASH and sodium-restricted diets on blood pressure in normotensive elderly. /I. Andronikashvili, G. Simonia, N. Basishvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #1. – pp. 126-129. – eng.; abs.: eng., geo.

During the past century, the evidence for the risks imposed on human health by excess salt consumption was compelling. The causal relation between habitual dietary salt intake and blood pressure has been established through experimental, epidemiological, migration, and intervention studies. The aim of the work was to select from persons having normal arterial pressure the salt sensitive ones and using DASH and sodium-restricted diets to set the perspective for the development of preventive measures. Salt sensitivity was assessed in normotensive 54 young and 68 elderly males. Accordingly salt sensitive subjects were divided into two groups in accordance with age. Salt sensitivity was assessed by the difference of mean arterial pressure (MAP) on high (200 mmol/day) vs. low (40 mmol/day) salt diet. Compliance with the diet was confirmed by measurement of 24-hour urinary sodium excretion during the last 2 days of both weeks. As was mentioned, both the DASH diet and DASH diet with lower sodium intake caused mean arterial pressure decrease, but the combination of the DASH diet plus lower sodium intake consistently produced the greatest mean reductions in blood pressure with peak levels in the elderly. Based on our results, we can suggest that in spite of the fact that diet modifications cannot influence the genetic nature of salt sensitivity, it can lower the mean arterial pressure in normotensive salt sensitive individuals, thus creating the possibility of its use for hypertension prevention.

Auth.

9.C13.6. Myelin fibers of dental pulp and their partial demyelinization at acute pulpitis. /T. Zhvitiashvili, Kh. Davarashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #1. – pp. 130-132. – eng.; abs.: eng., geo.

One of the factors of pain is the damage of nerve fiber structure. Due to the fiber damage passive penetrability of Na^+ ion is increased, leading to the change of membrane polarization and additional local currents with pain syndrome strengthening. Thus two moments in the occurrence of pain syndrome play an important role: disfibering of myelin and growth of Na^+-ion penetrability.

Auth.

9.C13.7. Influence of environment, lifestyle and gender on the health status of long-lived persons. /N. Khipshidze, T. Zubiashvili/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #1. – pp. 133-138. – eng.; abs.: eng., geo.

Since 2004, the nationwide Georgian Longevity Study has been undertaken by Department of gerontology and geriatrics at the National Center of Therapy. Interesting features have emerged regarding gender, geography and diet. The female-to-male longevity ratio is more than six to one and it is not uniform throughout Georgia, varying according to the proximity of inhabitants to the seashore or mountains. Significant dietary groups were noted. Although fewer in number, men are better off functionally and medically. Long-lived people in the mountainous regions have better state of health than those living near the sea. Similar findings have also been noted in Korea and Italy. It can be concluded that habitation might influence gender differences in longevity, particularly via the influence of diet and physical activity.

Auth.

9.C13.8. Arterial and venous blood gas monitoring in hemorrhagic shock. /M. Ghvaladze, R. Chikhladze, Gr. Sulaberidze, G. Didava, T. Gegeshidze, M. Chkhaidze, T. Buachidze, L. Gopodze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #2. – pp. 127-132. – eng.; abs.: eng., geo.

We aimed at evaluating the informativeness of arterial and venous blood indices at hemorrhagic shock and gravity of hemorrhagic shock in animal models with the use of the in vitro system AVL (England). The model of severe hemorrhagic shock (HS) in 2-4 kg anesthetized (nembutal narcosis - 40 mg/kg) male cats (n=8) was induced by the Wiggers-fine' method through bloodletting. Intraarterial blood effusion summary 40mg/kg, till arterial blood pressure dropped to 40mm/hg for 1 hr. Arterial and venous blood gas monitoring was conducted in dynamics: at 30th min (HS 30), at 60th min (HS 60) and at 80th min. Blood was taken from femoral vein and artery (v.et.a.femoralis) using microcapillary TYPPE 551T 1/18 5/100 and studied on AVL (England). A total of 174 blood gas samples: arterial and venous pH, partial pressure of $PC0_2$, mmHg, partial pressure of PO_2 , mmHg,bases excess BE mmol/l, buffer bases BB mmol/l, bicarbonate HCO_3, mmol/l, saturated O_2 sat mmHg, alveolo-arterial oxygen deficiency ($AaDO_2$) and cardio circulatory oxygen deficiency $CCDO_2$ - % were measured. The obtained results were analyzed statistically with the use of STX program. Reduction of arterial blood effusion to 40ml/kg/ led to the following alterations: decreases in mean arterial blood pressure (from 124 mmHg to 60 mmHg –at HS30 and 40 mmHg - at HS60), In venous blood control $CCDO_2$ increases from 17.10 ± 1.20 % to $21.43\pm1.15\%$. At HS60 and 80th min $CCDO_2$ increases from $43.3\pm3.60\%$ to $47.80\pm1.03\%$ ($p< 0.05$, $p< 0.01$, $p<0.01$). Inarterial blood control $CCDO_2$ was 0%, while at HS30, HS60 and at 80th min $CCDO_2$ increases and is equal to $9.0\pm1.3\%$, $43.3\pm3.63\%$ and $50.1\pm1.3\%$, respectively. ($p<0.01$, $p<0.01$, $p<0.01$). Arterial $PC0_2$ varies and at HS30,HS60 and 80th min it is 40.55 ± 1.09 mmHg, 32.40 ± 2.40 mmHg ($p< 0.05$), 38.66 ± 1.20 mmHg and 45.60 ± 1.3 mmHg($p< 0.05$). After 80th min

irreversible changes develop. In the experiments carried out PCO2 differs from controldata. Arterial and venous blood gas monitoring revealed close correlation of altered PCO_2 and $CCDO_2$ indices with acidosis, which could be used for assessment of acidosis at hemorrhagic shock. Changes in venous PCO_2 and $CCDO_2$ have recently been shown to correlate with changes in global tissue perfection (cardio-vascular system).Such data, available immediately via continuous venous blood gas monitoring, may be useful for monitoring shockand the response to resuscitation. The results of blood gas monitoring agrees closely with the results obtained withthe use of fiberoptic three-dimensional sensors. This method could be used in different unstable situations. In vitro AVL system provides additional possibilities to investigate other vitally important parameters (buffers, $CCDO_2$, $AaDO_2$) etc.

<div align="right">Auth.</div>

9.C13.9. The antitussive and expectorant medicinal plants from the mallow family. /M. Getia, M. Jokhadze, J. Kuchukhidze/. Wood Bulletin. – 2011. - #4. – pp. 127-129. – geo.; abs.: geo., rus., eng.
The content of polysaccharides was examined in the plant of Mallow species. The fractional and monosaccharide constitutions of the polysaccharides were determined. On the basis of water-soluble polysaccharides, effervescent tablets with mucolytic and mucosecretory properties were produced. The methods of standardization of the effervescent tablets are studied.

<div align="right">Auth.</div>

9.C13.10. The effect of treatment by "Borjomi" and "Utsera" mineral waters on the cardiohemodynamics of patients with chronic cholecystitis. /L. Burchuladze, N. Davituliani, N. Kalandia/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 5-9. – geo.; abs.: geo., eng., rus.
50 patients with chronic cholecystitis were examined (25 under conditions of Borjomi and 25 Utsera health resorts). The mineral water treatment course in the patients of both groups demonstrated an improvement of health condition not only in terms of the principal disease, but also of the functional state of the cardiovascular system. The positive changes were more manifested under conditions of Utsera health resort.

<div align="right">Auth.</div>

9.C13.11. Classification of patients with prerenal azotemia and modern principles of diagnostic investigation. /G. Gelbakhiani, I. Gelashvili/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 10-25. – geo.; abs.: geo., eng., rus.
The development of prerenal azotemia in different pathologies accounts for 40-80% of cases. In order to identify it, especially at early stages, special clinical diagnostic methods should be selected. The goal of the present paper is to select a combination of clinical diagnostic tests to identify the early manifestation of this pathological mechanism. Three types of prerenal azotemia are known: (1) a decrease in intravascular volume; (2) a change in vascular resistance; (3) a low cardiac output. We have studied the second type – 5 patients with liver cirrhosis in the decompensation stage and the third type - 22 patients with clinical heart failure (refractor stage, D degree according to Hunt's classification). We have applied the following methods of clinical tests: (a) relation of blood urine nitrogen and creatinine (norm <20:1); (b) glomerular flow rate (GFR); c) sodium rate in urine (U_{Na}); (d) measurement of fractional excretion percent of sodium ($F_{ENa);}$ e). Osmolality of urine and blood serum by our construction (conductometer-osmometer); e) oliguria is defined as urinary output <400-500 ml/d or 20 ml/h. We have determined all the parameters of osmoregulation by means of the parameters obtained from the device. The same device is supposed to state the viscosity of urine and blood serum together with osmolality. Due to our data, in patients with liver cirrhosis the prerenal azotemia occurs at the decompensation stage, also observed is hypervolemic hypotonic hyponatremia. Osmalality of blood serum decreases from 275 mEq/kg. Against the backgrounds of sharply decreased diuresis, urine sodium decreases from 20 mEq/l to 10 mEq/l. In severe clinical cases the concentration of sodium decreases up to 5mEq/l. The ratio of blood urine nitrogen and creatinine is 60:1 (the upper limit 20:1). In patients with chronic heart failure (at the refractor stage) under 36 hours of deprivation the urine osmolality was less than 400 mosm/kg. At the refractor stage, glomerular filtration (GF) makes 1.4±0.42 ml/min. It is dramatically decreased. Also decreased is the excretion fraction of osmotic substances (0.83±0.06 osm%) as well as the excretion of free water (T_{H2O} 0,24±0,3ml/min). The results obtained show the already formed prerenal azotemia. The designed by us micro conductometer–osmometer is in full compliance with modern standards. In order to expose prerenal azotemia at an early stage, much wider combinations of clinical laboratory tests are needed.

<div align="right">Auth.</div>

9.C13.12. Dynamics of the chronotropic cardiac function under different conditions of physical load. /G. Eliava, A. Isakadze, L. Berulava/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 25-29. – geo.; abs.: geo., eng., rus.
The exercise performance of man depends on many factors. The study aims to investigate the exercise performance at different types of respiration. The study results show that in the case of nasal respiration

distress the chronotropic cardiac function is enhanced as compared to both nasal and oral respiration, which is indicative of the general exercise performance impairment.

Auth.

9.C13.13. Development of medical rehabilitation system in different social groups. /I. Zarnadze, Sh. Zarnadze, L. Lomtadze, D. Kitovani, M. Kajrishvili/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 29-32. – geo.; abs.: geo., eng., rus.
The results of this study demonstrate the medical rehabilitation system's development trends in Georgia. Social cooperation of the population with the State is expressed in the development of a system of social insurance and increase of individual incomes. The development of a social insurance system is the first step towards the formation of a new democratic policy and satisfaction of the population's needs. The rehabilitation of invalids, access to medical services and health resort treatment remain to be the most urgent problems today.

Auth.

9.C13.14. The mechanism of action of iontophoresis of the microelement Selenium and its effectiveness in treating neurasthenia. /N. Kakulia, I. Kvinikadze, N.Kvinikadze/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 39-45. – geo.; abs.: geo., eng., rus.
It is established that treatment with Selenium iontophoresis – an effective method of therapy of neurasthenia causes in patients improvement of a psychological condition, EEG data, function of vegetative nervous system and glucocorticoid functions of adrenal cortex, cardiohemodynamics index and increases tolerance to physical activity.

Auth.

9.C13.15. Identification of lipid metabolism disorders up in preventing atherosclerosis according to age groups. /A. Kochlamazashvili, T. Kbilashvili/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 45-51. – geo.; abs.: geo., eng., rus.
The aim of the work was to identify a level of increase in general cholesterol, low-density lipoproteins and triglycerides in different age groups – from 25 - to 50, from 50 – to 65, from 65 – to 75 and up to 75 years. Based on the 2009 observation data, the contingent studied for lipid metabolism amounted to 340 (297 men, 43 women) patients. The carried research vividly showed that an increase in general cholesterol in all age groups was almost equally proportional (18 to 27%). The same holds true in respect of triglycerides, their high level was within 35 to 38%. As for the low-density lipoprotein increase in any age groups, its maximum made 93 to 100%. Thus, the timely detection of dislipidemy by age groups means primarily prevention of atherosclerosis and related cardio-cerebral-vascular complications. It would be reasonable to carry out a wide-range research of lipid metabolism in children and adults to ensure timely control of atherosclerosis development.

Auth.

9.C13.16. Method for establishing the effectiveness of therapeutic riding (hippotherapy) for the rehabilitation of patients with coxarthrosis. /M. Rukhadze/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 51-62. – geo.; abs.: geo., eng., rus.
The purpose of the work is to develop a method for establishing the effectiveness of therapeutic riding and having it tested in the rehabilitation of patients with stage I-II coxarthrosis. Under observation were 60 women, aged 24-56 and, of them 30 healthy and 30 patients with stage I-II coxarthrosis. To establish the effectiveness of therapeutic riding, we observed the hip joint function using a biomechanical curve of the hip joint at different gaits of a horse, i.e. we have developed a method of functional diagnostics with application of horse riding as an exercise. For this, an optical method is used, in particular, accelerated filming by professional camera (Mini DV Sony GCR-VX2100 PAL). The resultant video recording was divided into exposures, measuring on each the angle of the joint hip flexion. By the angle values, a biomechanical curve was built. We studied the wave curves (their number and shape), their length and width, amplitude, angle of movement and their range. To establish self-descriptiveness of the biomechanical curve, the curves of healthy subjects and patients during the horse's going at a slow pace and at trop were studied and compared. The biomechanical curves were also analyzed in dynamics – prior to therapeutic riding and 3 months later. Based on these results, it can be said that the biomechanical parameters of the curves of hip joint at different gaits of horse (walk, trot) in healthy patients and the stage I-II coxarthrosis were significantly different (p< 0,001), which allows to recommend the biomechanical study of the hip joint, in particular the biomechanical curve, as an objective criterion for evaluating the effect of rehabilitation in coxarthrosis. In the therapeutic riding dynamics, the biomechanical parameters of curves during the horse's going at a slow pace verged towards the parameters of healthy individuals, while during trot the shape of the curve radically

changed, being shaped to that characteristic of trot. This in turn points to the positive impact of therapeutic riding at coxarthrosis stage I-II.

<div align="right">Auth.</div>

9.C13.17. The effect of mineral water "Gundauri" on biochemical indices in the patients with insulin-independent diabetes. /N. Saakashvili, I. Tarkhan-Mouravi, M. Tabidze, N. Gurgenidze/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 62-69. – geo.; abs.: geo., eng., rus.
25 patients with insulin-independent diabetes were examined. It has been established that the treatment by drinking the mineral water "Gundauri" in patients with insulin-independent diabetes leads to a significant, up to the norm, decrease of the content of sugar in blood, also of the amount of adrenocorticotropic hormone and cortisol in blood plasma.

<div align="right">Auth.</div>

9.C13.18. Physiotherapeutic aspects of application of camelyn. /N. Saakashvili, T. Chilingarishvili, K. Maglakelidze/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 69-74. – geo.; abs.: geo., eng., rus.
Camelyn is a biologically active agent produced from a special, organic honey by the well-known Georgian surgeon Benedict Maglakelidze in the 40s of the 20th century. The work aims to study the expediency of application of the phonophoresis "Camelyn M 3" (20 patients) and the electrophoresis "Camelyn M1" (20 patients) in the treatment of some forms of osteoarthritis and osteochondrosis. The observations revealed a high therapeutic effect in both groups, which make it possible to recommend widening the sphere of application of Camelyn in the clinical medicine, rheumatology as well as the physical medicine and rehabilitation.

<div align="right">Auth.</div>

9.C13.19. Medical rehabilitation of scoliosis in children and adolescents. /Z. Sophromadze, N. Chabashvili, T. Svanishvili, E. Tataradze, T. Adamia/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 74-82. – geo.; abs.: geo., eng., rus.
The goal of our research was timely detection of children and adolescents with scoliosis and complete improvement of stance by the complex of remedial exercises and massage, developed by us in accordance with various degrees of the disease. Physical development of patients was investigated and somatoscopy was carried out. Precise diagnosis was obtained on the basis of X-ray and orthopedic tests. We studied 226 patients (from 3 to 17 years) with different degrees of scoliosis, including 58 patients with 1st degree, 55 – with 2nd degree, 53 – with 3rd degree and 60 athletes (from 6 to 17 years) with 1st and 2nd degree of scoliosis. During our investigation we focused our attention on collection of correct anamnestic data. Clinical investigations included study of children's physical development, somatoscopy, orthopedical and radiological investigations. As a result of 20-day treatment by the above-mentioned methods, improvement of stance was achieved in 98% in case of 1st degree scoliosis and in 58% in case of 2nd degree scoliosis. Although, in case of 2nd degree scoliosis, additional 2 courses of treatment (20 days each) were required for better results. In case of 3rd degree scoliosis, strong muscular frame was formed as a result of remedial exercises and the stance of patients was improved.

<div align="right">Auth.</div>

9.C13.20. Effectiveness of the medical rehabilitation of patients with obesity and digestive disorders. /E. Grigoryan, I. Sekoyan, D. Maleryan, A. Cherchinyan/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 82-92. – rus.; abs.: geo., eng., rus.
Eighty patients with constitutional exogenous obesity, metabolic syndrome and digestive disorders were observed. The baseline therapy which included diet with unloading, exercise therapy, massage, acupuncture, therapeutic muds, chophytol controlled intake, was combined with magnetic laser therapy on certain parts of abdomen, electrostimulation of thigh, back and abdominal muscles. The concentrate of domestic probiotic product "Nor Narine" in combination with mineral water "Jermuk" was administered to patients with intestinal dysbiosis. Clinical and paraclinical evidence established the effectiveness of the combined use of physical factors as part of complex medical rehabilitation of patients with obesity, metabolic syndrome and digestive disorders. High positive result was recorded after magnetic laser therapy with therapeutic muds applied on the area of abdomen, which is conditioned by the marked anti-inflammatory action of these factors. The muscle electrostimulation favors weight loss, improvement of the musculoskeletal system. The administration of the concentrate of domestic probiotic product "Nor Narine" in combination with mineral water "Jermuk" ameliorates both intestinal biocenosis and general well-being and is recommended for patients with intestinal dysbiosis as part of complex therapy.

<div align="right">Auth.</div>

9.C13.21. The impact of phonophoresis of "naftalan oil" on the immunology indicators of patients with rheumatoid arthritis. /L. Nabiyeva, S. Bagirova, S. Magerramova, N. Immamverdiyeva/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 92-101. – rus.; abs.: geo., eng., rus.

The dynamics of clinical-immunology indicators under the influence of phonophoresis of "Naftalan oil" in complex treatment of 31 patients with rheumatoid arthritis was examined. A positive dynamics of the most clinical-laboratory indicators reflecting functional status of the patients, inflammatory activity, of rheumatoid process and severity of immune system's functional disorders were established.

<div align="right">Auth.</div>

9.C13.22. The application of some siliceous waters of Azerbaijan during urolithiasis. /M. Salmanov, S. Nasrulaeva, S. Bagirova, R. Hasanova/. Actual Problems of Health Resort Managing, Therapy and Medical Rehabilitation. – 2011. – pp. 101-109. – rus.; abs.: geo., eng., rus.

The intensity of daily diuresis depending on drank liquid was estimated in 40 patients with urolithiasis with the aim to study the mechanism of action of siliceous waters "Likaqua" and "Turshsu". The research on ion-excretory function after drinking siliceous waters demonstrated positive dynamics in changes of electrolytes in daily urine. It was established that siliceous water "Likaqua" has well-expressed therapeutic effect, increases the activity of crystal-forming ability of patients with urolithiasis. The application of siliceous water "Turshsu", on the contrary, leads to a moderate decrease of the content of salt in the urinary sediment.

<div align="right">Auth.</div>

9.C13.23. IL-10 in pathogenesis of diabetes-induced fetus wastage. /M. Gongadze, A. Sephashvili, N. Gogia, Ts. Atamashvili, I. Mesropyan, M. Iobadze/. Experimental and Clinical Medicine. – 2011. - #2. – pp. 8-12. – eng.; res.: geo.

Spontaneous abortions and inborn structural anomalies are the main complications of diabetic pregnancy. We made a research to reveal the role of IL -10 in streptozotocin-induced diabetic outcome of pregnancy in IL-10$^{-/-}$ and IL-10$^{+/+}$ mice. According to our results, we can conclude that IL-10 has a major role in diabetic pregnancy outcome. Interleukin 10 knockout pregnant mice are much more sensitive to sterptozotocin-induced diabetes. We found out that they have reduced pregnancy rate. During diabetes production of IL-10 decreases, therefore raises expression of TNFα in uterine mucosal cells, which leads to increase of NO production. Thereafter, excessive apoptosis and reduced proliferation processes cause the uterus weight loss. Consequently, the uterus is not ready for successful implantation; there are deregulation and dysfunction of important molecules, such as LIF and MMP-9, responsible for uterine sensitivity acquirement and implantation.

<div align="right">Auth.</div>

9.C13.24. Sanology – basic science of healthcare management. /I. Dolidze/. Experimental and Clinical Medicine. – 2011. - #2. – pp. 12-17. – geo.; res.: eng.

There are two strategies in modern public health system to preserve health: treatment and health protection of healthy human. The latter is less prioritized by government, because nowadays it is more common to eradicate diseases than preserve the health of healthy people. This has definitely affected the professional training of doctors in universities, in the curricula of which the subject of sanology is completely disregarded, while the physiological reactions of both the pathogenic and sanogenous direction are involved in the organism in the course of diseases. Based on the above, the psycho-physic condition and social standing of a healthy person must become the main object of medical research. Doctors must, in addition to the "case history", also start keeping a "health history" in order to identify the health defense and compensatory mechanism with the aim to protect health and restore the disturbed homeostasis. According to this position, sanology is the basic science teaching of health management, the efficient functioning of which is based on the theoretical and practical achievements in pathology, rehabilitation and general valeology (health studies).

<div align="right">Auth.</div>

9.C13.25. Investigation of cytoprotective activity of compound GR-805. /N. Joglidze, M. Machavariani, M. Enukidze, T. Sanikidze/. Experimental and Clinical Medicine. – 2011. - #3. – pp. 25-28. – geo.; res.: eng.

Clinical trials reveal toxic activity of lead in the living organism. The aim of our study was the investigation of the effect of the synthetic compound GR-805 on the Jurkat cells' culture. The results show that the agent is characterized of the cytoprotective activity in Jurkat cells, incubated under low and moderate oxidative stress conditions.

<div align="right">Auth.</div>

9.C13.26. Infectious inflammatory pathologies of the urogenital system and fertile properties of semen. /Sh. Tchiokadze, G. Galdava/. Experimental and Clinical Medicine. – 2011. - #2. – pp. 37-40. – geo.; res.: eng.

5 normospermic men with idiopathic infertility were revealed out of 85 patients fully examined for infertility. The rest of 80 patients had urogenital diseases of different etiology with chronic infectious inflammatory pathologies and pathospermia. The present study has shown that infectious inflammatory processes as well as resultant complications in urogenital organs impair the ejaculate quality in regard to fertility. In particular, the ejaculate from all the patients diagnosed had a markedly decreased number of spermatozoa. Changes in the sperm volumes were seen in 32(40%) of men with different inflammations of the genitalia. pH was altered in 62(77%) cases, with a decreased pH noted in 39(62%), while increased pH was in 11(37.1%) patients. It has been established that infectious inflammatory processes seriously affect the concentration of actively motile, especially of fertility –potent (forward progressive) sperm. The number of sperm leukocytes drastically rises resulting in leukocytospermia which has been documented in 29 (36.25%) cases. The study has revealed significant disturbances of spermatokinesis, increase in teratogenic shapes of spermatozoa, and changes in the biochemical indices of the ejaculate.

<div align="right">Auth.</div>

9.C13.27. Antialcoholic activity of the vegetable extract "Solani". /N. Joglidze, D. Mikeladze, H. Zhuravliova, T. Sanikidze/. Experimental and Clinical Medicine. – 2011. - #3. – pp. 71-73. – geo.; res.: eng.
The antialcoholic activity of the vegetable extract "Solani" was studied. The results of the study revealed that "Solani" increases activity of ALDH and ADH. These results make it possible to recommend "Solani" for use in prevention/treatment of alcoholic intoxication as well as a hepatoprotector.

<div align="right">Auth.</div>

9.C13.28. Environmental effect and women reproductive health. /K.King, M.Pirtskhalava, M. Mirtskhulava, G.Mamukashvili , Z.Barbakadze, K. Zaridze, N. Barnabishvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 19-21. – eng.; res.: geo., eng.
Cervical carcinoma is the leading cause of cancer among Georgian women. However, few women in Georgia have been screened for cervical cancer. In our study, only 8% had been screened for cervical cancer, 10% are found to have symptoms of reproductive tract infections, while 94% of women never use condoms. Due to the low number of women screened and the high number of women experiencing reproductive tract infections, it is possible to conclude that many cases of cervical cancer have been missed.

<div align="right">Auth.</div>

9.C13.29. On the antibiotic resistance of the S. enteritidis strains isolated from children with acute intestinal infections. /D. Chikviladze, Kh. Gachechiladze, M. Mikeladze, D. Metreveli, M. Sinjikashvili, T. Iosebashvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 21-25. – geo.; res.: eng., rus.
The spectrum of sensitivity of 95 S. enteritidis strains isolated from children admitted to Tbilisi hospitals in 2004-2006 to 23 antibiotics has been studied by the agar dilution method, which established an increase in the pathogen's drug resistance and the emergence of multidrug-resistant strains (33.7%). It has been found that the drug resistance of the pathogen to nalidixic acid and aminoglycosides (gentamicin and tobramicin in particular) increases and its high sensitivity is observed only to carbopenems, some ftuoroquinolones, aminopenicillins and third-fourth generation cephalosporins. Further evolution of drug resistance in this direction may lead to the formation of hospital strains among the S.enteritidis ones and alter the epidemiological process and the clinical course of the disease.

<div align="right">Auth.</div>

9.C13.30. Implication of some food products in the spread of salmonellosis. /T. Mchedlishvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 25-26. – eng.; res.: eng.
The frequency of consumption of chicken meat, eggs and their cooked food products was studied in a case-control study among persons with salmonellosis caused by S.enteritidis and the findings were compared with the selected control group. The study results showed that the cases oftener than health persons consume the mentioned products (84,6±6,4% and 81,25±6,9% - in cases and 60,5±7,9% and 55,3±8,1% - in controls).

<div align="right">Auth.</div>

9.C13.31. Spread of chronic viral hepatitis type B in Georgia. /I. Mchedlishvili, S. Guramishvili, P. Imnadze, G. Katsitadze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 26-29. – geo.; res.: eng.
The current epidemiology of chronic viral hepatitis type B (chronic HBV) was studied in Georgia. Dramatic increase of chronic HBV has been observed for the past decade. In contrast to 2001, a 12.3-fold increase in incidence rates was reported in 2010. Along with the increase of the rate proportion of chronic HBV, viral hepatitis of the liver totaled 29.9%, based on the 2008-2010 data. The disease is unequally spread in the country and some regions, namely Ajara and Imereti are characterized with high prevalence. The majority of the cases are detected in the youth, in the age group 20-29, incidence rate of which composed 104.9 per 100 000 population.

<div align="right">Auth.</div>

9.C13.32. Course of leptospirosis in Georgia. /N. Mamuchishvili, I. Mchedlishvili, P. Imnadze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 29-31. – geo.; res.: eng.
The course of leptospirosis was studied in Georgia. Incidence rate has significantly increased since 2006 and in 2010 the highest rate - 16.5 per 10 000 population was registered. The recent increase in incidence rate, in our opinion, is mainly associated with the improvement in diagnostics of the infection. The territorial study of the disease showed that the infection is mostly spread in Ajara, which is also likely associated with the improvements in diagnostics in the region.

Auth.

9.C13.33. Isolated systole arterial hypertension. /A. Isakadze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 31-33. – geo.; res.: eng.
Isolated systolic hypertension is elevation of systolic arterial pressure with 140 mmHg or more under conditions of normal diastolic arterial pressure. The pulse arterial pressure is increased. Significant is the impairment of flexibility of aorta and blood vessels. Orthostatic hypertension, hypokinetic type of hemodynamic and increased peripherial resistence are characerestic. Medicine treatment begins with diuretics and calcium antagonists. AGP inhibitors and b–blokers should be applied with caution. Treatment approach for patients at the age of 80 or over is of great importance.

Auth.

9.C13.34. Damage of cardio-vascular system during rheumatic diseaseses. /A. Isakadze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 33-34. – geo.; res.: eng.
During rheumatoid arthritis, pericarditis is developed. Endocarditis causes heart valvular disease. The reason of myocardial injure may become amiloidosis. Rheumatoid coronaritis should be mentioned. Systemic Lupus Erithematosus causes damage of the pericardium. During systemic sclerodermia, heart ischemic diseases, myocarditis, fibrosis, pulmonary hypertension are developed. Blood vessel damage is cardinal and pathogenic sign for vasculitis. Seronegative spondilopaties are characterized of abnormality of aortic regurgitation, heart rate and conductivity.

Auth.

9.C13.35. Meningococcal infection in Georgia. /M. Eloshvili, P. Imnadze, I. Mchedlishvili, G. Katsitadze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 34-37. – geo.; res.: eng.
Morbidity with meningococcal infection in Georgia is characterized by downward trend, the lowest level of the infection was reported in 2010 when the incidence rate made 0.34 per 100 000 inhabitants, which, in our opinion, does not reflect the real magnitude of the disease in the country. Lethality is quite high. According to the 2006-2010 data, it constitutes 19.9+4.2%. It is even higher in children up to one year of age - 30,0%. Laboratory diagnostics of meningococcal infections as well as meningitis of bacterial etiology should be improved in Georgia.

Auth.

9.C13.36. Immunological changes among miners and patients with occupational bronchial asthma caused by manganese. /N. Khachapuridze, M. Tsimakuridze, Maia Tsimakuridze, D. Zurashvili, M. Kvartskhava, E. Maisuradze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 37-40. – geo.; res.: eng.
This article deals with the studies of immunological status among the miners working in Chiatura and the patients with occupational bronchial asthma caused by manganese. T lymphocytes and its subpopulations and B lymphocytes were investigated. The changes of total T lymphocytes and T_H were stated in blood of the patients with occupational bronchial asthma caused by manganese. The research of immunological status must be introduced into the biological monitoring plan in order to prevent this disease.

Auth.

9.C13.37. Results of study on mother-to-baby health tendences in Georgia. /M. Kajrishvili, Maia. Tsimakuridze, N. Khachapuridze, Kh. Kekelashvili, M. Kvartskhava, M. Tsimakuridze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 40-42. – geo.; res.: eng.
An analysis of mother and baby health situation in Georgia shows an increase in the conception and fertility rate. The rates of perinatal mortality and mortality of children under 12 months of age have decreased. The positive dynamics is also observed in the indices of newborn and stillborn babies. The number of the sick among newborns has reduced. The reduction of abortions in different age groups is observable except for the 15-19-year age group.

Auth.

9.C13.38. The state of occupational hygiene in baking industry of Georgia. /R. Kverenchkhiladze, V. Rokva, M. Arabidze, M. Rizhinashvili, M. Kvatadze, A. Chikovani, K. Khvadagiani, N. Tatalashvili, N. Kverenchkhiladze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 42-44. – geo.; res.: eng.

Based on a relevant statutory act, the work conditions of Georgian bakers have been assessed. A complex of unfavorable manufacturing environment has been revealed. The conditions of work of the bakers have been assessed as unfavorable – harmfulness class 3.2. The conducted study will serve as a basis for the development of sanitary measures.

Auth.

9.C13.39. Public policy in the sphere of healthy nutrition in Georgian population. /B. Kurashvili, Sh. Zarnadze, G. Kverenchkhiladze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 44-46. – geo.; res.: eng.
Based on a critical analysis of the situation in the sphere of food policy in Georgia, a long-term plan of urgent measures for ensuring conditions of wholesome and rational nutrition of Georgian population, as well as supply with quality food products and securing them from the dangerous products is considered. The implementation of the recommended measures is to be come a prerequisite for real improvement of the situation in this sphere.

Auth.

9.C13.40. From metabolic syndrome to cardiovascular disease. /N. Katamadze, D. Topuria/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 49-51. – geo.; res.: eng.
Metabolic syndrome is a pathogenetically interconnected symptom-complex – visceral obesity (fat), arterial hypertension, disturbance of carbohydrate and fat metabolism. According to IDF definition, the main component of metabolic syndrome is visceral obesity. Metabolic syndrome, characterized with rising tendency, is considered as a disease of welfare, especially in children and adults. Metabolic syndrome increases a complication risk of diabetes mellitus four times and cardiovascular diseases twice as much, respectively. The principles of endothelial dysfunction are included into biology of visceral fat. In treatment, an important role is given to life-style modification.

Auth.

9.C13.41. Kinesiology models of the human masticatory apparatus. /N. Gotsiridze T. Gotsiridze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 51-54. – geo.; res.: eng.
The lower jaw kinesiology studies the features of its movements. In the process of chewing, speaking and swallowing, the lower jaw makes various movements in the following three directions: vertical (mouth opening and closing), sagittal (forward-backward movement), and side to side, or transversal (left-right movement). The kinesiology model of the masticatory apparatus of a person is proposed. Based on laws of mechanics and biophysics and given the morfo-functional and electromechanical analogies, tooth physiology models allowing to explain the results of the tooth mechanical and neurophysiological studies have been built. The role of chewing in the enamel mineralization is determined and the mechanism of transformation of energy of elastic vibrations of hard tooth tissues in electromagnetic energy of the nerve endings is offered.

Auth.

9.C13.42. Methods of identification of promising athleths according to physical and functional properties. /D. Chitashvili, E. Korinteli/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 54-57. – geo.; res.: eng., rus.
The article considers the effect on high sport results of such factors as talent, inheritance and surrounding. A study of successful athletes aimed at studying their functional abilities shows that the environmental factor, in particular when place of exercise is located at various altitudes above sea level, has a direct effect on the changes in the functional abilities of athletes.

Auth.

9.C13.43. Aspects of athletic optimization in judo. /G. Zubitashvili, D. Chitashvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 57-61. – geo.; res.: eng., rus.
The article deals with the development of the strength of arms and trunk as well as total lung capacity in judoists measured in the dynamics of two-year regular training. The data are described according to age. The obtained results are of self-descriptive meaning to couches as they facilitate identification of judoists with the best athletic abilities.

Auth.

9.C13.44. Gross motor function disturbances caused by neurodevelopment abnormalities. /E. Murvanidze, D. Chitashvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 61-64. – geo.; res.: eng., rus.
The article considers the result of a study of the gross motor function disturbances caused by neurodevelopment abnormalities in children. The abnormal development of nervous system causes disorders of motion and postural-abnormal muscle tone, weakness, contractures. It is established that early intervention and regular physical therapy improve the functional independence of affected children.

9.C13.45. Efficacy of long-term administration of carvedilol in patients with chronic heart failure with and without concomitant diabetes mellitus. /G. Tabidze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 64-66. – geo.; res.: geo., eng., rus.
Diabetes mellitus is frequently associated with heart failure and is an independent risk factor for increased mortality and morbidity. Beta-blockers are traditionally regarded as relatively contraindicated in patients with diabetes mellitus. The aim of the study was to assess the efficacy of carvedilol administration in patients with chronic heart failure. The 3-month carvedilol treatment of patients with chronic heart failure with and without diabetes mellitus demonstrated the positive dynamics of similar clinical and homodynamic indices in both groups. In addition to the patients' clinical status improvement, also improved the contractile cardiac function. In contrast to other beta-blockers, the carvedilol treatment significantly increased the cardiac index, stroke volume, while decreasing the systemic peripheral vascular resistance. All the above is associated with the multifunctional neurohormonal effect of carvedilol.

Auth.

9.C13.46. The dynamics of occupational morbidity and industrial risk factors in manganese industry. /R. Javakhadze, M. Tsereteli., N. Rukhadze, Kh. Chigogidze, N. Khatiashvili, Kh. Shubladze, O. Gvaberidze, E. Liponava/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 66-69. – geo.; res.: eng.
Harmful occupational factors occupy a special place among the risk factors affecting human health and the environment. In Georgian industry, the mining and processing of manganese takes the leading position and engages thousands of workers and employees. A whole series of measures for reducing the occupational risk factors and early detection and prevention of occupational diseases have been worked out at the Institute of Labor Medicine and Ecology based on numerous practical and scientific researches.

Auth.

9.C13.47. The study of morbidity indices in workers of Rustavi JSC "Azot". /N. Chkhaidze, M. Gvishiani, E. Liponava, T. Svanidze, R. Baratashvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 69-71. – geo.; res.: eng.
The gross extensive and intensive indices of morbidity of the workers of the cyanic salts and ammonium synthesis shops were studied by: nosologic forms, sex, age, occupational groups, and length of service. According to E.L. Notkin's classification, the morbidity index in these shops was estimated as very high. Both shops demonstrated definite wavelike changes in the general morbidity level according to the growth of workers' age and length of service. As for the occupational groups distinguished by the selected morbidity indices, they had to work under the most unfavorable from the occupational hygiene working conditions.

Auth.

9.C13.48. Problems of manganese pollution in Chiatura mining region. /G. Bzhalava, V. Gvakharia, T. Adamia/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 71-75. – geo.; res.: eng., rus.
The article describes the primary ecologic problems caused by processing of manganese ore in Chiatura region. A particular attention is paid to the environmental pollution sources and factors caused by anthropogenic processes of the past and present. The quality of ambient air and surface waters is assessed. The presented data are based on the results of field and laboratory research conducted by the scientific research firm "Gamma" in Chiatura in 2007-2010.

Auth.

9.C13.49. Results of chemical monitoring of Supsa oil transhipment terminal (2001, 2006, 2009). /V. Gvakharia. N. Machitadze, N. Gelashvili, N. Benashvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 75-80. – geo.; res.: eng., rus.
The scientific research firm Gamma carried our a water and sea bottom sediment study in the Supsa River mouth and sea water area next to the oil reloading facilities. The research was done in 2001, 2006 and 2009. The objective of the survey was to evaluate the impact of the Supsa terminal on the environment and assessment of the chemical pollution level within the sea water area. The results of the survey were compared with the findings of the survey carried out by Norwegian company Det Norske Veritas (DNV) in the same area in 1997. It is concluded that the content of pollutants and their distribution are the limits of the natural background, and that in the period from 1997 to 2009 no traces of negative impact caused by the Supsa terminal are observed.

Auth.

9.C13.50. Ecology and liver damage. /N. Antelava, M. Okujava, K. Pachkoria, M. Ghonghadze, K. Bakuridze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 80-85. – geo.; res.: eng.
Liver damage represents the most widely distributed pathology. It plays a main role in morbidity and mortality of human population. According to the WHO, more than 2 billion people suffer from liver damage; this

number is 100 times higher than HIV-infected population. Every year 500 thousand to 1 million new cases of liver disease are being registered in the CIS (Commonwealth of Independent States). The article discusses the role of undesirable ecological factors in the development of liver damage. Admittedly, chemical agents that contaminate environment may have a direct destructive effect on the liver function, may change the human organism's sensitivity to drugs, thus leading to iatrogenic hepatotoxicity. Some groups of medicinal agents are known to cause the liver damage and liver dysfunction with different types of clinic-morphological patterns.

Auth.

9.C13.51. Analysis of the effect of natural disasters on the health condition of the population from Racha-Lechkhumi and Kvemo Svaneti Region. /T. Giorgadze, I. Maisuradze, A. Japaridze, Z. Utiashvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 85-88. – eng.; res.: geo., eng.
Natural disasters are not unfamiliar for Georgia. One of the actual zones in this respect is the Racha-Lechkhumi and Kvemo Svaneti Region situated in the active seismic zone. This region is known for its frequent earthquakes (1991, 2002, and 2009), landslides and floods (2005). The purpose of the presented study is to identify in the Racha-Lechkhumi and Kvemo Svaneti Region a connection between natural disasters (1991-2009) and the population health index, as well as the preparedness of local case for emergencies. The study is of a retrospective character, encompassing data of the 1991-2009 natural disasters in the research region. The used information sources were obtained from the Center for Disease Control CDC; the Emergency Coordination and Regime Department of Ministry of Labor, Health and Social Affairs; the Seismic Monitoring Centre. The study failed to link the population's health status or a specific disease with the natural disasters that took place in the region in 1991-2009. However, based on Irimpen's research, the study managed to detect a possible association of the natural disasters (earthquake or flooding) with the quantitative indices of the blood circulation system disorders. In addition, the preparedness of local hospital for emergencies is identified.

Auth.

9.C13.52. Urgency of food poisoning. /M.Khorbaladze, B.Zurashvili, N.Tskhovrebadze, I. Tskhovrebadze, N. Kiladze, T. Gelovani/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 88-92. – geo.; res.: eng.
The morbidity of Georgian population from food poisoning in 2007-2010 was studied and preventive measures have been developed. During the period of 2007-2009, the number of people with food poisoning decreased from 4597 to 3805 cases, increasing again to 4667 in 2010. The recent increase in the number of food poisoning may be explained by two reasons: 1) inadequate control over products, and 2) better recording of food poisoning cases. It connection with the above, the problem of comprehensive control over food products (locally produced and imported) with the aim of preventing the getting of uncertified products to the consumer market needs to be solved.

Auth.

9.C13.53. Salmonella toxic infections: urgency and prevention. /M. Khorbaladze, T. Gelovani, B. Zurashvili, T. Qochoradze, E. Chapidze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 94-96. – geo.; res.: eng.
Morbidity by salmonella poisoning in the population of Georgia in 2007-2010 and the ways of prevention have been studied. In 2007-2010, the number of people with salmonella poisoning decreased from 236 to 77 cases. The recent decrease may be explained by an increased accessibility of for all the population strata and households to the first emergency aid service.

Auth.

9.C13.54. Acute intoxication by baclofen. /G. Katsitadze, S. Kutubidze, T. Mikadze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 96-99. – geo.; res.: eng.
Baclofen (brand names Kemstro, Lioresal, Liofen, Gablofen, and Beklo) is a derivative of gamma-aminobutyric acid (GABA). It is primarily used to treat spasticity and is in the early research stages for use for the treatment of alcoholism. There are registered cases when baclofen was taken for suicidal purposess, and there are cases of baclofen overdose and baclofen withdrawal syndrome. In Georgia, intoxication by baclofen is registered to have taken place for using the drug for producing a narcotic effect. The main clinical manifestation are convulsions, tachikardia, bradikardia, aryrthmia, and respiratory disorders. Since there is no specific antidote to baklofen, the treatment of intoxication is limited to general detoxication and symptomatic therapy.

Auth.

9.C13.55. Methods of evaluation of solubility of pollutants of the hydrosphere. /B. Arziani, G. Lekishvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 99-101. – geo.; res.: eng.

Dependence of a solution of various important pollutants and biologically active compounds on the structure of their molecules and on thermodynamic parameters is studied. The efficiency of several approaches to solubility modeling is estimated.

<div align="right">Auth.</div>

9.C13.56. Gram-negative bacterial agents for immunotherapy of cancers – perspectives of treatment. /K. Gambashidze, P. Khorava, T. Azaladze, N. Bezhitashvili, N. Pkhaladze, L. Gabunia, A. Azaladze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 101-106. – eng.; res.: geo., eng.
In the present work, the anti-tumor effects of Gram-negative Bacterial preparations (lysates of E. coli and Ps. aeruginosa) at Ehrlich carcinoma growth in laboratory mice have been studied. The anti-tumor effects were evaluated according to the index of malignant tumor growth and development (volume of tumor tissue); cancer growth inhibition percentage; cancer growth average rate; life-span of experimental animals and the rate of survivors. The results of experiments have shown that application of bacterial vaccines being used against hospital infections is well tolerated in mice and does not stimulate or support the malignant tumor growth. Immunization, using E.colli and Ps. aeruginosa, has a positive anti-tumor effect on experimental animals manifested by inhibition of tumor growth and prolongation of animals' life-span.

<div align="right">Auth.</div>

9.C13.57. The elevated content of arsenic in the environment as a health risk for population. /I. Gvineria, M. Zhuruli, R. Javaxadze, V. Saakadze, T. Oniani/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 106-108. – geo.; res.: eng.
On the basis of statistical data, the morbidity structure in Racha-Lechkhumi and Kvemo Svaneti population was analyzed with a particular attention to cancer diseases and their possible casual relationship with increasing the arsenic content in the environment. Recommendations on biomonitoring of the arsenic content in the ebvironment and decontamination of arsenic-bearing toxic waste are given.

<div align="right">Auth.</div>

9.C13.58. Epidemiological features of visceral leishmaniasis in Tbilisi. /N. Garuchava, T. Kesanashvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 108-111. – geo.; res.: eng.
A retrospective research of visceral leishmaniasis in Tbilisi showed that its incidence has slightly decreased. The highest incidence is observed in the Isani-Samgori and Mtatsminda-Krtsanisi district. The cause of the above can be explained by existence of favorable conditions for the night-biting sand fly of the genus *Phlebotomus,* which is primarily responsible for the transmission of leishmaniasis. The incidence is highest in the one-year age group (64.8) and in the 20-29-year age group (4.1). The cases of visceral leishmaniasis are registered during all seasons of the year due to the prolonged incubation period.

<div align="right">Auth.</div>

9.C13.59. Development of social protection and social security system in Georgia. /I. Zarnadze, Sh. Zarnadze, N. Gokieli, L. Lomtadze, D. Kitovani, M. Kajrishvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 111-114. – geo.; res.: eng.
The results of the study enable to assess a tendency towards development of the social protection and social security system in Georgia. Social cooperation between population and the state is based on insurance, provision of quality medical services, growth of the quality of life, and individual income of citizens. The Social services are based on the needs of population. The efficiency of social security operating models is determined by growth of the quality of life in various strata of the population – handicapped, elderly people, IDPs, etc. The development of social security system in the 21st century in Georgia is the first step towards formation of a new democratic public policy of social welfare.

<div align="right">Auth.</div>

9.C13.60. Dietary habits and health promotion in border regions of Georgia. /Sh. Zarnadze, T. Darsania, D. Raminashvili, I. Zarnadze, L. Lomtadze, M. Kajrishvili/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 114-116. – eng.; res.: geo., eng.
In developing countries, morbidity and mortality are directly related to protein deficiency and malnutrition, while in many Western countries, health authorities try to actively promote the consumption of healthy food products. The health promotion activities are aimed at prolonging life through introduction of a healthy life-style of the population and community. Health promotion has an important role in the control of diseases. The efficient ways of health development promotion make it possible to introduce new strategies for strengthening health and provision of services. Health promotion in the healthcare policy of the border regions is rather complex and laborious process.

<div align="right">Auth.</div>

9.C13.61. Rare case of post-polytrauma paroxysmal fibrillation. /G. Katsitadze, A. Rekhviashvili, A. Koroshinadze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 116-118. – geo.; res.: eng.

The paper describes paroxysmal fibrillation developed in a 27-year-old, absolutely healthy man as a result of a motor accident. A 24-hour therapy with standard doses of Cordarone yielded no result. The sinus rhythm restoration was achieved only by electric cardioversion.

<div align="right">Auth.</div>

9.C13.62. Hygienic assessment of irradiation doses of the population of Racha-Lechkhumi region of Georgia. /I. Kugoti, N. Vepkhvadze, M. Khorbaladze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 118-122. – geo.; res.: eng.
The radionuclide content in water and food in Ambrolauri, Oni, Lentekhi and Tsageri districts of Racha-Lechkhumi region of Georgia has been studied, internal and total irradiation doses for the population have been determined and preventive measures for its reduction proposed. The internal irradiation dose for the population due to K-40 was identified as 0.85 mSv/y, total irradiation dose (external and internal irradiation) – 1.7 mSv/y. To reduce the total irradiation dose, it is necessary to provide the population with new sources of low activity drinking water and strict radiation control over the local and imported foodstuff. It is also necessary to minimize and control irradiation from artificial sources, including means of optimization of medical radiological procedures and rational use of fertilizers with K-40 content.

<div align="right">Auth.</div>

9.C13.63. Good pharmacy practice and its peculiarities in Georgia. /V. Eriashvili, N. Dugashvili, A. Mikadze, T. Chumburidze, N. Nemsitsveridze, T. Zarkua/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 124-126. – geo.; res.: eng.
International Pharmaceutical Federation (FIP) has considered the methodical recommendations such as Good Pharmacy Practice (GPP) and established that it can be applied as guidance for national pharmaceutical institutions. The aim of our research was: to get acquainted with the Good Pharmacy Practice standards presented by International Pharmaceutical Federation and to conduct inquiry among the pharmacists working in a pharmacy network; to propose recommendations for developing GPP national standards taking into account FIP standards. The results received at the result of inquiry showed that only 30% of GPP national standards proposed by FIP are fulfilled in our country. Therefore, we consider it necessary to offer the following recommendations for developing GPP national standards: - It is necessary to hold conferences, briefings, meetings between the employees of health care sphere, which will facilitate the collegial collaboration among them; - It is necessary that the reference books available to the health products issued with or without prescription in pharmacies; - It is necessary that the confidential room exist in the pharmacy for sincerer conversation between pharmacists and patient; - It is necessary to conduct professional trainings for pharmacists aiming at raising their qualification; - In case of discovering an error made in prescription, pharmacists and doctor should confidentially solve the problem; - Pharmacist should not replace/change the preparation prescribed in the prescription or offer its analogous preparation without doctor's consent; - For company, pharmacy and pharmacist it should be paramount to care for patient and not to focus on profit.

<div align="right">Auth.</div>

9.C13.64. Antiphospholipid syndrome - modern concept about pathogenesis and treatment. /T. Samakashvili, T. Chitishvili, T. Gogilashvili, N. Katamadze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 126-130. – geo.; res.: eng.
The antiphospholipid syndrome (APS) is an autoimmune thrombophilic condition that is marked by the presence in blood of antibodies that recognize phospholipid-binding proteins. The clinical manifestations of APS include vascular thrombosis and pregnancy complications, especially recurrent spontaneous miscarriages. Several study groups have demonstrated the importance of inflammatory mediators in the pathogenesis of APS. It was also established that tissue factor, p38MAPK, nuclear factors kappa B, complement system, toll-like receptors and annexin are integral to the pathophysiology of the disease. These study groups proposed new targeted therapeutic strategies which include Rituximab, complement inhibition, anti-cytokine therapy, p38 MAPK inhibitors, nuclear factor inhibitors and tissue factor inhibitors. Newer therapeutic strategies are being proposed that might lead to safer and more efficacious treatment modalities in the future.

<div align="right">Auth.</div>

9.C13.65. Strategies to combat zinc deficiency. /Sh. Tukvadze R. Kverenchkhiladze D. Topuria/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 130-132. – eng.; res.: geo., eng.
The publication outlines modern aspects of zinc deficiency worldwide. World Health Organization (WHO) data (2004) suggest that zinc deficiency is expected to be widespread, mainly in developing countries, and Georgia is not an exception. Zinc is an essential micronutrient needed not only by people but also by crops. Almost half of the world's cereal crops are zinc-deficient. The best way of preventing micronutrient malnutrition is food fortification with zinc, which has the dual advantage of being able to deliver nutrients to large segments of the population without requiring radical changes in food consumption patterns.

9.C13.66. Optimization of defining the occlusive planar surface. /S. Mghebrishvili, L. Kvatsashvili, T. Nibladze, I. Barbakadze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 132-134. – geo.; res.: eng.
The article deals with the importance of taking into consideration the occlusive planar surface in dental practice. The study conducted by thy authors indicates that in about 70% of patients the occlusive planar surface is parallel to the Camper line, whilst in 30% it is parallel to the Frankfort horizontal plane. 100 persons were observed – young 20-22-year-old males and females. The observation results showed that the occlusive planar surface of 68% of the observed was parallel to the Camper line and the rest had it parallel to the Frankfort plane. The authors hope that their findings will be helpful for Georgian orthopedists in defining the patients' occlusive planar surface.

<div align="right">Auth.</div>

9.C13.67. Morpho-functional aspects of the liver toxic damage and its further regeneration. /D. Topuria, N. Katamadze, N. Lobjanidze, E. Kurdadze, Sh. Tukvadze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 134-136. – geo.; res.: eng.
Acute toxic damage of the liver is a clinical syndrome developed during exacerbation of pathological process, which frequently results in an acute massive hepatic parenchymal necrosis. The morphological base of an acute hepatic failure is the so-call 'cytological syndrome' resulting in the damage of cell membranes and then of cell structures with the development of functional insufficiency. The liver has a unique ability of reparative regeneration, which is manifested by a quantitative increase of the peroxisomes, oval mitochondria and endoplasmic reticulum microtubules. The application of the said ability of the liver is of much importance in developing the already tested or completely new (cell transplantation) treatment techniques.

<div align="right">Auth.</div>

9.C13.68. Hygienic estimation of functional changes in a human body of the hot-trade steelworkers. /L. Bakradze, M. Tsimakuridze, Maia Tsimakuridze, R. Kverenchkhiladze, M. Kvartskhava, G. Kverenchkhiladze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 136-138. – geo.; res.: eng.
Functional changes have been investigated in a steelworkers' body exposed to hot conditions in a dry subtropical climate. The revealed functional changes have a temperate character. It has been established that the character and intensity of functional changes of the workers' body depend both on the industrial and non-industrial factors, such as the character and intensity of thermal load, climatic and geographical conditions of the region, adaptation of the workers to these factors, the season. The conducted research has laid down a basis of the measures for work improvement.

<div align="right">Auth.</div>

9.C13.69. Viral genesis of non-specific urethritis (NSU). /G. Maglakelidze; L. Khutsishvili; N. Akhaladze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 138-140. – geo.; res.: eng.
The author gives his views concerning chronic prostatitis. He suggests that the disease is laid down by virus (or group of viruses) existing in the cell during the embryonic life. The lifelong effect of virus (or group of viruses) on cells may initiate different chronic inflammatory processes and different pathologic changes in the organism, including prostatitis. An analysis of the literature showed a lack of complete understanding of the causes and mechanisms of chronic prostatitis, but it also showed that the prostatitis syndrome is no longer a faceless myth. It is a reality, and the new awareness of its importance may give new hope for patients suffering from this intractable pain syndrome. Further research in this area will help to better understand the nature of chronic prostatitis and find the best possible solutions in its treatment. The current literature in mechanisms involved in the pathogenesis of prostatitis/chronic pelvic pain syndrome (GPPS) is reviewed. Based on the literature and own observation it is suggested that, in the pathogenesis of chronic prostatitis are involved several mechanisms, and the mechanism of infection, especially in the later stages of the disease, is not determinative. Carried out researches give us an opportunity to state that this disease begins in perinatal period by the group of viruses HSV-1, HSV-2, and cytometagalovirus infection.

<div align="right">Auth.</div>

9.C13.70. Prevalence and factors influencing cigarette smoking among medical and non-medical university students in Tbilisi, Georgia. /I. Chkhaidze, N. Maglakelidze, T. Maglakelidze, N. Chkhaidze/. Experimental and Clinical Medicine. – 2011. – #3. – pp. 140-142. – eng.; res.: geo., eng.
The objectives of this study were to describe the prevalence and factors influencing smoking habits among medical and non-medical students of Tbilisi, Georgia. A cross-sectional study was carried out in Tbilisi State Medical University and Tbilisi State University. 400 students were asked to anonymously fill out standardized questionnaires. In total, 48.9% of students were identified to be smokers and 51.1% nonsmokers. Medical education did not play role in acquiring smoking habit, since 50%.3 among medical students were smokers and 47.5% among non-medical students. Smoking turned out to have strong relation with gender, males

constituting of 68% smokers. 45.8% were light smokers, 40.2% moderate and 14.0% heavy smokers. Just 37.3% of smokers have tried to quit smoking. The willingness to quit smoking was expressed by 61.2% of medical and 56% of non-medical students. In conclusion, results of the study have identified the need of enhancement of smoking related education on university level. Special attention should be given to the inclusion of anti-smoking evidence-based information in study curricula.

<div align="right">Auth.</div>

9.C13.71. Study of gender predilection for thyroid gland carcinoma in the Republic of Armenia. /A. Khachatryan/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 7-11. – rus.; res.: geo., eng., rus.
Thyroid carcinoma is the most common primary cancer of the thyroid gland. The purpose of the study is to find if thyroid gland carcinoma shows gender predilection in Armenia. 529 cases of thyroid gland cancer were studied in hospitals from 1999 to 2011. It was found that thyroid gland carcinoma is three times more common in women than in men practically in all age groups. In comparison with 1985 year, the frequency of disease in women has increased. Thyroid gland carcinoma had a higher death rate in women than in men. The lethality was higher in men.

<div align="right">Auth.</div>

9.C13.72. Problem of early intra- and preoperative pathomorphologic diagnosis of thyroid cancer. /A. Khachatryan/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 11-16. – rus.; res.: geo., eng., rus.
Thyroid cancer is considered as one of the deadly cancers. Differentiation of benign and malignant structures is difficult in patients with thyroid cancer. This work is devoted to the problem of early clinical diagnosis of thyroid cancer. 523 cases of primary thyroid cancer from 1999 to 2011 were studied. The pathomorphologic analysis of thyroid cancer was carried out. The problem of early detection of thyroid cancer is reviewed. It is concluded that the thyroid nodule fine-needle aspirate biopsy and intraoperative frozen section examination do not allow the accurate differentiation of benign tumors from malignant neoplasms; novel diagnostic methods for early detection of thyroid cancer are needed.

<div align="right">Auth.</div>

9.C13.73. Post-radiotherapy complications and ways of their correction it patients with nasopharyngeal carcinoma. /J. Aliyev, I. Isayev, R. Kaziyeva/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 17-21. – rus.; res.: geo., eng., rus.
Today hyperfraction radiotherapy in combination with cisplatin and 5-FU is the most effective treatment modality of patients with nasopharyngeal carcinoma. The poorly investigated late complications developed as a result of using this method made the basis of this research. By analyzing the treatment results of 118 patients, we revealed that radiation damages are more often and severe in the patients subjected to a more aggressive treatment – accelerated hyperfraction radiotherapy with and without concurrent cytotoxic drugs. However, the application of complex prophylaxis and treatment measures by radiation oncologists in cooperation with other specialist (dentists, dermatologists, endocrinologists, etc.) make it possible to control toxicity and finalize the planned treatment schedule.

<div align="right">Auth.</div>

9.C13.74. Impact of new technologies on the flow properties of blood in breast plastic surgery. /J. Alakbarov, V. Potanin/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 22-28. – rus.; res.: geo., eng., rus.
151 patients subjected to breast reconstruction were examined. The blood flow properties and acid-base balance were examined in all the postoperative patients. The examination results evidence that the oxygenation effect in the prevention of postoperative complications is realized primarily at the expense of reduction the early postoperative complications by 2.5 times, while in the transplanted issues with irreversible blood supply disturbances by 5 times.

<div align="right">Auth.</div>

9.C13.75. Features of physical and sexual development and reproductive behaviour in female adolescents. /G. Shelia, A. Chavchidze/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 28-32. – rus.; res.: geo., eng., rus.
The assessment of adolescent's reproductive behaviour and identification of the factors affecting this kind of behavior represented the main goal of the study. A comprehensive examination (n=136) and interviewing (n=825) were made in female adolescents aged 14 to 19 years (randomly formed via continuous selection). Information on the state of their health, their attitude towards child–bearing and their risky habits have been evaluated. Under the present conditions, the development of the reproductive system in female adolescents is characterized by high frequency of menstrual irregularities (24.7%), the delayed formation of the bone pelvis (25.2%) the trend for retarded development of secondary sexual characters (12.3%), the high prevalence of chronic extra genital diseases. Thus, the results of the given study prove that reproductive disorders develop under the influence of a complex of socio-medical factors and lifestyle.

They predetermine the reproductive abnormalities, inadequate reproductive behaviour, and the low standard of knowledge of contraception.

Auth.

9.C13.76. Use of trental for correction of disorders in the system of hemostasia in patients with fibro-cavernous tuberculosis and chronic pulmonary heart. /R. Aliyev, F. Agayev, R. Aliyeva/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 32-35. – rus.; res.: geo., eng., rus.
The effect of trental on the system of hemostasia in patients with chronic pulmonary tuberculosis complicated by chronic cor pulmonale is studied. The desirability of inclusion of trental in the treatment regimen of patients with fibrocavernous pulmonary tuberculosis and compensated CPHD in order to correct violations of the microcirculation and prevention of circulatory decompensation is corroborated.

Auth.

9.C13.77. Clinical trials and intensive therapy of the swine flu (H_1N_1). /I. Nakashidze, N. Tsintsadze, Sh. Potskhishvili, K. Jibladze/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 36-42. – rus.; res.: geo., eng., rus.
Lately, high rate of swine flu A (H1N1) disease has been recorded in the world. In Georgia, it began to spread at the end of autumn 2009. The aim of our study was to define clinical trials of the swine flu (H1N1) in patients of the Republic Clinical Hospital in Batumi from 2009 to 2011 and to generalize the methods of treatment. In the hospital, there were 94 patients suffering from the swine flu (H1N1) disease, 20 of which, due to their critical situation of the disease, were treated in the intensive care department. We studied case histories of 20 patients, who were undergoing treatment in the intensive care department under the generally recognized monitoring programme. Out of 20 patients 10 were women and 10 men. 10 patients died. The intensive care programme consisted of infusive-transfusive therapy by the negative water balance, antivirus treatment (Tamiflu/Relenza), de-escalation antibiotic therapy, mechanic ventilation of lungs, aerosol therapy, plus symptom treatment. In 2011, there were fewer cases of the swine flu and death rate compared to the earlier years. In 2011, one out of 25 patients died, but in 2009-2010, 7 out of 69 patients died), which was conditioned by immunity development. The most frequently used regime of lung mechanic ventilation was BIPAR. In the first days, the antibiotic therapy is not determining. A more effective method of antivirus treatment is to be looked for.

Auth.

9.C13.78. Application of bacterial thermo-and phagelysates for suppression of malignant tumor growth in experimental studies: 1. Anticancer efficacy of thermo- and phagelysates of E.coli. /K. Gambashidze, P. Khorava, K. Kalandarishvili, B. Lasareishvili, E. Jaiani, A. Azaladze, M. Tediashvili/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 42-47. – rus.; res.: geo., eng., rus.
Immunotherapy is considered as one of the promising treatment strategies for patients with malignant tumors. In the presented work antitumor effects of E.coli thermo- and phagelysates on Ehrlich carcinoma growth in mice have been studied. The treatment efficacy was evaluated by estimation of dynamic changes in volume of cancer tissue and by the percentage of cancer growth inhibition. Semi-empirical mathematical model, describing cancer volume variations in relation to time, passed after Ehrlich carcinoma inoculation was elaborated. It was shown that at the early stage of cancer growth both tested bacterial preparations significantly inhibit cancer growth. Antitumor treatment effects were better expressed in animal studies using bacterial pagelysates in comparison to that of thermolysates. After cessation of administration of bacterial preparations a prolonged antitumor activity in animals treated with E. coli phagelysates was demonstrated.

Auth.

9.C13.79. The aspects of pricing policy in Azerbaijan pharmaceutical sector. /K. Jalilova, K. Alieva/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 48-53. – rus.; res.: geo., eng., rus.
The effect of macro-, middle- and microeconomic factors on price formation in Azerbaijan pharmaceutical market has been studied. Worldwide pharmaceutical leaders have the goals to become leader on the pharmaceutical market of Azerbaijan and maximize their market share. Non-leaders pharmaceutical companies use different strategies of price formation: prime cost plus markup, or price formation on the base of current prices. It was revealed that domestic pharmaceutical market has high demand elasticity. Future market development is related to stimulation of product development, and hard penetration to the market through realization of price formation strategy. Non-state pharmaceutical organizations to achieve the purpose of survive in conditions of high competition should take in to account the factor perceptions of assortment by customers.

Auth.

9.C13.80. Postsynaptic reactions of cerebral cortex neurons activated by nociceptive afferents during stimulation of the Raphe nuclei. /T. Labakhua, T. Janashia, G. Gedevanishvili, L. Jokhadze, T. Tkemaladze, E. Abzianidze/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 54-60. – rus.; res.: geo., eng., rus.

On cats, we studied the influence of stimulation of the Raphe nuclei (RN) on postsynaptic processes evoked in neurons of the somatosensory cortex by stimulation of nociceptive (intensive stimulation of the tooth pulp) and nonnociceptive (moderate stimulation of the ventroposteromedial – VPM- nucleus of the thalamus) afferent inputs. 6 cells, selectively excited by stimulation of nocciceptors and 9 cells, activated by both the above nociceptive and nonnociceptive influences (nociceptive and convergent neurons, respectively) were recorded intracellular. In neurons of both groups, responses to nociceptive stimulation (of sufficient intensity) looked like an EPSP-spike-IPSP (the letter of significant duration, up to 200-300 ms) complex. Conditioning stimulation of the RN, which preceded test stimulus applied to the tooth pulp or VPM nucleus by 100 to 800 ms, induced a 40-60% decrease of the IPSP amplitude only, while the maximum effect in both cases was noted within intervals of 300-800 ms between conditioning and test stimulus. During stimulation of the RN, serotonin released via receptor and second messengers provides the postsynaptic modulation of GABAergic system, decreasing the IPSP amplitude, which occurs after stimulation of both the tooth pulp and VPM thalamic nucleus. This process may be realized through either pre- or postsynaptic mechanisms.

Auth.

9.C13.81. Antibiotic resistance of nosocomial strains of staphylococcus spp. /D. Chikviladze, D. Metreveli, Kh. Gachechiladze, M. Mikeladze/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 60-63. – rus.; res.: geo., eng., rus.

115 clinical strains of Staphylococcus spp. were isolated from patients with wound infections hospitalized in Tbilisi surgical clinics in 2005-2010 and investigated. Detection of sensitivity/resistance to several groups of antibiotics was detected by serial dilution method on agar media. During the period of testing, a 2-fold increase in 2 meticillin-resistant St. aureus and a 3-fold increase of meticillin-resistant St. epidermidis strains were detected. An important increase of resistant Staphylococcus strains was identified toward aminoglycosids, macrolides, lincosamides, tetracyclines and fluoroquinolones. The investigated strains of staphylococci were characterized of 100% sensitivity to vancomycin and linezolid.

Auth.

9.C13.82. Irradiation doses of population in mountainous Adjara region of Georgia. /I. Kugoti, N. Vepkhvadze, N. Kiladze/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 64-68. – rus.; res.: geo., eng., rus.

Radionuclide content of food and water in high mountainous regions of Georgia - Adjara (Keda, Shuakhevi, Khulo) has been studied; internal and total irradiation doses for the population have been defined and preventive measures for its reduction have been proposed. Internal irradiation dose for the population caused by K-40 was identified as 0,63 mSv/y, total irradiation dose – 1,73 mSv/y that slightly exceeds acceptable levels; due to this it seems desirable to provide some measures with the aim to reduce the radiation dose of the population and conduct further observation of the radiation situation. Measures intended to reduce irradiation doses include: provision of population with less radioactive water sources, the regulation of medical radiation procedures (mostly - X-ray diagnostic procedures), the rational use of fertilizers with ^{40}K content, construction of buildings on the territories with the lowest values of gamma radiation and radon release from soil, use of materials with low content of natural radioactive nuclides for building construction, provision of premises with effective ventilation and radiation monitoring of buildings at any stages of construction, reconstruction or repair.

Auth.

9.C13.83. The chronic action of memantine on release of glutamate and GABA in the hippocampus during spatial alternation testing. /M. Dashniani, M. Burjanadze, T. Naneishvili, L. Kruashvili, M. Sephashvili/. Georgian Medical News (GMN). – 2012. – #1(202). – pp. 68-75. – rus.; res.: geo., eng., rus.

These experiments examined the release of glutamate (Glu) and GABA in the hippocampus of rats treated with memantine (2.5mg/kg, for four weeks) or saline prior to, during, and after spontaneous alternation test. Glu and GABA release during the 10 min samples taken at the time of the behavioral testing of animals treated with memantine or saline were not different from those seen immediately before and after testing. Similarly, the alternation scores were not significantly different between groups. We found an increase in KCl-stimulated glutamate and GABA release in the hippocampus of memantine-treated rats compared to the saline-treated rata. This difference in KCl response between the memantine-treated and control rats was statistically significant (p<0,05). Our evaluation of memantine reveals that changes in KCl-stimulated Glu and GABA release after chronic memantine treatment do not affect the working memory in adult rats assessed in the spontaneous alternation task.

Auth.

D. INTERSECTORAL PROBLEMS

D1. Organization and Management

9.D1.1. New public management (NPM) - a constituent part of administrative science. /K. Kutateladze, M. Maghradze/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 38-41. – geo.; res.: geo., eng., rus.
The development of administrative science is an important step towards implementing successful administrative reforms. The necessity of these reforms for the development of a democratic and law-governed state is vital for the country's administration. The article deals with some issues of new public management that are essential importance in forming a perfect public administration.

Auth.

9.D1.2. On some questions of occupational safety and health in Georgia. /A. Bezhanishvili, K. Nanobashvili/. Mining Journal. 2011. - #2(27). – pp. 102-105. - geo.; abs.: geo., eng., rus.
The article deals with the Georgian occupational safety and health legislation, activities of various partners and some problems of OSH. The data concerning the economic activity of labor in Georgia and the percentage of the employed by the sectors of economy are given.

Auth.

D2. Environmental Protection. Ecology

9.D2.1. Principles of operational evaluation of solid wastes in Georgia by the example of Rustavi metallurgical works. /A. Sarukhanishvili, M. Gugeshidze/. Mining Journal. – 2011. - #1(26). – pp. 105-108. – geo.; abs.: geo., rus., eng.
By the example of Rustavi metallurgical works' slag dump, some aspects of attribution to the man-caused raw material and the significance of carrying out works for operational evaluation before taking a decision concerning slag reclamation are considered. Expressed is an opinion that decision-making without a detailed study of physical, chemical and technological properties may lead to definite unwanted consequences. The content of the first two stages of operational evaluation of the proposed waste is proposed.

Auth.

9.D2.2. Study of iron ions sorption from quarry waters. /N. Chkhubianishvili, Ts. Kurtskhalia, Z. Simonia, M. Kavtaradze/. Mining Journal. – 2011. - #1(26). – pp. 109-111. – geo.; abs.: geo., rus., eng.
For purification and utilization of quarry waters by electrodialysis the preliminary treatment from iron ions is necessary. For this purpose, various sorbents were studied, out of which calcite is selected. The optimum parameters for a selective treatment of quarry waters are determined.

Auth.

9.D2.3. Calculation of safe distance given the pressure in the shock front. /N. Bochorishvili, A. Neverov/. Mining Journal. – 2011. - #1(26). – pp. 112-112. – geo.; abs.: geo., rus., eng.
The paper discusses security issues during explosion of a charge in the air, on the ground surface or in mines. The requirements of safety regulations on the calculation of safe distances, taking into account the excess pressure in the shock front are given. The dependences presented in the paper make it possible to check the correctness of calculations and, where necessary, adjust the safe distance and reduce thus possible injuries.

Auth.

9.D2.4. On the problems of environmental safety and optimization of an environmental management system. /N. Poporadze, D. Abzianidze, M. Dvali/. Transactions of Technical University of Georgia. – 2010. – #2(476). – pp. 59-63. – geo.; res.: geo., eng., rus.
This work is an example of applying mathematical methods for solving practical tasks associated with the environmental safety system The article focuses on the role of mathematical methods on the accuracy of which the environmental system' level of safety is dependent.

Auth.

9.D2.5. Efficiency of ecological monitoring in case the River Mtkvari is polluted with heavy metals. /N. Poporadze, D. Abzianidze, M. Dvali, T. Meskhishvili/. Transactions of Technical University of Georgia. – 2010. – #3(477). – pp. 17-21. – geo.; res.: geo., eng., rus.

The pollution of the River Mtkvari with heavy metals in the Gachiani-Rustavi-Red Bridge section, its degree and causes are discussed. The data obtained as a result of annual monitoring are statistically processed. The quarterly, seasonal and background concentrations have been computed for identifying the unwanted period of any controlled year.

Auth.

9.D2.6. Environmentally safe production trends and strategy. /O. Keshelashvili, Sh. Veshapidze, N. Mirotadze/. Agrarian-economic Science and Technologies. 2012. - #1. – pp. 20-33. - geo.; abs.: geo., eng.
In Georgia, as well as in the whole world, production of environmentally safe products (eco-, organic or bio-products is a burning issue. Described are examples of development trends and strategy of organic production. In the context of this problem, the meaning of bio-resources and the sources of their formation, as well as the organic production development trends and characteristics of the relevant market formation in the world and Georgia are considered. The article outlines the necessity of convincing the general public in the importance of using wholesome food products, as well as of promoting organic farming and production. The priority strategies in organic farming should be soil fertility improvement, application of organic fertilizers, biological crop protection techniques and integrated methods of genetic engineering achievements.

Auth.

9.D2.7. Anthropogenic impacts and global natural processes. /L. Mzarelua, I. Lekishvili/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 20-23. – geo.; abs.: eng., rus.
This article relates to one of the most urgent problems - global natural processes associated with harmful human activities. The man's impacts of the environment endangering the flora and fauna are discussed and the respective examples are give, such, for example, as deforestation, air and water pollution with harmful substances leading to ozone depletion, etc. The depletion of the ozone layer results, in turn, in solar radiation increase and global warming.

Auth.

9.D2.8. Establishment of the application areas of novel high efficient fire-extinguishing powders and optimal conditions of fire suppression. /L. Gurchumelia, F. Bezhanov, V. Tkemaladze, N. Sarjveladze, L. Tkemaladze/. Mining Journal. 2011. - #2(27). – pp. 98-101. - geo.; abs.: geo., eng., rus.
In this article, the ways for production of new highly efficient fire-extinguishing powders based on mineral raw materials are described and their application areas and optimal conditions of fire suppression established. The proposed method of producing such composite powders differs essentially from those for producing imported powders of serial production. It consists in a mechanical mix of raw material and does not require additional chemical processing and modification with expensive halogen-inclusive additives. Therefore, these composite powders are cheaper than the imported analogues. The received composite powders will be used for extinguishing all classes of fires, both in underground and aboveground structures. The article lists a number of activities in order to establish the most cost-effective fire-fighting conditions.

Auth.

9.D2.9. Photochemical smog in Tbilisi. /A. Amiranashvili, T. Bliadze, V. Chikhladze/. 2012. - pp. 160. - geo.; abs.: geo., eng., rus.
In the book the results of studies of photochemical smog and its effect on the health of people in Tbilisi that were conducted in 2009-2012 within the framework of the project GNSF/ST/5-437 are presented. Monitoring of smog-forming and its associated atmospheric parameters was conducted both in the regime of stationary measurements on two fixed bases of observation and in the episodic regime of mobile measurements on 20 points in different districts of city (content in air of ozone, sub-micron aerosols, radon, light ions; solar radiation intensity, visibility, cloudiness, temperature, humidity, wind, pressure; the gamma-radiation of soil; intensity of galactic cosmic rays). The detailed analysis of the connections between the investigated parameters is given; the conditions for the formation of photochemical smog are determined; the special features of the effects of radionuclide emission in the formation of secondary aerosols under the conditions of the cities are revealed, which are described as the Tbilisi type of smog; laboratory experiments on the development of the methods of action on smog ozone are carried out; the effects of the action of the components of photochemical smog (ozone, aerosols, etc..) and other atmospheric parameters on the health of people are determined; recommendations regarding the softening of the negative action of smog on the population of city are proposed, etc. It is intended for the scientific workers and engineers, lecturers, students, government and nongovernmental organizations, connected in their activity with the problems of atmospheric physics, ecology, public health, etc.

Auth.

D3. Statistics

9.D3.1. Poverty in Georgia: statistics and reality (comparative analysis). /I. Makalatia/. Economics and Business. - 2011. - #3. – pp. 123-130. – geo.; abs.: eng.
The article considers the dynamics of statistical indicators showing the level of poverty. The article presents the changes of living wage according to different years and explains the reason for poverty reduction. Living wage of an average consumer is compared with the household income per capita and appropriate conclusions are made. Development of poverty level in urban and rural areas is also discussed in the article. While reviewing the rate of unemployment the error of this indicator revealed. As a result of the research, conducted in the article, modern picture of poverty has revealed and main ways for reducing poverty have been suggested.

Auth.

9.D3.2. The short analysis and forecasts of dynamics of growth of the world prices for gold. /G. Tabatadze, N. Poporadze, Kh. Gachechiladze, B. Kakhadze/. Mining Journal. 2011. - #2(27). – pp. 92-94. - geo.; abs.: geo., eng., rus.
Gold, as precious metal, its role and value in a national economy is considered in the article; reserve stocks of gold and their movement in some countries are studied and analyzed; the tendency of growth of these reserves is predicted; dynamics of change of the prices for gold and the tendency of their growth during last period taking into account current world political and economic processes is given.

Auth.

9.D3.3. On the accidents and occupational diseases at enterprises of Georgia in 1990-2007. /A. Bezhanishvili, A. Grdzelidze, N. Memarnishvili/. Mining Journal. 2011. - #2(27). – pp. 105-107. - geo.; abs.: geo., eng., rus.
An analysis of accidents and occupational diseases at Georgian in 1990-2007 is shown; the problems and factors provoking accidents and occupational diseases are considered; aspects of occupational diseases and their distribution according to the age and length of service of the employed are shown; recommendations on proper management of the labor safety system is given, which is an important factor for reducing the rate of accidents and occupational diseases at Georgian enterprises.

Auth.

D4. Other Intersectoral Problems

9.D4.1. Mathematical calculation of the role of attendant gradients in MRI. / K. Kotetishvili, K. Kapanadze, I. Kalandadze, Sh. Dekanosidze/. Nano Studies. - 2011. - #4. – pp. 41-42. - eng.; abs.: geo., eng.
Magnetic Resonance Imaging (MRI) is a popular and effective diagnostic method in the modern medicine. In MRI different kinds of magnetic fields are utilized, although mostly the sick fields are considered. In spite of some advantages, that possess the sick magnetic fields in MRI, there may arise some problems being untypical for the ordinary and strong magnetic fields in MRI. Especially, some differences appear in inhomogeneous magnetic fields due to the presence of attendant gradients being transverse relative to the main field. In this paper the mathematical formulation of the relation between the performed object and the data received by MRI methods is considered. It is noted as well that the relaxation processes of a tissue may affect on the described phenomena if the period of the gradient growth equals or exceeds the tissue relaxation times.

Auth.

9.D4.2. Onion-like carbon in microwave applications. /P. Kuzhir, A. Paddubskaya, S. Maksimenko, O. Shenderova/. Nano Studies. - 2011. - #4. – pp. 103-112. - eng.; abs.: geo., eng.
A novel lightweight onion-like carbon (OLC)-based polymer composite with high electromagnetic (EM) shielding ability in the frequency range of 26 − 37 GHz is presented. OLC have been produced via the large-scale production technology based on the annealing of detonation nanodiamond under vacuum conditions (or in inert atmosphere). It was proved experimentally that OLC EM shielding capacity can be optimized by varying the nanocarbon cluster size and nanodiamond annealing temperature so that effective EM coatings can be produced.

Auth.

9.D4.3. Theoretical bases for computer simulation of river floods. /R. Kiladze/. Bulletin of Georgian National Academy of Sciences. – 2011. – v.5. - #1. – pp. 81-83. – eng.; abs.: eng., geo.
High waters and floods are considered as an unsteady motion of water in a river, as described by the non-linear differential Saint Venant. A new method for the numerical solution of these equations based on stable difference schemes and the method of matrix "runs", which permits broader possibilities of coverage under

complex initial and boundary conditions that unavoidably occur in practice is proposed. This method is proposed for computer simulation of river floods.

<div align="right">Auth.</div>

9.D4.4. Technology of production articles from explosion-proof alloys. /G.Tsirekidze, A. Gordeziani, G. Gordeziani/. Air Transport. - 2011. - #1(6). – pp. 48-55. – rus.; abs.: eng., geo.
The technology of production of explosion-proof alloys and recommendations to widen the sphere of application of articles and tools made from these alloys are presented with the aim of using them under potentially explosive conditions, which might exist in aviation, petrochemical, gas production enterprises, gas transporting organizations, etc.

<div align="right">Auth.</div>

9.D4.5. The possibilities of making humates from the coal industry waste. /V. Totibadze, J. Kakulia, Sh. Malashkhia, L. Kartvelishvili, N. Lomidze, N. Chubinidze, T. Guruli/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 39-42. – geo.; abs.: eng., rus.
In the article, the possibility of making necessary for agriculture fertilizers and plant growth-promoting agents from the coal industry waste by novel chemical and biological technologies is considered. The results of these researches aimed at producing ballastless sodium humates by alkaline extraction of the carbon of the Tkibuli coal dressing factory waste are considered. The parameters providing for a high degree of extraction of humates are selected. The most effective parameters of the process are established: carbon and alkaline correlation, dimension of particles, the sodium alkali concentration, etc. 36% humus is produced from the coal waste. The researches were conducted under laboratorial conditions, the results of which enable to conclude on the expediency of using the Tkibuli coal waste for producing humates.

<div align="right">Auth.</div>

9.D4.6. Simulation of forming a polymer film by a blown extrusion technique: computer experiment. /A. Tvalchrelidze, Sh. Sagrishvili/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 68-72. – geo.; abs.: eng., rus.
The article gives the results of simulation of a sleeve-type film forming process on blowing. The effect of internal pressure and drawing speed on the kinetics of the strained state of the blown film is studied.

<div align="right">Auth.</div>

9.D4.7. The permanent support construction simulator. /T. Churadze, J. Kilasonia, V. Tsertsvadze/. Metsniereba da technologiebi (Science and Technologies). – 2011. - #1-3. – pp. 84-87. – geo.; abs.: eng., rus.
The article considers a multi-stage and multi-step simulator applying a method of final elements and providing for the stages of tunnel engineering under any condition. The simulator also provides for deformations developed in the "support-massif" system and the resultant change of the deformed state of the system in time and space.

<div align="right">Auth.</div>