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List of Publications Reflected in the Present Issue

1. **Bulletin of the Georgian National Academy of Sciences**
2. **Proceedings of the Georgian National Academy of Sciences – Chemical Series**
3. **Georgian Engineering News (GEN)**
4. **Appendix to the Journal Moambe Newsletter Works of the Georgian Academy of Educational Sciences, 10**
5. **Hydro Engineering**
6. **Georgian Oil and Gas**
7. **Building**
8. **Proceedings, Automated Control Systems**
9. **Intellectual**
10. **I. Lomouri Institute of Agriculture, Scientific Works, XXXXV, 2007.**
11. **Problems of Metallurgy, Welding and Materials Science**
12. **Transport and Machinebuilding**
13. **Georgian Chemical Journal**
14. **Georgian Mining Journal**
15. **Economics and Business**
16. **Aghmashenebeli**
17. **R. Gakhokidze. Guarantee for Rich Harvest (Monograph)**

BULLETIN OF THE GEORGIAN NATIONAL ACADEMY OF SCIENCES

ISSN 0132-1447

Bulletin of the Georgian National Academy of Sciences contains articles (mathematics and physical sciences, engineering and applied sciences, biological sciences, agricultural sciences, medical sciences, humanitarian and social sciences) in the English language, annotations - in English and Georgian languages, quarterly publication; address: 52 Rustaveli Ave., Tbilisi.

<http://www.science.org.ge>

PROCEEDINGS OF THE GEORGIAN NATIONAL ACADEMY OF SCIENCES – CHEMICAL SERIES

ISSN 0132-6074

Bulletin of the Georgian National Academy of Sciences. Articles and abstracts in the Russian, Georgian and English languages, quarterly publication; address: 5 Jikia St., Tbilisi.

GEORGIAN ENGINEERING NEWS (GEN)

ISSN 0132-6074

International Engineering Academy, Georgian Engineering Academy, published quarterly, in Russian and English languages; address: 47 Kostava St., Tbilisi.

<http://www.mmc.net.ge/gen>

APPENDIX TO THE JOURNAL MOAMBE OF THE GEORGIAN ACADEMY OF EDUCATIONAL SCIENCES, PROCEEDINGS, 10

ISSN 1512-0287

Georgian Academy of Educational Sciences, Technical University of Georgia. Articles in Georgian, Russian and English languages, annotations in Georgian, Russian and English languages; address: 1, Zandukeli St., Tbilisi.

HYDRO ENGINEERING

ISSN 1512 – 410X

Technical University of Georgia, quarterly publication, articles in Georgia, Russian and English languages, abstracts in Georgian, Russian and English languages; address: 77 Kostava Street, Tbilisi.

GEORGIAN OIL AND GAS

ISSN 1512-0457

Technical University of Georgia, Scientific-Technical Society of Oil and Gas, articles in Georgian, Russian languages, abstracts in Georgian, Russian and English languages; address: 77, Kostava St., Tbilisi

BUILDING

ISSN 1512-3936

Technical University of Georgia, Georgian Federation of Builders; Scientific-Technical Journal, articles in Georgian and Russian languages, abstracts in Georgian, Russian and English languages; address: 68, Kostava Street, Tbilisi.

PROCEEDINGS, AUTOMATED CONTROL SYSTEMS

ISSN 1512-3979

Technical University of Georgia, articles and abstracts in Russian, Georgian, and English languages; address: 68, Kostava St., Tbilisi.

INTELLECTUAL

ISSN 1512-2530

Public Academy of Georgian Young Scientists; International Scientific Journal; abstracts in Russian and English languages.

SCIENTIFIC PROCEEDINGS OF I. LOMOURI INSTITUTE OF AGRICULTURE

ISSN 1512-4657

Articles in Georgian language, abstracts in Russian and English languages

PROBLEMS OF METALLURGY, WELDING AND MATERIALS SCIENCE

ISSN 1512-1909

Association of Welders of Georgia, P. Tevzadze Institute of Metallurgy and Materials Science of the Georgian National Academy of Sciences, International Scientific-Technical and Production Journal, published since 2003, quarterly publication, in Russian language, abstracts in Georgian and English languages; address: 2/4 I. Nikoladze Lane, Tbilisi.

TRANSPORT AND MACHINEBUILDING

ISSN 1512-3537

Transport and Machinebuilding, Technical University of Georgia, Faculty of Transport and Machinebuilding, Scientific-Technical Journal, published quarterly, in Georgian and Russian languages, abstracts in Georgian, Russian and English languages.

GEORGIAN CHEMICAL JOURNAL

ISSN 1512-0686

Journal of the Georgian Chemical Society, published since 2001, articles in Georgian, Russian and English languages, annotations in two languages, 3, Chavchavadze Ave., Tbilisi.

MINING JOURNAL

ISSN 1512-407X

Information Scientific-Engineering Analytical Journal, founders and publishers: Technical University of Georgia, G. Tsulukidze Institute of Mining, published since 1998, in Georgian and Russian languages, abstracts in Georgian, Russian and English languages; address: 77 Kostava St. Tbilisi.

ECONOMICS AND BUSINESS

ISSN 987-5789

Tbilisi Iv. Javakhishvili State University, Faculty of Business and Economy, International Abstracted and Reviewed Scientific-Technical Journal, published since January, 2008, bimonthly; address: 1, University St. Tbilisi

AGHMASHENEBELI

ISSN 1512-2581

Tbilisi D. Agmashenebli University, Periodical Scientific Journal, in Georgian and Russian languages, abstracts in Georgian, Russian and English languages.

R. GAKHOKIDZE. GUARANTEE FOR RICH HARVEST (MONOGRAPH)

ISBN 978-99940-17-82-9

Monograph in Georgian language, abstract - in English, Publishing House GCI, 2008, 324 pages.

TOPICAL RUBRICS

A. SOCIAL SCIENCES

- A1. State and Law. Jurisprudence**
- A2. Sociology. Demography**
- A3. Economy**
- A4. Education**
- A5. Informatics**
- A6. Other Social Sciences**

B. NATURAL AND EXACT SCIENCES

- B1. Mathematics. Mechanics. Physics. Cybernetics**
- B2. Chemistry. Biology**
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- B4. Geography. Cartography. Astronomy**
- B5. Other Natural and Exact Sciences**

C. TECHNICAL AND APPLIED SCIENCES. SECTORS OF ECONOMY

- C1. Power Industry**
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- C3. Automatics. Telemechanics. Computing Machinery**
- C4. Mining. Metallurgy. Chemical Sciences**
- C5. Mechanical Engineering. Tool Engineering.**
- C6. Light Industry**
- C7. Food Industry**
- C8. Construction. Architecture**
- C9. Agriculture and Forestry. Fishery**
- C10. Water Economy. Melioration**
- C11. Foreign and Domestic Trade. Tourism**
- C12. Transport**
- C13. Medicine. Healthcare**

D. INTERSECTORAL PROBLEMS

- D1. Organization and Management**
- D2. Nature Protection. Ecology**
- D3. Statistics**
- D4. Other Intersectoral Problems**

A. SOCIAL SCIENCES

A1. State and Law. Jurisprudence

UDC 347.19:343

A1.1. General Reference of Criminal Responsibility of Juridical Person according to Georgian Law. /T. Dolidze/. *Inteleqtuali.* – 2007. - #4. – pp. 95-99. – geo., abs.: geo., rus., eng.
Rules of criminal responsibility of juridical person are considered and are stated those arguments, which are known against this criminal institute.

Auth.

UDC 336.3

A1.2. Some Questions of Reform and Improvement of Bankruptcy Legislation. /L. Shaishmelashvili/. *Inteleqtuali.* – 2007. - #3. – pp. 10-13. – geo., abs.: geo., rus., eng.
This article considers improvements in the Law on Insolvency and reforms of some issues, such as, effectiveness of managers of the insolvency process and the special jurisdiction on insolvency cases. The defects of operating law and the necessity of adoption of the new statute are considered.

Auth.

UDC 343.222

A1.3. Legal Nature of Guilt Exception Circumstance and Excusable Risk as the Guilt Exception Circumstance. /T.Dolidze/. *Inteleqtuali.* – 2007. - #3. – pp. 31-35. – geo., abs.: geo., rus., eng.

In the publication is considered the legal nature of guilt expel circumstance and excusable risk, as a guilt exception circumstance prevailing over law.

Auth.

UDC 002.5/6:340.134

A1.4. Questions of Legal Regulation of Internet-Service in Georgia. /A. Shonia, D. Shonia, O. Shonia, N.Tsomaia/. *Inteleqtuali.* – 2007. - #3. – pp. 60-64. – geo., abs.: geo., rus., eng.

The existing condition in the field of Internet-service in Georgia is considered. The work gives detailed analyses for solving existing problem and presents recommendations.

Auth.

A3. Economy

UDC 662.276

A3.1. On Joining the Azerbaijan State Oil Company (SOCAR) to the Georgian Republic. /M. Gajiev-Shengelia/. *Georgian Oil and Gas.* – 2007 - №21. - pp.129-132, - rus. abs. : eng.

Transit of Azerbaijan oil and gas via territory of Georgia, also import of oilproducts for heating purpose helps to meet needs of the country in the mentioned energoresources, promotes to development of economy and strengthening of defence potential. bibl. 3.

Auth.

UDC 336.71

A3.2. Valuation of Commercial Bank and its Stocks. /N. Giguashvili/. *Proceedings, Automated Control Systems.* - 2007. - #2 (3). – pp. 143-148. – geo., abs.: eng., rus.

In this work are estimated the value of Georgian commercial bank (namely TBC Bank) and its stocks on the basis of Discounted Cash Flow Model. Here are established relations between ROA and ROE of Georgian commercial banks. Is made a forecast of common financial ratios on the basis of linear regression. Are shown the peculiarities of Georgian commercial banks.

Auth.

UDC 061.5:658.6/9

A3.3. Role of Internet in Commercial Operations of a Firm. /P. Tsotskolauri/. *Economics and Business.* – 2008. - #2. – pp. 97-101. – geo., abs.: eng.

The use of information technologies and electronic facilities in commercial activities of a firm has its positive and negative aspects. To reduce the negative situations, the firm must carry out specific preparation work. It is important that the commercial firm defines the use of the web-window according to the business goal and defines the meaning and the structure of the web-window before it decides to use the internet connection for its own goals. Also to defines the information to be displayed. Following all these, the firm must choose the methods of communication with its customers. This is the most important moment because the main means of increasing the income in E-commerce is to lengthen the purchasing process.

Auth.

A4. Education

UDC 378.09:681.51/.54

A4.1. The Study Process in Higher Schools. /T. Sukhiashvili/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 104-113. – geo., abs.: eng., rus.

Building an automated system envisages studying the existing control system and creating an adequate model of its functioning. The article discusses stages of building automated control system of organizing study process in higher schools by object-oriented approach, starting from assigning demands for the system and ending with formation of the mechanisms for their realization.

Auth.

UDC 37.01

A4.2. Research of Service Distribution in Educational Network. /M. Kartvelishvili, O. Kartvelishvili/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 114-119. – eng., abs.: rus., geo.

This article presents the service distribution analysis in network flows of the external traffic of the Georgian Research and Educational Network and its application to the detection of typical and anomalous traffic patterns. As a result of this analysis, the most used services were identified for different parts of the network. Network statistics collection was performed by the software system, that was constructed by optimal interconnection of different Netflow and SNMP protocol components, which gave the opportunity to acquire much more detailed statistical information.

Auth.

A5. Informatics

UDC 519.863/.873

A5.1. The Multicriterial Optimization Problem, Methods and Algorithms of Decision. /M. Salukvadze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 45-51. – eng., geo.abs.: eng.

The general multicriterial optimization problem is presented. The numerical algorithm of the decision-making person's search for the compromise solution of the problem has been studied.

Auth.

UDC 629.7.025:519.863/.873

A5.2. Use of Nonlinear Programming Method for Optimization of the Lower Part of Aircraft Wing Profile. /A. Prangishvili, T. Obgadze, I. Davitashvili/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 22-31. – rus., abs.: eng., geo.

When studying the problems of profile flow around with viscous fluid navier-stokes mathematical model is often used. The respective algorithms developed for this model are so complicated and the errors are so grave that they become unsuitable for the problems of aerodynamics. Therefore, in practice the corresponding calculations are based on semi empirical formulas and relations. We construct the algorithm based on classical experiments and laws of

mechanics. We consider incompressible viscous fluid and then using recalculation formulas, pass over to aerodynamic indices for compressible fluids. The article is based on nonlinear programming method for minimization of efficiency function – integral error consisting of kinematic conditions, boundary conditions and modified function of wing quality when integral laws of conservation of mass and energy for viscous fluids are presented in the form of limitations. In order to demonstrate the new algorithm the problem of flow around of aircraft wing profile is presented. The upper part of aircraft wing is presented with the matrix of coordinates of profile points, while lower part is presented with cubic polynomial crossing the two given points (front and rear edges). The components of the vector field of the required speed are determined as the polynomials of two variables with unknown coefficients. The problem of determination of the lower contour of profile is stated and solved on condition of maximum quality.

Auth.

UDC 519.86:338.46

A5.3. About the General Method of Analyses of the Complicated Massive Service System.

/Z. Mikadze, I. Shurghaia, I. Mikadze/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 32-39. – geo., abs.: eng., rus.

This article deals with the analysis of a complicated system of massive service using one of the methods (offered by Mikadze-Kakubava) of math modeling.

Auth.

UDC 681.3.06

A5.4. VN-Net. /R. Samkharadze/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 40-45. – geo., abs.: eng., rus.

The new approach to visualization of change of conditions of processes and planning of loading of processors is offered. The new type of network Petri - a VN-network which allows visualization the processes proceeding in a computer at work of operational system is developed. On the basis of a VN-network models and algorithms of visualization of change of conditions of processes and planning of loading of processors, and also corresponding educational program simulators are developed.

Auth.

UDC 517.977.52(158)

A5.5. The Task of Optimal Control for the Soft Landing to the Moon. /I. Mosashvili, N. Mchedlishvili/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 46-52. – geo., abs.: eng., rus.

A fuel optimization task in work for a soft landing on the Moon, has been completed. The control is determined with Pontryagin's minimum principle. The mathematical model of system included Maximum Principle with transversality conditions and the boundary conditions to find the optimal solution. Computer designing of optimal system for the soft landing on the moon is realized with use of system Matlab. A detailed investigation of the constrained trajectory optimization of the Moon landing problem has been presented. The resulting trajectories were analyzed based on state and control histories, effect on fuel and usages, operational feasibility, etc. First, analysis was performed considering only two-dimensional translational motion. The baseline trajectory, which represented a minimally constrained landing trajectory, was found to be operationally infeasible. Operational constraints were imposed to obtain a more viable solution. A parametric study was performed varying the perilune height of the descent orbit and an impulse-like burn was observed in cases that targeted a positive descent orbit perilune height. The final vehicle attitude and landing approach of the vehicle were found to be very shallow (horizontal), which motivated the inclusion of rotational kinematics in the equations of motion in order to constrain the attitude characteristics of the vehicle. Attitude kinematics were included in the equations of motion and a constant scaling of the angular acceleration command appended to the cost function in order to minimize the rotational motion of the vehicle during the flight. The

vehicle was constrained to land at a near vertical attitude (within 0.5 *deg*) with zero angular rates. Fuel penalty metrics were obtained for both the terminal attitude and attitude rate constraints, as well as further constraining the throttle to maximum thrust. It was found that the fuel usage increased by further limiting the throttle bound to maximum thrust. During the final portion of the trajectory, the final throttle profile was observed to decrease to a specified lower bound as the vehicle rotated to a vertical orientation, which suggested the optimum was a minimal, or possibly zero, engine thrust during this interval. To investigate this, and to provide for navigational error margin, a terminal vertical descent phase was included in the trajectory.

Auth.

UDC 519.863/.873

A5.6. Multicriterial Decision Making Task Formalization and Computer Support in the Management. /T. Macharadze. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 53-59. – geo., abs.: eng., rus.

The task of multicriterial decision making in the management is formalized. It considers decision making model construction, based on linear convolution function, integrates the particular criteria and its realization as a decision making support subsystem.

Auth.

UDC 681.3.06

A5.7. Algorithm for Combined Processing of Scanned Information. /I. Kartvelishvili, A. Djlantashvili/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 60-64. – geo., abs.: eng., rus.

The thesis presents the algorithm for combined processing of scanned information. Each algorithmic block is designed to carry out certain function for automatic identification. Each algorithmic block is presented in such a way that it makes possible and simplifies the programming process.

Auth.

UDC 681.3.06

A5.8. Object-Role Modeling for the Automated Construction of Structures of Databases. /G. Surguladze, N. Topuria, N. Motsonelidze/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 65-72. – geo., abs.: eng., rus.

Questions of automation of the processes of design of conceptual scheme for the distributed problem area and construction of corresponding logic structure of a database on the basis of object-role modeling and visual programming are stated. Results are adapted for the account, statistical processing and monitoring of hydro resources in the rivers of Georgia on the basis of information computer system. Program realization of system is executed on the platform MsSQL Server and ADO.NET.

Auth.

UDC 681.51/.54

A5.9. Perfection of System of Organizational Management on the Basis of BI-Technology. /M. Giutashvili/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 73-78. – geo., abs.: eng., rus.

In the article is presented perfection of enterprise information systems on the basis of BI-business Intelligence technology. Software tools for information processing and making quick and exact decisions in the enterprise systems are considered. On an example process of projects processing in the department of organizational management, selection and management of intelligence resources of the company, with use of automated mechanisms of gathering of information, the analysis and decision-making is shown. The basic stages of realization of organizational management automated system by means of modern informational technologies are considered.

Auth.

UDC 002.6:681.3.06

A5.10. Converting Information for Data Warehouse. /L. Petriashvili, M. Kashibadze, M. Okhanashvili/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 79-84. – geo., abs.: eng., rus.

Converting information for data warehouse of the big corporate systems is a complex process. It is characterized with high labour input. The structure of the process of converting information for data warehouse is offered. Problem of the dependence between processes of converting and decision-support are researched.

Auth.

UDC 519.22:534.2

A5.11. On the One Mathematical Model of the Sound Wave Propagation Theory. /T. Chilachava/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 85-93. – rus., abs.: eng., geo

Questions connected with the existence and singularity of the solution of boundary value problem for Helmholtz equation with variable coefficients are represented with the significant interest in the theory of differential equations with partial derivatives. In the previous articles a sound field created by point-like harmonic sources in a three-dimensional nonhomogeneous wave conductor with a ruffled surface and an uneven bottom was found by an asymptotic method of a small parameter. It is confirmed that the sound field perturbation is represented by the continual sum of diverge secondary waves, the source of which is the nonhomogeneity of medium and the roughness of boundaries. Besides the wave amplitudes are proportional to the small parameter and are depended on the parameters of all modes (normal wave).

Auth.

UDC 62-192:681.5.08

A5.12. Interconnecting Measuring Facility, as an Effective Way of Increase of Accuracy and Reliability. /I. Mikadze, Sh. Nachkebia, T. Kaishauri, N. Mikiashvili/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 94-98. – geo., abs.: eng., rus.

In automatic computer control technical devices in case of random failure the common constant reservation with substitution and rehabilitation is widely spread. The advantage of reservation method is more completely shown when measuring devices are supplied with analogue output. They are effectively applied in local subsystems of complex automatic systems. In such subsystems as the redundant information processing unit some devices are often used for realizing the function of rehabilitation. Significant increase of reliability is achieved in case when in the algorithm of redundant information processing, signal comparison logical operation of different measuring units is introduced. In the paper. A model of reliability for parallel – reserved systems with substitution and rehabilitation without significant limitations in the modes of failure and rehabilitation distribution rules is investigated.

Auth.

UDC 621.311.177

A5.13. Questions of Transportation and Processing of the Information for Management of the Power System. /I. Modebadze, G. Murdjikneli, N. Modebadze/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 99-103. – geo., abs.: eng., rus.

The article covers information collection, integration, transmission and processing issues for ensuring energy system remote management. Also, the need of necessary information for electrical energy system's efficient management is considered and information preciseness and high quality delivery to the final destination is demonstrated, i.e. mistakes should be completely avoided. For raising reliability of the system, information transfer and processing alternative ways by means of fiber optical and computer systems application are considered.

Auth.

UDC 301.18:519.22

A5.14. Modeling Social Systems. /B. Meparishvili, G. Janelidze, T. Meparishvili/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 104-113. – eng., abs.: geo., rus.

This paper is considering the new concept for a formal description of the society complexity with respect to the viewpoint of modeling the social behavior that is conditioned by the existence of a human being as of a nonlinear and fuzzy factor, respectively with very high degree of freedom of behavior. The state of human society as a system is described with the different degree of dissatisfaction or satisfaction with the social, political and economical rules. Originality of this work is in the description of society in a form of the neural graph with synaptic connections between them, where every interaction between any two social clusters forms the new united cluster, provokes redistribution of synergy-entropy, its balance and fitness. Behavioral diversity of the society is conditioned by social homeostasis and heterostasis. In the given context, the criterion of society security is associated with stability, and in biological viewpoint with the idea of homeostasis or fitness-function.

Auth.

UDC 519.674

A5.15. On Graph Modeling, Extension and Transformation of Structured Informational Relations. /V. Nikolaishvili, D. Kapanadze, T. Zhvania, M. Kiknadze/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 154-159. – geo., abs.: eng., rus.

Visual modeling of informational relations and logical reasoning by using graph of mapping is considered. Possibility of graph representation of the structured information by reducing to the extension and transformation of connections among graph components of some concrete mapping is stated.

Auth.

UDC 061.68

A5.16. Main Functions and Characteristics of QoS in Computer Networks. /L. Lobzhanidze, M. Tevdoradze/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 160-163 – rus., abs.: eng., geo.

Is described the mechanism of the Quality of Service (QoS). It is a classified network ability to provide the different levels of service of data transfer by categories. Are described and characterized different functions of QoS and related preferences and possibilities. It is shown the realization of the algorithm “token bucket” for mechanism of traffic shaping. Is shown the importance of management of resources, is described the main characteristics of the realization network connection: delay, packet loss, packet jitter, load of network, bandwidth, and control of intensity of traffic.

Auth.

B. NATURAL AND EXACT SCIENCES

B1. Mathematics. Mechanics. Physics. Cybernetics

UDC 627.841

B1.1. Establishment of the Optimum Law of Change of Thickness of a Circular Cylindrical Gas Main. /N. Pailodze, G. Kipiani/. Hydro Engineering. - 2007. - №2(2). - pp. 75-80. – geo. abs.: geo., rus., eng.

In the work the establishment of such law of change of thickness of a gas main which provides simultaneous transition of a design (environment) from an elastic condition in plastic is considered. It is meant, that the material is isotropic and has various characteristics concerning deformation of compression and a stretching.

Auth.

UDC 05.13.16

B1.2. Graphical-Analytical Method for Construction of Revolving Surfaces Normal and Tangent. / M. Demetrashvili, M. Dinuashvili/. Georgian Oil and Gas. - 2007. - №21. - pp. 148-152. – geo., abs. : geo., rus., eng.

Three tasks of graphical construction of normal and tangent on the revolving surfaces are considered in the article. Two of them are revolving surfaces with elliptic points: flattened ellipsoid and elongated one. One of them is a surface with hyperbolic points: one-sheet hyperboloid. To determine normal and tangent at any point of the surface, a sphere tangent to this surface, should be constructed and the tangency of sphere and the surface defines the midline and the center of the sphere. The tangent sphere and the surface have equal radius of curvature at the tangent point and general normal passing the tangent sphere center. The perpendicular line of the normal at the given point will be the surface tangent. In parallel with the graphical construction the mathematical interpretation is presented. 3 il., bibl 2.

Auth.

UDC 517.911/958

B1.3. General Solutions of Linear Matrix Canonical Second Order Differential Equations with Variable Coefficients. /G. Kharatishvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 17-22. – eng., abs.: eng., geo.

This article contains the formulae of general solutions for particular classes of nonhomogeneous ordinary linear second order matrix differential equations with variable coefficients.

Auth.

UDC 515.174.2/3

B1.4. Holomorphic Structures in Seifert Fibrations. /G. Khimshiashvili, R. Wolak/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 23-26. – eng., abs.: eng., geo.

We show that each seifert fibration of an orientable closed three-dimensional manifold has an intrinsic complex structure induced from the loop space of manifold. It is also shown that the natural mapping from the leaf space of Seifert fibration to the loop space of manifold is meromorphic.

Auth.

UDC 519.624

B1.5. On Some Boundary Value Problems with Conditions at Infinity for Nonlinear Differential Systems. /I. Kiguradze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 27-33. – eng., abs.: eng., geo.

For nonlinear differential systems, the boundary value problems are investigated on infinite intervals with conditions at infinity. Optimal, in a certain sense, conditions are found, guaranteeing, respectively, the solvability and unique solvability of these problems, as well as conditional stability of their solutions.

Auth.

UDC 517.956.225

B1.6. On a Generalization of Calderon-Zygmund's Theorem in Weighted Lebesgue Spaces with Variable Exponent. /V. Kokilashvili, S. Samko/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 34-39. – eng., abs.: eng., geo.

The paper is devoted to the study of behaviour of the solutions of Poisson equation when the right side belongs to the variable Lebesgue space with weights. The obtained results generalize the well-known Calderon-Zygmund theorem.

Auth.

UDC 531.754/.758

B1.7. On the Wolverton-Wagner Estimate of a Distribution Density. /E. Nadaraya, P. Babilua/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 40-44. – eng., abs.: eng., geo.

The result of the work consists mainly in obtaining the limit distribution of an integral quadratic deviation of the Wolverton-Wagner nonparametric estimate of a multidimensional distribution density.

Auth.

UDC 517.584/.587

B1.8. On Stable Quaternionic Polynomials. /G. Khimshiashvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3. – pp. 19-21. – eng., abs.: eng., geo.

We present several results on the location and structure of the zero-set of a quaternionic polynomial. Our main result provides an effectively verifiable criterion of stability of such polynomials. We also explain own one can find the number of components of the zero-set having negative real parts.

Auth.

UDC 519.624

B1.9. Numerical Analysis of the Stress Distribution by the Boundary Elements Method in Continuous Body with a Hole. /N. Zirakashvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3. – pp. 22-25. - eng., abs.: eng., geo.

The stress-deformed state of tunnels has been studied. Numerical solutions of the corresponding boundary value problem are obtained by the boundary elements method. The corresponding curves are constructed.

Auth.

UDC 517.938:62-112.6

B1.10. Engineering Methods of Modeling of Oscillation Processes and Rational Design of Mechanical Systems. /R. Adamia/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3. – pp. 42-48. - eng., abs.: eng., geo.

Methodology of optimization synthesis of linear multimass mechanical systems oscillation processes and rational design of structural schemes is offered, allowing to choose rational relationship of machine transmission elastic-mass (inertial and stiffness) parameters ensuring their steady functioning with minimum dynamic coefficient at transition regimes.

Auth.

UDC 531.261

B1.11. Numerical Calculation of Distribution of Induced Charge Density on Planar Confined Surfaces. /V. Bolotov, R. Druzhenko, V. Karazin, J. Lominadze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2. – pp. 47-52. - eng., abs.: eng., geo.

The calculation method of distribution of induced charge density on planar surfaces, including fractal structures of Sierpinski carpet type, is proposed. The calculation scheme is based on the fact that simply connected conducting surface of arbitrary geometry is an equipotential surface.

Auth.

UDC 669.018.2/.8

B1.12. Physico-Mechanical Properties of $\text{Si}_{0,85}\text{Ge}_{0,15}:\text{GaP}$ Alloy. /G. Bokuchava, I. Kurashvili, E. Sanaia, G. Darsavelidze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2. – pp. 53-56. - eng., abs.: eng., geo.

Internal friction and shear modulus temperature and amplitude dependences of $\text{Si}_{0,85}\text{Ge}_{0,15}:\text{GaP}$ alloy were investigated. Relaxation processes of dislocation origin were revealed and their activation characteristics determined. The mechanism of internal friction relaxation processes

was analyzed from the point of view of geometrical and double-kink migration on the screw and 60° dislocations.

Auth.

UDC 517.956

B1.13. Formulae of Extrapolations and Filtrations of Partially Observed Solutions to Quasi-Linear Functional Differential Equations with Random Disturbances. Part V. /G. Sokhadze/. GEN. – 2007. - #4. – pp. 5-9. – rus., abs.: eng.

There are given explicit formulae of filtration of the solution to the differential equation with the random right-hand part by observations of the component. The evolutionary case is considered separately.

Auth.

UDC 519.642.3/4

B1.14. On Fredholm's Integral Equation of the Second Order with the Symmetrical Finite Kernel. /G. Kevanishvili, I. Kevanishvili, I.Tskvitinidze/. GEN. – 2007. - #4. – pp. 27-31. – eng., abs.: rus.

The strict solution of Fredholm's integral equation of the second order with the symmetrical finite kernel, appearing in antenna theory and diffraction of waves, is presented. There is considered a special case when the free term of the equation contains an unknown coefficient, determined from the additional, physically adequate condition.

B2. Chemistry. Biology

UDC 548.735

B2.1. Stereochemical Peculiarity of Zink Denitro-Bis-Izonicotinamide Complex. /T. Turiashvili/. Georgian Oil and Gas. - 2007. - №21. - pp. 133-137. – geo. abs.: geo., rus., eng.

By means of roentgenostructural analysis the stereochemical peculiarity of Zink de-nitro-bis-izonicotinamide complex $[Zn(NO_2)_2(AIHK)_2]$ has been studied. It is stated that this molecule is monodentative. NO_2 groups are in a *trans*-binding situation towards each other, the oxygen atoms are close to each other, the repelling force acts causing the octahedric distortion. 2 il., tab. 1, bibl. 4.

Auth.

UDC 548.735

B2.2. Crystal-Chemical Aspects of the Zink Denitrit-Bis-Picolynamide Coordinative Mixture. /T. Turiashvili/. Georgian Oil and Gas. - 2007. - №21. - pp. 143-147. – geo. abs.: geo., rus., eng.

The crystal chemical aspects of denitro-bis-picolynamide coordinate mixture has been studied up by means of roentgen structural analysis method. $[Zn(NO_2)_2(AIK)_2]$ Zink atom is placed in the center of symmetry and has a distorted octahedral coordination. *AIK* ligand atom is coordinated both by carboxyl group oxygen and heterocyclic nitrogen, the organic ligand is bidentative. 2 il., tab. 1, bibl. 4.

Auth.

UDC 549.67

B2.3. Similarity of Zeolite Micropore Structures. /V. Tsitsishvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 52-56. – eng., abs.: eng., geo.

Similarity indexes for six loop configurations of zeolitic T-atoms are calculated on the basis of n-dimensional vectors with the procedure of normalization taking into account the unitary self-similarity of each configuration as well as the possibility of "sliding" for the low-dimensional vectors that topologically is considered as an addition of apexes not connected with the graphs of

loop configuration. Compliancy of loop configurations and similarly of zeolite structures characterized by two loop configurations are considered in the frame of the proposed approach.

Auth.

UDC 678.745.842

B2.4. Bends in Satellite DNA. /T. Beridze, I. Pipia/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 76-80. – eng., abs.: eng., geo.

The dependence of the mobility of three different stDNA oligomers (*Citrus limon*, *Poncirus trifoliata* and *Mus musculus*) on temperature in PAAG has been investigated. The dependence of mouse stDNA dimer's Kfactor on temperature has chair-like form. First it decreases in 5-25°C interval, reaches a plateau at the 25-35°C interval, and finally decreases at 45°C. The monomers of lemon and *P. trifoliata* are splitting into two components at 5°C (181 and 186 bp). In the case of *P. trifoliata* they are presented in equal amount; in the case of lemon – the fast moving component is less than half. The same process occurs in the case of mouse stDNA monomer at 45-55°C (234 and 240 bp). The amount of retarded component is about 10%. It was shown for the first time that in certain conditions stDNA molecules in solution may exist simultaneously in two - bent and straight forms.

Auth.

UDC 577.175.82

B2.5. Regulation of NaK-ATPase Activity by Neurotransmitters. /Z. Kometiani/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 81-84. – eng., abs.: eng., geo.

The hitherto unknown NT-regulated mechanism of NaK-ATPase localized in the nerve ending membranes is found. The mechanism certainly has a functional significance and must be involved in the regulation – modulation of chemical synaptic transmission. On the other hand, the availability of the discovered specific protein, regulators (SFa and SFi) of synaptic origin, makes it possible to consider these mechanisms as the possible components of learning and short-term memory processes.

Auth.

UDC 502.72

B2.6. Potential of Higher Plants as Environmental Remediators. /G. Kvesitadze, E. Kvesitadze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 85-90. – eng., abs.: eng., geo.

Elimination of contaminants from the environment by microorganisms of different taxonomic groups is a genetically determined property, which has already been widely discussed. Until recently, plants still occupying above 40% of the world land, were considered as organisms having only a limited potential for contaminants conjugation and accumulation within cell organelles. Analysis of experimental data of last two decades revealed the high ecological potential of plants. It has been exposed deep degradation processes proceeding in higher plants and in the majority leading to complete detoxification of anthropogenic contaminants: the enzymes carrying out oxidation and conjugation processes have been revealed and characterized; formation of anthropogenic contaminants conjugates with endogenous compounds and enzymes participating in this process have been shown. However, still there are uncertain questions closely related to the contaminants multistage degradation process in plants, the Authors are making an attempt to evaluate different aspects of plants, ecological potential from the modern understanding, revealing the criterion for the evaluation of deviations under the action of contaminants in the ultrastructural architectonics of plant cells.

Auth.

UDC 615.89:58

B2.7. Biologically Active Compounds and Original Remedies from Plants Growing in Georgia. /E. Kemertelidze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 91-96. – eng., abs.: eng., geo.

A purposeful study of plants of Georgian flora for the content of cardiac glycosides, steroid and triterpene saponins, lipids, stilbens, flavonoids, tannides, anthraglycosides etc. is carried out. Cardiotonic, antiatherosclerotic, bronchospasmolytic, antirheumatic, hepatoprotective and bile-expelling, antiherpetic, antiuremic remedies, regulators of blood circulation and function of gastro-intestinal tract were developed on the basis of different classes of natural compounds. The raw material for the synthesis of steroid hormonal remedies and plant growth stimulator are proposed.

Auth.

UDC 502.75:912

B2.8. The Map of the Natural Vegetation of Europe and its Application in the Caucasus Ecoregion. /U. Bohn, N. Zazanashvili, G. Nakhutsrishvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 112-121. – eng., abs.: eng., geo.

The map of the natural vegetation of Europe was compiled and produced by an international team of leading geobotanists from 31 European countries over the period 1979 – 2003. The final results are available in printed and digital form, especially on an interactive CD-ROM with German and English texts. They include vegetation maps at the scales of 1: 2.5 and 1: 10 million, a hierarchically structured overall legend, a comprehensive explanatory text, and standardized digital data sheets with detailed information on 699 mapping units. The digital database on CD-ROM facilitates a multitude of analyses and uses in the fields of research, teaching, information, and planning. Selected examples give a brief overview of the present application of the European map data. Thus the European vegetation map is very important for the development of a protected areas network in the Caucasus Ecoregion.

Auth.

UDC 669.691.5:778.33

B2.9. Roentgenographic and Electron Microscopic Investigation of Active Coating of Lead Dioxide Deposited on Titanium-Based Anodes. /T. Rokva, T. Chakhunashvili/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 9-13. – rus., abs.: geo., eng.

According to the X-ray phase analysis data of active coating of lead dioxide on titanium-based anodes it has been shown that in conditions of 1-50mA/cm² current density obtained coatings belong to β -tetragonal modification of PbO₂ with traces of α -orthorhombic modification. By scanning electron microscopic investigation of the samples of lead dioxide coating it was established that at 3-8 mA/cm² current density a coarse-grained crystals with densities lower than 3 mA/cm² and higher than 40 mA/cm² (up to 50mA/cm²) – fine grained dense coating of total porosity less than 10% are formed.

Auth.

UDC 628.543

B2.10. Effect of High-Energy Radiation on the Regeneration Degree of Cathionite cu-2 During the Sewage Treatment from Heavy Metals. /R.Tushurashvili, N.Chikvaidze, M.Mamardashvili, N.Aslanishvili/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 14-16. – rus., abs.: geo., eng.

The variation of adsorption capacity of ion exchanger (KY-2) used for copper-containing sewage treatment has been studied after its multiple regeneration. It has been established that after the first act of regeneration the capacity decreases by 12% and remains constant after the every act

of regeneration. It has been shown that after irradiation of ion exchanger (KY-2) by dose of 6.5 kg its adsorption capacity increases by 10-11%, i.e. practically returns to the initial value.

Auth.

UDC 539.16

B2.11. Radiation-Chemical Decay of Complex Alile Ethers of Saturated Acids. /S. Gogoberishvili, N. Gabelia, R. Tushurashvili/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 17-23. – rus., abs.: geo., eng.

On the bases of experimental data it has been proved that peculiarities of redistribution of chemical bonds in bifunctional combinations are determined by interactions of aliphatic functional groups which are constituent part of molecules. ESR (electron-spin-resonance) spectra of formed radicals and PMF (para-magnetic-fraction) quantity confirm the correctness of the theoretical considerations.

Auth.

UDC 678.644:547.495.1

B2.12. Definition of the Structured Polyurethane Glue's Pleurae Spacious Net's Compactness. /M. Shalamberidze, Z. Kopaladze and N. Lomtadze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 24-26. – rus., abs.: geo., eng.

Solidification process of latent and polyizocianative solidified structured urethane polymers UK-1 and Dismekol-400 has been investigated in dimethylformamide and toluene. Determination of physical parameters of network for the structured urethane polymers is given.

Auth.

UDC 665.7.035.6:547.538.141

B2.13. Research of Reological Properties of Latental-Solidifying Butadiene-Styrole Thermoelasticplasts. /M. Shalamberidze, Z. Kopaladze, N. Lomtadze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 27-30. – rus., abs.: geo., eng.

The article is about the investigation of the influence of the latent solidifier substance containing LO-3 on the reological quality of the thermoelasticplasts DST -30 and sibyllene. There is made investigation of the plastication time influence of the latent solidifying (LO-3) rubbers of the butadiene styrole DST-30 and sibyllene, on the reological qualities.

Auth.

UDC 547.538.141:678.4

B2.14. The Definition of the Specious Net Physical Parameters of the Structured Butadiene-Styrole Rubbers. /M. Shalamberidze, Z. Kopaladze, N. Lomtadze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 31-33 - rus., abs.: geo., eng.

This article is about investigation oh the latent solidificial Butadiene - styrole rubbers SKS-30 ARK and SKS-30 ARK-15 and solidifying process of the suitable sulphuric volcanizites of rubbers in cyclonexanole and benzole. Hereby is given definition of the physical parameters of the specious net of the structured Butadiene - styrole rubbers.

Auth.

UDC 575.26

B2.15. Influence Of Liquid Phase Polarity and Of Solid Supports Nature on Intensity of Separation for Compounds of Different Homologous Series. /L. Eprikashvili, T. Kordzakhia, N. Pirtskhalava, M. Zautashvili, M. Dzagania/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 34-40 - rus., abs.: geo., eng.

It was proven that especially clear separation of mixtures of saturated normal hydrocarbons takes place on nonpolar stationary liquid coated on the solid support Celite-545. On the contrary, better separation of mixtures of monoatomic alcohols with normal structure takes place on polar liquid coated on solid support Chromaton N-AW. It was deduced that for separation of mixtures of aromatic hydrocarbons, it is appropriate to use nonpolar liquid that is coated on the solid support Celite-545.

Auth.

UDC 541.183

B2.16. Quantum Model of Polyatomic Polarizable Dipole Particle Adsorption on Metal Surface. /T. Marsagishvili, G. Tatishvili/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 41-45 - rus., abs.: geo., eng.

Adsorption processes on the interface: solid (metal) – polar liquid has been studied. These processes are considered in the framework of quantum model. Polyatomic polarizable dipole particle of complete structure participate on this processes. Quantum model of medium polarization operators one-particle Green function approximation is used also for consideration of medium (electrolyte) influence on adsorption processes. Analytic expressions for kinetic characteristics of adsorption processes are obtained. During these calculations gasephase characteristics of the particle adsorbed on given surface are applied as zero approximation. These characteristics are obtained by quantum-chemical calculations or are used experimentally obtained values of corresponding parameters.

Auth.

UDC 621.039:539.194

B2.17. Kinetics of the Heterogeneous Elementary Act of Charge Transfer With Participation of Polarizable Multinuclear Particles. /T. Marsagishvili, G. Tatishvili/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 46-49- rus., abs.: geo., eng.

Charge transfer processes in heterogeneous systems are considered. Current density is calculated for charge transfer processes through the interface with participation of polyatomic dipole polarized particles with consideration of interaction intramolecular vibrations of the particles with fluctuations of electrolyte polarization. Electrolyte is described with the help of temperature Green Functions of polarization operators. Analytic expressions for kinetic parameters of the process are obtained.

Auth.

UDC 547.313.5: 539.194

B2.18. Kinetics of Triamylarsenite Transesterification. /K. Sulaberidze, G. Bezarashvili, S. Tsirekidze, R. Gigauri, Z. Dzotsenidze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 50-54- eng., abs.: geo., rus.

The reaction between Triamylarsenite and 1,4 – dioxibenzene under nonisothermal conditions (434K- 478K) and stoichiometric relationship of reactant amounts was studied by means of kinetic experiment realization. The process was being observed using a volumetric method via distillation of the by-product (Amyl alcohol). The reaction rate values were determined by the method of graphical differentiation of the kinetic curve obtained. Specific kinetic equations describing the dependence of the depth of chemical conversion on time under the given experimental conditions are presented. The numerical value of the rate constant of the transesterification reaction is as follows: $k = 1.41 \cdot 10^{-4} \text{ L} \cdot \text{mmol}^{-1} \cdot \text{min}^{-1}$.

Auth.

UDC 546.284

B2.19. Program for Computation of High-Temperature Values of Heat Capacity of Silicate and Refractory Substances by the Method after Landia. /A. Gogishvili, D. Eristavi, L.

Megrelishvili, A. Sarukhanishvili, V. Eristavi/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 55-59 - eng., abs.: geo., rus.
Application of N.A. Landia's logical-approximation method is proposed for the purpose of updating information data base of high temperature thermal capacities. Unlike the earlier attempt to apply N.A. Landia's algorithm as a dialogue program for calculation of high temperature thermal capacities for a number of silicates, the program complex currently proposed by Authors allows to calculate practically the whole spectrum of silicate and refractory substances, including crystalline hydrates.

Auth.

UDC 669.14.018.44

B2.20. Mutual Connection Of Unisothermal Initial Heating with Isothermal Oxidation Kinetics of Heat Resistant Chromium Alloys. /I. Nakhutsrishvili, G. Mikadze, O. Mikadze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 60-63 – rus., abs.: geo., eng.

On the kinetic data base of high temperature oxidation of heat resistant chromium alloys it has been obtained the empirical expression providing connection for the weight gain of initial unisothermal heating with kinetic parameters of the subsequent isothermal oxidation.

Auth.

UDC 666.951

B2.21. Physical, Mechanical and Dielectric Properties of Diatomite-Containing Polymer Compositions. /Z. Tabukashvili, N. Doxturishvili, K. Ebralidze, G. Papava, N. Maisuradze, N. Gelashvili, E. Gavashelidze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 64-66 – geo., abs.: rus., eng.

Phenol-formaldehyde oligomers of resol. type have been synthesized. Polymer compositions on the base of synthesized oligomers have been prepared with application of unmodified diatomite as an additive. Conclusion is made, that in optimum composition contains 40 – 60% of diatomite. Physical, mechanical and dielectric properties of prepares plastics have been investigated. In most cases prepared polymers are characterized by better characteristics in comparison with analogous phenol plasticcs.

Auth.

UDC 678-13

B2.22. Quantum-Chemical Values of Relative Reaction Ability of Some Thienyl-Containing Methylvinilsilanes in Reactions of Copolymerisation. /N. Kapatadze, O. Mukbaniani, E. Markarashvili, Ts. Vardosanidze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 67-73 – geo., abs.: rus., eng.

Last time besides experimental searches of all relative reaction ability of monomers which participate in reactions of copolymerisation, great attention is paid to their quantum-chemical calculations with a view to establish parameter values of reaction ability. On the base of quantum-chemical researches of molecules of styrol, dimethylthienylvinilsilane (DMTVS) and dithienylmethylvinilsilane (DTMVS), as well as their exited condition and simplicified α -radicals, the sequence of their activity in chemical reactions: DMTVS < DTMVS < Styrol, is determined, that is proved by comparing them with experimental data [6].

Auth.

UDC 541.64

B2.23. Thermogravimetric Examination of Certain Polymer Compositions. /Guram Abashidze, Lali Ghurtchumelia, Givi Papava, Teimuraz Metshurtshvili/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 74-76 – rus., abs.: geo., eng.

Some very promising structural and protective-isolative thermograms of polymer compositions have been developed. They will give us the possibility to find out mechanisms of thermo-oxidative destruction and combustion of these compositions. The study of these mechanisms will contribute to the creation of new polymer compositions resistant to high temperatures.

Auth.

UDC 54-386

B2.24. Coordination Compounds of Some 3d-Transition Metals Containing Dinitrobenzoic Ions. /G. Tsintsadze, T. Sakvarelidze, G. Adeishvili, M. Tsintsadze, I. Gvelesiani/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 77-82 – rus., abs.: geo., eng.

Coordination compounds of some 3d-transition metals with dinitrobenzoate of secondary amines have been synthesized and studied. Composition and structure of complexes was established on the basis of IR-spectra and X-ray analysis.

Auth.

UDC 54-386

B2.25. Dinitrobenzoic-Containing Heteroligand Coordination Compounds of Cobalt and Nickel. /G. Tsintsadze, T. Sakvarelidze, G. Adeishvili, M. Tsintsadze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 83-87 – rus., abs.: geo., eng.

Coordination compounds of cobalt and nickel with dinitrobenzoate of secondary amines have been synthesized and studied. The composition and structure of complexes was established by IR-spectra and X-ray analysis.

Auth.

UDC 541.623

B2.26. Tautomeric Conversion of Ethazole and its Compounds. /N. Zhorzholiani, I. Beshkenadze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 88-89 – rus., abs.: geo., eng.

A tautomeric conversion of ethazole and its complexes $M(\text{AetH})_2 \cdot n\text{H}_2\text{O}$, $M(\text{AetH})_2 \cdot \text{Cl}_2$, $(\text{AetH}_2)_2 \cdot [\text{MCl}_4]$ in benzol has been studied. Three forms of ethazole molecules in the compounds: Aet, AetH, and AetH₂ have been determined.

Auth.

UDC 547.443

B2.27. Tetra-Acid Complexes of Ethazole. /N. Zhorzholiani, I. Beshkenadze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 90-93 – geo., abs.: rus., eng.

Tetra-acid complexes $(\text{AetH}_2)_2 [\text{MCl}_4]$ are synthesized, where $M = \text{Cu, Co, Ni, Mn, Fe, Zn, Cd}$, AetH₂ are protonated molecules of ethazole. Physical and chemical properties of the synthesized tetra-acid complex compounds have been studied, such as melting temperature, density, conductivity, solubility in water and organic solvent. These compounds are three-ion electrolytes that dissociate in water, and are soluble in methanol, ethanol, and acetone. Melting temperature is in a range 60-100°C, cleavage of HCl occurs at 105-135°C, oxidation occurs above 300°C. End product of dissociation for these compounds is MCl_2 or MO . Consecutive stability constants of the tetra-acid complex compounds are defined by the potentiometric titration method in acetone-water solution. It is determined that two ions $[\text{M}(\text{AetH})\text{Cl}_3]^-$ and $[\text{MCl}_4]^{2-}$ are produced in a system of MCl_2 -AetH-HCl. A mechanism of these processes has been studied. It is determined that the complex producing ion can bind only two molecules of ethazol.

Auth.

UDC 615.838.7:54.06

B2.28. Chemical Study of Bazaleti Lake Mud. /N. Bokuchava, D. Bibileishvili, D. Jincharadze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 94-98 – rus., abs.: geo., eng.

For the first time the chemical composition and physical-chemical indexes of the mud from the Bazaleti Lake and its solutions has been studied, which permitted to obtain an extensive information relating to the wide range of quantitative and qualitative composition of organic and inorganic compounds, among which are biologically active ones. The possibility of application of above-mentioned mud in resort practice is proposed.

Auth.

UDC 663.12/14

B2.29. Function of the Yeast Rad57 Protein Depends on a Conserved Lipid-Binding Motif.

/G. Tevzadze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3 – pp. 78-86. – eng., abs.: eng., geo.

The Rad57 protein of the yeast *Saccharomyces cerevisiae* has been extensively studied and is known to have multiple functions critical for vegetative growth and meiosis. Here we present evidence suggesting that these functions are regulated by lipid binding. This binding likely occurs via a GW...W motif conserved in the phosphatidylinositol kinase (PIK) protein family and in a meiosis-specific yeast protein Spo73. Earlier studies indicate these proteins respond to and are regulated by phosphatidylinositol phosphate (PIP) or phosphoinositide signaling molecules. Specific mutations in the GWLVGW motif of Rad57 abolish the ability of lipid binding, and significantly impair Rad57 functions essential for vegetative growth, meiotic recombination and spore germination. These results imply the multiple roles of Rad57 are governed via lipid signaling, and can be modulated by direct binding of specific lipid second messengers to a specific motif in Rad57p.

Auth.

UDC 577.25:616.89

B2.30. Chronic Stress and Pathological Aggression as Premise for Killer Rats Formation.

/N. Aleksidze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2 – pp. 81-85. – eng., abs.: eng., geo.

It is detected that disturbance of the biological rhythm with light deprivation and social isolation, together with low temperatures, results in stress and pathological aggression, leading to the formation of killer rats. That is the result of the disruption in the metabolism of biogenic amines.

Auth.

UDC 577.114

B2.31. Structure of Glucofructan from Bulbs of *Galanthus platyphyllus* Traub et Moldenke (Amaryllidaceae).

/V. Barbakadze, K. Mulkiyanan, M. Merlani, L. Gogilashvili, L. Amiranashvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2 – pp. 86-88. – eng., abs.: eng., geo.

Hot water extraction of bulbs of *Galanthus platyphyllus* Traub et Moldenke followed by amylolysis (to remove starch), chromatography on DEAE-cellulose (to remove acidic arabinogalactan) and elimination of acetylated glucomannan by alkaline saponification (to remove water-insoluble deacetylated glucomannan) afforded glucofructan. According to ¹³C NMR spectral data it belongs to the branched type (mixed-linkage type) fructans, containing both inulin and levan type structures.

Auth.

UDC 582.282.123.4

B2.32. Homogenous Preparation and Kinetic and Molecular Indices of Endo-1,4-β-glucanase from the Extremophilic Micromycete *Aspergillus versicolor*-83.

/G. Kvesitadze, R. Khvedelidze, T. Urushadze, L. Kutateladze, A. Berulava/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2 – pp. 89-92. – eng., abs.: eng., geo.

From the collection of micromycetes, consisting of microscopic fungi isolated from different ecological niches of the Caucasus and belonging to S. Durmishidze Institute of Biochemistry and

Biotechnology, the active producer of cellulase, thermophilic and acidophilic strain of *Aspergillus versicolor* 83 has been selected. The homogenous preparation of endo-1,4- β -glucanase, one of the enzymes of the cellulosic complex of the strain, was obtained and its kinetic characteristics, absorption capacity on an insoluble substrate, the type and extent of inhibition with products, amino acid composition and isoelectrical point were investigated.

Auth.

UDC 579.252.55:57.063.8

B2.33. Selection of Phages Active against Multiple Antibiotic-Resistant *P. stutzeri*. /T. Suladze, M. Darsavelidze, T. Chanishvili, M. Elizbarashvili, M. Dvalishvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2 – pp. 105-107. – eng., abs.: eng., geo.

Total of 26 strains of *P. stutzeri* were isolated from the upper respiratory tract and patients ears. 11 clones of phages active against them were selected in 2002-2004. After investigation of their morphology the above clone virions were ascribed to the *Myoviridae* family. According to the studies of biologic properties of 11 clones of *P. stutzeri* phages, it was found that the five phages were characterized by the highest lytic activity ($3 \cdot 10^{11}$ - $7 \cdot 10^{11}$) and wide range of action (40-80%)

Auth.

B3. Geology. Geodesy

UDC 550.36

B3.1. The Role of Quartz and Biotite in Endogenic Metallogeny. /G. Odikadze, I. Paradashvili/. Georgian Oil and Gas. - 2007. - №21. - pp. 35-39. – geo. abs. : geo., rus., eng.

Quartz and biotite, among the granite rock-forming minerals, play the main part in endogenic metallogeny. Due to specific peculiarities of their unique crystalline lattice, quartz assumes no ore elements isomorphically and thus plays positive role in endogenic metallogeny, while biotite accumulates practically all the ore elements and thus affects negatively not only the formation of ore but the formation of their own minerals as well. 1 il., bibl. 2.

Auth.

UDC 004.00.11

B3.2. Peculiarities of Adigeni Ore-Clusters Ore-Metasomatic Processes and Structural Position of Gold-Polymetallic Mineralization Occurrence on Gagvi Area. /T. Shengelia, D. Pataridze, D. Kuparadze/. Georgian Oil and Gas. - 2007. - №21. - pp. 43-48. – geo. abs. : geo., rus., eng.

Adigeni ore-cluster ~ (400 sq./km) is mainly built with Eocene volcanogenic-sediment thickness. Out of the revealed five perspective areas in the region of Gagvi area the most important zone is Gagvisubani. Ore-metasomatic rocks of Gagvi area represent intrusive-dome construction in structural arrangement and from all sides they are confined by middle Eocene regionally propylitized volcanites. Ruptural tectonics plays significant role in the distribution of metasomatic rocks. Productive mineralization is sometimes presented with gold-containing barite-polymetallic and quartz-barite-polymetallic ores. Ore-mineralization intensity refers to absolute prospectivity of the mentioned area. 1 il., bibl. 5.

Auth.

UDC 550.831

B3.3. On the Uniqueness of Solution of the Inverse Problem of Gravitation. /D.Kapanadze/. Georgian Oil and Gas. - 2007. - №21. - pp. 49-55. – geo. abs. : geo., rus., eng.

The article deals with the question of uniqueness of solution of the inverse problem of gravitation prospecting for polynomial density which depends on one variable. In particular density changes in a horizontal direction. The following theorem is proved as unique: if the boundary of any area (on the plane) does not contain short straight line, the solution of the

inverse problem of gravitation prospecting is unique. Hence the unique solution for the inverse problem of gravitation prospecting for circular polygons. The unique theorem is also determined in the three-dimension area for Newton potential. It should be marked that in case of permanent density solution of the inverse problem of gravitation prospecting is unique for narrow class (lemniscates), which is proved in V. Starkov and M. Brodsky article. As a particular case, from the theorem proved above, V. Strakov and M. Brodski theorem is obtained. Bibl. 10.

Auth.

UDC 553.068(47.93)

B3.4. Refinement of Geological Structure of Eastern Georgia by Geophysical Prospecting. /G. Jashi, N. Gamkrelidze, V. Chichinadze, P. Mindeli, S. Ghonghadze, T. Gvantseladze/. Georgian Oil and Gas. - 2007. - №21. - pp. 56-63. – geo. abs. : geo., rus., eng.

On the basis of re-interpretation of geological and geophysical data for the territory of Mountainous Kakheti and surrounding areas the seismogeological sections have been built showing structural units of sedimentation. The direct problem of geophysics have been solved using data on thicknesses and physical parameters of sedimentary formations; this allowed to make more exact the first approximations of the sections and physical parameters of different geological units. Some additional criteria for prospecting of geological structures are established. 2 il., bibl. 10.

Auth.

UDC 513.511.509

B3.5. Mathematical Modeling of the Wave Disturbance Caused by Earth Local Relief and its Impact on the Atmospheric Agents. /Z. Khvedelidze, R. Danelia, T. Shalamberidze. R. Aplakov, E. Tagvadze/. Georgian Oil and Gas. - 2007. - №21. - pp. 64-69. – geo. abs. : geo., rus., eng.

For the wind velocity, storm and mixture spread average velocity in the air, equations are obtained by means of application of hydrothermodynamic linearized equation system considering the impact of parameters characteristic for relief. Solution of the equations was provided in a form of the plane wave with the external force factor added. Analysis of the solution showed that the wave disturbance velocity amplitude depends on the relief inclination angle. Nature of this relation was studied for individual regions of Georgia and the results were compared with the field practice data. The obtained theoretical results confirmed the phenomena observed in the field wind velocity, in particular, presence of two maximums in the wind profile in Tsipa-Khashuri-Gori direction. There was also revealed the significant role of the wave disturbance influence on mixture spread in the air caused by the relief. 4 il., bibl. 7.

Auth.

UDC 552.322.1

B3.6. Pre-Alpine Geodynamics of the Caucasus, Suprasubduction Regional Metamorphism and Granitoid Magmatism. /I. Gamkrelidze, D. Shengelia/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 57-65. – eng., abs.: eng., geo.

It is shown that granitoid magmatism and regional metamorphism of different type, being a reflection of thermobaric field variation in external shells of the Earth, represent a direct consequence of geodynamic settings in various structural units of the Earth's crust and lithosphere of the Caucasus. Geodynamic constructions are based on the conceptions of plate tectonics and horizontal tectonic layering of the lithosphere, which according to geological and geophysical data are established all over the Caucasian region.

Auth.

UDC 627.223.4

B3.7. Increase of Order of Local Seismic Energy Release Caused by Water Level Variation in the Enguri High Dam Reservoir. /V. Abashidze, Z. Javakhishvili, Th. Khutsishvili, E.

Mepharidze, N. Zhukova, T. Chelidze, T. Matcharashvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3. – pp. 49-51. – eng., abs.: eng., geo.

It was reported earlier that water level periodic variation in a high dam reservoir may lead to the synchronizing influence on local seismic activity. Taking into account that phase synchronization is not related to strong functional relationships, in the present study small dynamical changes in seismic activity caused by water level variation were investigated. For this purpose the recurrence quantitative analysis (RQA) approach was used. Analysis was carried out on data sets of water level daily variation and released daily seismic energy. It was shown that when the external influence on the earth's crust caused by reservoir water becomes periodic the extent of the regularity of earthquake daily distribution essentially increases.

Auth.

UDC 627.223.4

B3.8. Controlling Influence of Reservoir Water Level on Local Seismic Energy Release. /V. Abashidze, Th. Khutsishvili, Z. Javakhishvili, N. Zhukova, E. Mepharidze, T. Chelidze, T. Matcharashvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2. – pp. 77-80. – eng., abs.: eng., geo.

We present an evidence of reservoir induced controlling influence of water level periodic changes in Enguri high dam reservoir on regional seismic activity. Data sets of water level daily variations in the Enguri high dam reservoir and the seismic data sets recorded by the local network have been analyzed. Monthly frequency of earthquake occurrence has been calculated. According to our results decrease in daily seismic energy release around Enguri high dam during water level periodic variation can be assumed as a control of seismic activity. This controlling influence may be explained as a result of phase synchronization of complex seismic process with small periodic changes in the reservoir water level.

Auth.

B4. Geography. Cartography. Astronomy

UDC 523.681:629.787/.788

B4.1. On the Probability of Collisions of Interplanetary Space Vehicles with Meteors. /R. Kiladze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3 – pp. 30-34. – eng., abs.: eng., geo.

On the average once in 4 years uncontrolled geostationary satellites suffer small sudden changes of speed, which is connected with their collisions with fine space debris. Most of these events are caused by collisions with meteoric bodies. Such collisions threaten space vehicles as well, sent to planets of the solar system to study their physical nature. The present paper is devoted to determining the degree of risk of collision of a space vehicle with meteors at different possible variants of its interplanetary orbit. The study allows selecting - out of several possible variants – the least hazardous trajectory of interplanetary flight of a space vehicle from the point of view of meteoric danger.

Auth.

UDC 523.4:52-846

B4.2. On Vortex Model of Planet Formation in Keplerian Disks. /A Tevzadze, G. Chagelishvili, J. Lominadze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3 – pp. 35-41 – eng., abs.: eng., geo.

Invoking a hypothesis that long-lived vortices in the protoplanetary nebula play an important role in the three-phase model of planet formation, we analyze the first phase and present results on the stability and nonlinear development of vortices against the background of shearing Keplerian flows. We discuss the conditions under which vertical perturbations evolve into long-lived self-sustained structures and describe the properties of these equilibrium vortices. The properties of equilibrium vortices appear to be independent of the initial conditions and depend only on the

local disk parameters. In particular, we find that the ratio of the vortex size to the local disk scale height increases with the decrease of the sound speed, reaching values well above the unity. The process of spiral density wave generation by the vortex leads to the formation of spiral shocks attached to the vortex. These shocks may have important consequences on the long term vortex evolution and possibly on the global disk dynamics. Our study strengthens the arguments in favor of anticyclonic vortices as the candidates for the promotion of planet formation. Hydrodynamic shocks that are an intrinsic property of persistent vortices in compressible Keplerian flows are an important contributor to the overall balance. These shocks support vortices against viscous dissipation by generating local potential vorticity and should be responsible for the eventual fate of the self-sustained anticyclonic vortices.

Auth.

UDC 622.2:519.863

B4.3. Natural Anthropogenic Mining Complexes and the Problems of their Optimization.

/Z. Seperteladze, E. Davitaia, T. Kikvadze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3 – pp. 64-66 – eng., abs.: eng., geo.

The present work concerns optimization issues of natural anthropogenic industrial mining complexes. Particularly, statistic interrelation between physical and geographic factors and reclamation time period is obtained by means of linear regression analysis. In combination with appropriate empiric data base, it allows to make scientifically well-reasoned statement about optimization of environmental conditions.

Auth.

UDC 551.435.84

B4.4 Geographo- Hydrological Arguments on Possible Expansion of the Tskaltubo Cave System. /G. Gigineishvili, Z. Tatashidze, K. Tsikarishvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3 – pp. 67-70 – eng., abs.: eng., geo.

The Tskaltubo Cave System is one of the most important speleological objects which is designed for effective tourist exploitation. Because of its complex geological setting the entire system and its unknown branches in particular have not been studied yet. On the basis of geographo-hydrological methods their provisional directions have been defined and new vectors of speleological research stated.

Auth.

UDC 551.438.5

B4.5. The Anthropogenic Transformation of Natural Landscapes of Sub-Mediterranean Semi-Humid Foothills. /T. Mamukashvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3 – pp. 71-73 – eng., abs.: eng., geo.

In sub-Mediterranean semi-humid foothills the stability of landscapes has been established – the degree of anthropogenic influence on them, the sections of ecological tensions and the territory distinguished for high landscape diversity have been determined.

Auth.

UDC 550.93

B4.6. Absolute Age of the Relief of the Black Sea Coast Zone of Georgia Based on Archaeological Materials. /Z. Janelidze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2 – pp. 74-76 – eng., abs.: eng., geo.

On the basis of archaeological material and radioisotope dating it is concluded that the land surface of the zone of the Black Sea coast of Georgia escaped from the sphere of active wave action 3500-3600 years ago. Since then the settlement in the coastal zone began.

Auth.

B5. Other Natural and Exact Sciences

UDC 591.481.8

B5.1. Dynamics of Neuronal Activity of the Parietal Associative Zones of the Cat Cerebral Cortex in Sleep-Wakefulness Cycle. /T. Oniani, L. Gvetadze, Sh. Manjavidze, N. Oniani, M. Eliozishvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 97-103. – eng., abs.: eng., geo.

The dynamics of neuronal activity of the so-called association zones of the parietal regions of the cerebral cortex in the sleep-wakefulness cycle has been studied in chronic cats. It is conjectured that the changes in neuronal activity of the association zones of the parietal regions of the cerebral cortex over sleep-wakefulness cycle display the dynamics of cognitive processes, which on their part, are determined just by the transformation (both quantitative and qualitative) of the neuronal activity of the cerebral cortex, in general, and of its association zones, in particular.

Auth.

UDC 903.4

B5.2. Hominid Fossils from Dmanisi and Their Place Among the Early Hominids. /D. Lordkipanidze, A. Vekua, Ph.G. Rightmire, A. Margvelashvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 104-111. – eng., abs.: eng., geo.

Discoveries of *Homo* remains consisting of four craniums and four mandibles with several postcranial remains, stone artifacts of Olduvai type Mode 1 (13) and faunal fossils that points to a latest Pliocene – earliest Pleistocene age during the excavations in Dmanisi, Republic of Georgia, yielding the age of 1.81 M. yr. (Ar40/Ar39) have reopened the debate about the first human dispersal out of Africa; being one of the problematic questions for the paleoanthropologists. The Dmanisi paleodeme presents numerous primitive characters, typical to Early African hominids, but it as well shares quite big similarities with *Homo erectus*, and is probably better accommodated to the latter species. Dmanisi, presenting a small-brained population, could have been the ancestors of the African and Far East branches of *H. erectus* having more derived morphology.

Auth.

C. TECHNICAL AND APPLIED SCIENCES. SECTORS OF ECONOMY

C1. Power Industry

UDC 627.841

C1.1. Analysis of Seepage Parameters During the ENGURI HPP Reservoir Filling Up. /M. Kalabegishvili, L. Mebonia/. Hydro Engineering. – 2007. - №1(1). - pp. 95-100. – rus. abs. geo., rus., eng.

Based on transient analysis of seepage task calculation are given some results of ENGURI HPP reservoir right bank investigation with respect of geological crack and filling mode. Seepage calculation is carried out by cycle-iteration scheme in frame of no stationary field problems where conductivity and volumetric water-content were determined by numerically functional relations. Head gradients were analyzed in cases of 3 m sudden filling in upstream and in case of slow filling and steady state. ill. 5, bibl. 3.

Auth.

UDC 621.711.1

C1.2. Analyzes of Application of Thermal Pumps in Heat Supply in the Conditions of Georgia. /V.Chikhladze, G. Kumsishvili/. Hydro Engineering. – 2007. - №2(2). - pp. 69-74. – geo. abs.: geo., rus., eng.

The prospects of use non-conventional, non-traditional sources of energy and the role of thermal pumps installations in economy fuel and energy resources savings are analyzed in Georgia. The analyze of condition of fuel and energy complex, prospect of development and its influence on the efficiency of the systems of heat supply, working on the base of thermal pump is executed. Heating systems imitation model, working on the bases of thermal pump, analyze of application of use of thermal pump's installations in the decentralized heating

system is executed. In results of the researches, executed according to the model, is established the influence of heating system, temperature of low potential heating source and the value of fuel on the efficiency of heating system working on the base of thermal pump.

Auth.

UDC 626/627

C1.3. Aging of Hydraulic Engineering Structures and some Measures towards Prolonging their Term of Service and Averting Ecological Crises. /Ts. Mirtskhoulava/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2. – pp. 61-65 – eng., abs.: eng., geo.

The obtained expressions enable to assess the level of vulnerability or the onset time of the condition of breakdown of facilities of various purposes, for different prognostic variables, at any time interval and value of impact . Assessment of vulnerability according to diverse prognostic variables will allow to select the parameter that is most "to blame" for the facility becoming vulnerable. This parameter should form the basis for developing measures towards relieving the facility from the vulnerable state.

Auth.

UDC 621.22

C1.4. Water Power Resources of the Rivers in Abkhazia. /M. Keburia, O. Shautidze, A. Chichinadze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2. – pp. 66-70 – eng., abs.: eng., geo.

The research data of water-power resources of the rivers in Abkhazia are considered. Specific energy per unit of the catchment basin area is determined. The equation for calculation of the theoretical power is obtained. This allows the power for any required sector of the river in Abkhazia to be determined with precision up to 35%. Calculation of the power by the mentioned equation may be used in prospective work to the first approximation.

Auth.

UDC 621.311.24

C1.5. Increasing the Wind Turbine Efficiency by Using Chimney Air Draught Power. /G. Sanadze/. Transport and Machinebuilding. – 2007. - #1. – pp. 74-79. – rus. abs.: eng., geo.

The modernized wind turbine concept is presented. Basic advantage of this wind turbine is to increase the efficiency and productivity of the power station. Besides by synthesis of two principles of transformation of the energy, the mutual reduction of lacks of these principles, without increase of dimensions and essential complication of its design is provided. Particularly, increase of the efficiency of the wind-solar power station is provided by using wind power passing through the central part of the blade-swept area of the wind turbine for the acceleration of the air stream in the chimney tower by using ejection effect. It is necessary to pay attention also to the fact that while combining functions of the chimney tower and wind power installation pole, expenses on the construction of structure are considerably cut down. It should be paid attention to the fact that the proposed basic decision allows to provide almost continuous running of the wind power station.

Auth.

C2. Electrical Engineering. Electronics. Radio Engineering. Communications

UDC 621.39:681.7.068

C2.1. Systems of WDM in fibre-optic lines of connection. /A. Papashvili/. Intelektuali. – 2007. - #3. – pp. 76-80. – rus., abs.: geo., rus., eng.

Conducted analysis of WDM system shows that such impressive result is possible to be reached in the expense of transferring at the method of frequent stiffness of a signal. One of the main worthies of WDM technologies is the possibility of parallel transmission of different signals (DDH, SDH, ATM, Internet and so on). Organization of passing facts in WDM is very complex.

Light together with different waves is connected and is transferred to one optic line. Though for realization of this method is necessary to be sure that transferring signals are not damaged and that signals of different frequency does not interact with each other.

Auth.

UDC 621.39

C2.2. Planting the advanced system in Tbilisi Telephone Network. /E. Razmadze/. Inteleqtuali. – 2007. - #3. – pp. 85-89. – geo., abs.: geo., rus., eng.

Considering the Georgian Telecommunication market demands, according to its technical characteristics, it is reasonable to plant C&C08 switching system which will exactly satisfy all the requests for PSTN development in Tbilisi.

Auth.

C3. Automatics. Telemechanics. Computing Machinery

UDC 519.728.4

C3.1. On the Method of Modeling of a Stationary Sequence. /Z. Piranashvili, M. Piranashvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2. – pp.

35-38 – eng., abs.: eng., geo.

Methods of modeling of stationary Gaussian or non-Gaussian sequences of some classes are considered. This problem is reduced to the modeling of independent stationary Gaussian Markov sequences. Simple algorithms of modeling of these sequences are presented.

Auth.

C4. Mining. Metallurgy. Chemical Sciences

UDC 622.244.442

C4.1. Adhesion and Friction Forces Impact on Drilling Tool Motion. /G. Varshalomidze, V. Khitarishvili, M. Asatiani/. Georgian Oil and Gas. – 2007. - №21. - pp. 70-79. – geo., abs. geo., rus., eng.

The influence of adhesion and friction forces on drilling pipe casing stickings has been studied up also influence of fluids treated with oiling agents on adhesion and friction force decrease while contact between steel and filtration crust, also between steel and clay layer. The investigation carried out showed that fluids treated with hydrofobic lubricant agents considerably reduce adhesive and friction coefficient. The test was carried out by means of adhesive and friction tools. Application of the fluids considerably reduce drilling tool stickness in clay rocks when well drilling takes place. 8 il., bibl. 6.

Auth.

UDC 622.244.442

C4.2. Investigation of Physical-Chemical Influence of Fluids on Clay Rocks. /G. Varshalomidze, V. Khitarishvili, N. Machavariani, M. Asatiani/. Georgian Oil and Gas. – 2007. - №21. - pp. 80-85. – geo., abs. geo., rus., eng.

Application of the device is recommended for drilling wells in clay rocks in laboratory conditions to state the content of the effective fluids. It enables to study up the fluid physical-chemical influence on the clay rock samples. Applying this device allows to determine the clay rock stability coefficient Q . Use of the fluids treated on the basis of investigations considerably increases the drilling technical-economic indices in the clay rocks while running wells. 1 il., bibl. 5.

Auth.

UDC 622.24

C4.3. Provocative Methods of Oil and Gas Inflow. /I. Goguadze, T. Sarjveladze/. Georgian Oil and Gas. – 2007. - №21. - pp. 86-103. – geo., abs. geo., rus., eng.

The provocative methods of fluid inflow are presented and discussed in the work; among them: drop in pressure, substitution of fluid density for a lower one, airing and air masses piping in, level lowering, application of transferring valves, using foams and intensive irrigation. On the basis of the analysis the conclusion has been drawn to provide all works in succession to achieve the satisfactory result. 9 il., tab. 1, bibl. 2.

Auth.

UDC 622.24

C4.4. Oil and Gas Three-Phase Multicomponent Isothermal Filtration Model. /G. Varshalomidze, I. Goguadze, T. Sarjveladze/. Georgian Oil and Gas. – 2007. - №21. - pp. 104-107. – geo., abs. geo., rus., eng.

The multicomponent filtration model is discussed that is placed in the oil and gas field cap in a great amount. It is used for determination of prognosing resources and reduction-oxydation processes, modeling, especially for determination of thermodynamic processes component composition. 1 il., bibl. 5.

Auth.

UDC 624.131

C4.5. Feed-Controllers Compilation Principles and Activity Analysis. /I. Goguadze/. Georgian Oil and Gas. – 2007. - №21. - pp. 108-114. – geo., abs. geo., rus., eng.

The work presents feed-controllers of automatically direct assemble with backcontact systems widely injected in oil and gas technologies. They are able to determine their transfer function and control parameters. On the basis of the graphical material analysis both positive and negative sides of separate types of Feed-Controllers have been stated. 7 il., bibl. 3..

Auth.

UDC 624.131

C4.6. Various Modification of Feed-Controllers. /G. Varshalomidze/. Georgian Oil and Gas. – 2007. - №21. - pp. 115-122. – geo., abs. geo., rus., eng.

The work presents Feed-Controllers of automatically direct assemble with backcontact systems widely injected in oil and gas technologies. They are able to determine their transfer function and control parameters. On the basis of the graphical material analysis both positive and negative sides of separate types of Feed-Controllers have been determined. 8 il., bibl 3.

Auth.

UDC 665.61

C4.7. Determination of Oil Origin by the Method of Infrared-Optical Photospectrometry. /O. Seskuria, N. Adeishvili, N. Ikoshvili/. Georgian Oil and Gas. – 2007. - №21. - pp. 138-142. – geo., abs. geo., rus., eng.

Spectral analysis of oil extracted from four wells in two regions has been described in the article by the method of optical photospectrometry. By the analysis taken with the optic photospectrometer the difference between spectra has been determined on the basis of the primary data. The subsequent investigations need more profound study of the given problem. 1 il., tab. 1, bibl. 4.

Auth.

UDC 621.74.002.6:669.131

C4.8. Influence of Hot Plastic Deformation and Austempering on Structural Peculiarities of Ductile Cast Iron. /V. Kopaleishvili, M. Pankvelashvili, G. Beradze, L.Kotiashvili, N. Khidasheli/. Georgian Oil and Gas. – 2007. - №21. - pp. 153-157. – geo., abs. geo., rus., eng.

Complex investigation is carried out in the combination of high-temperature thermo-mechanical (HTTM) treatment and austempering influence on the isothermal bainitic transformation processes and austenite products transformation parameters in low-silicon ductile cast iron. It is determined that the optimum combination of properties of DADI is caused by the microstructure dispersion increase and the possibility to regulate the variable content of retained (after phase transformation) austenite amount; this indicates a higher overloading capacity of DADI. 3 il, tab. 2, bibl 6.

Auth.

UDC 666.221.3

C4.9. Glass Matrix for Composite Materials on the Basis of Manganese-Containing Carbonate Ore. /I. Berdzenishvili/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 108-111 - rus., abs.: geo., eng.

Glass matrix for composite materials on the basis of manganese-poor carbonate ore have been synthesized for accepting heat resistant composite cover on titanium. Frits were developed by taking into consideration the low thermal expansion coefficient of titanium compared with steels. The processes of glass formation in manganese-containing zirconium silicate glass charges are researched and the existence of Mn_3O_4 (700°C) and $ZrSiO_4$, SiO_2 (1100°C) at temperatures preceding charge melting are proved. Zircon in the inspected charges as well as quartz partially acts in solid – phase reactions, but the main part is solved in liquid phase at 1200-1250°C. Optimal technological regimes of boiling were determined for the developed glass and it is studied their physical- chemical properties.

Auth.

UDC 621.762.242

C4.10. High Temperature Oxidation of Methane on Palladium and Manganum-Palladium Catalysts. /V. Bakhtadze, R. Djandjgava, M. Padjishvili, Ts. Jaoshvili, N. Chochishvili/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 112-115 - rus., abs.: geo., eng.

It has been shown, that the activity of MPK-1 type manganum-palladium catalysts in reaction of high-temperature oxidation of methane corresponds to activity of catalysts with significantly higher palladium content.

Auth.

UDC 678.029.438

C4.11. Destruction of Polymeric Materials in Process of Formation of Welded Connection at Ultrasonic Welding. /N. Dolidze, M. Datuashvili/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 116-118 - rus., abs.: geo., eng.

The mechanism of formation of welded connection at ultrasonic welding of polymers represents a combined process including the thermal, mechanical, and acoustic phenomena, which results in the warming up and orientation of polymers in a zone of connection. A method of IR-spectroscopy to research a nature of processes proceeding on border of contact at ultrasonic welding of artificial fur has been applied. The analysis of results of research has shown, that in artificial fur as a result of action of ultrasound there are complex physical and chemical changes, which cause partial destruction and reduction of durability of welded connection.

Auth.

UDC 678.029.438

C4.12. Research of Molecular-Mass Characteristics of Welded Seam of Artificial Fur. /N. Dolidze, M. Datuashvili/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 119-121 - rus., abs.: geo., eng.

The importance of explosive loading of a welded seam of a fibrous polymeric material essentially depends on molecular weight and molecular-mass distribution. Research of structural transformations in a welded seam of artificial fur taking into consideration the molecular-mass

characteristics was carried out with application of a gel-penetrating chromatography method. The analysis of the data testifies that at ultrasonic welding molecular weight of a polyacrylonitrile fibre decreases, destruction occurs, and physical-mechanical properties of a welded seam of artificial fur are worsened accordingly.

Auth.

UDC 669-491

C4.13. Pipe Rolling from Continuous Cast Metal. /I. Zhordania, I. Chkhartishvili, J. Lordkipanidze, Z. Melashvili, K. Papava, K. Khundadze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2. – pp. 71-73 – eng., abs.: eng., geo.

The approach to manufacturing of high quality pipes as a result of solid and hollow billet rolling from continuous cast metal is shown. Optimal parameters of piercing, temperature of piercing and piercing rolling mill rollers speed have been experimentally established.

Auth.

UDC 669.046.74'782'891 '787' 1:541.123

C4.14. Thermodynamic Analysis of the Charges Used at Medium-Carbon Ferromanganese Melting. /J. Bagdavadze, M. Chumbadze, G. Gvelesiani, K. Ukleba/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #1(15). - pp. 8-11. - rus.; abs.: geo, rus, eng.

The results of thermodynamic calculations of silicothermal reduction of the charges of two structures: 1. MnO₂ - 45,8, SiO₂ - 6,3%, CaO - 15,5%, Fe₂O₃ - 1,3%, Mn - 24,1 %, Si - 5,9%, Fe - 1,1 and 2. Mn₂O₃ - 50,4%, SiO₂ - 3,7%, CaO - 11,7%, Fe₂O₃ - 1 %, Mn - 25,7%, Si - 6,3%, Fe - 1,1 %, are presented using program ASTRA-4 . The results of calculations are given in the form of diagrams. Calculations for both charges have shown that the process basically comes to an end below 1200 K and full reduction of manganese does not occur. Obviously, during smelting in electric furnace at higher temperature there occurs full reduction of manganese from MnO by means of electrode graphite.

Auth.

UDC 621.753.5:669.054.8

C4.15. Development and Mastering of Cast Metal Cutting Tools of High Operating Features with Scrap Metal Remelting. /O. Mamatsashvili, B. Margiev, N. Gonjilashvili, Z. Mushkudiani, A. Gabisiani/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #1(15). - pp. 12-15. -rus.; abs.: geo, rus, eng.

Possibility of improving operating features of high cutting steel P6M5 for applying in cast tool production has been indicated. For practical purposes, optimization of steel composition has been done by introducing nitrogen and small additions of nitride generating elements of titanium and boron. Simultaneously the content of chrome has been decreased and content of carbon - increased. The final improvement of steel structure and characteristics has been achieved by preliminary high temperature treatment of cast slabs.

Auth.

UDC 669.168:669.15'782'74-198

C4.16. Development, Investigation and Industrial Assimilating of Silico-Manganese Smelting Using Metal Concentrate. /Z. Simongulashvili, B. Maisuradze, B. Japaridze, M. Mikeladze/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #1(15). - pp. 16-20. -rus.; abs.: geo, rus, eng.

The results of test and industrial smelting of silico-manganese using slam concentration product - metal concentrate - are presented. Because of fine dispersion its briquetting is proposed together with manganese concentrate and manganese containing dust. The effectiveness of using metal concentrate is established, it allowing increasing manganese usage, improving technical and economical indices of the process, decreasing metal cost and preventing environment contamination.

Auth.

UDC 539.67

C4.17. Dislocation Nonelasticity of Monocrystalline $\text{Si}_{0.98}\text{Ge}_{0.02}$ Alloy Doped by Arsenic. /I. Kurashvili, G. Bokuchava, E. Sanaia, L. Gabrichidze, V. Badzoshvili, T. Mkheidze, G. Darsavelidze/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #1(15). - pp. 21-27. -rus.; abs.: geo, rus, eng.

Nonelastic properties of monocrystalline $\text{Si}_{0.98}\text{Ge}_{0.02}$ alloy caused by dislocation motion have been investigated. The mechanical relaxation processes have been revealed during torsional vibrations and their activation characteristics have been determined.

Auth.

UDC 621.793.7:533.9

C4.18. The Effect of Laser Heat Treatment on the Structure and Properties of Steel and Cast Iron. /A. Gordeziani, N. Kenchiashvili, S. Kurashvili, G. Gordeziani/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #1(15). - pp. 28-32. -rus.; abs.: geo, rus, eng.

Parameters of laser beam hardening of steels of grade 20X, 40X, 45, 8XГТ, Y10, ИИХ15 and cast irons of grade Ч415, Ч421 to get maximum depth of thermal effect and hardness have been ascertained. For each selected material metallographic investigation of specimens hardened with ascertained regime have been carried out.

Auth.

UDC 669.504

C4.19. Researches Concerning the Possibilities of Receiving Complex Alloys with Nontraditional Carbon Containing Reducing Agent. /B. Gogichaishvili, T. Buchukuri, T. Tsertsvadze, B. Buchukuri/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #2(16). - pp. 4-7. -rus.; abs.: geo, rus, eng.

Experimental results of receiving manganese containing complex alloys from chemical and metallurgical waste products are given. Nontraditional carbon containing materials such as worn-out tires and cases of depreciated accumulators were used as reducing agent.

Auth.

UDC 621.983/984

C4.20. Press Tool Device for Heading of Internal Combustion Engine Discharge Valve. /Z. Lomsadze, D. Gorgodze, D. Lomsadze/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #2(16). - pp. 8-11. -rus.; abs.: geo, rus, eng.

For heading and simultaneous forming of fire-resistant part of rod blank in order to receive valve head, the construction of horizontal heading form fastened in work space of double-stand crank press is elaborated. Metal for valve head is collected with electric heading, while press effort which with the help of wedge surfaces is transmitted from vertical to horizontal direction, is used for forming.

Auth.

UDC 669.046.25'787'784:541.123

G1. Thermodynamic Analysis of CoO Reduction with Spirit ($\text{C}_2\text{H}_5\text{OH}$). /A. Kandelaki, J. Bagdavadze, Z. Tsikaridze/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #2(16). – pp12-15. -rus.; abs.: geo, rus, eng.

In the present work the complete thermodynamic analysis of reduction of CoO by gaseous spirit ($\text{C}_2\text{H}_5\text{OH}$) with application of the program ASTRA-4, which initial structures are chosen on the basis of the following 3 reactions (change of a ratio CoO with spirit) is spent: $\text{CoO}_{(\text{Cd})} + \text{C}_2\text{H}_2\text{OH}_{(\text{gas})}$; $\text{CoO}_{(\text{Cd})} + \text{C}_2\text{H}_2\text{OH}_{(\text{gas})}$; $\text{CoO}_{(\text{Cd})} + \text{C}_2\text{H}_2\text{OH}_{(\text{gas})}$; The calculations are performed for atmospheric pressure 101 kPa in the temperature range 300-1500K. The basic results are

presented in the form of diagrams (dependence of the contents of components on temperature).

Auth.

UDC 662.74

C4.22. On the Problem of Coal Coking Under the Pressure of Own Volatiles. /A. Gagnidze, S. Kurashvili/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #2(16). – pp16-21. -rus.; abs.: geo, rus, eng.

Production of metallurgical coke from Tkibuli type gas coals with traditional methods still is not possible. Coking under the pressure of own gases can solve this problem. Theoretical preconditions connected with coking of the mentioned coals are discussed.

Auth.

UDC 621.746.6:669.13

C4.23. Investigation of the Character of Preshrink Age Expansion During Crystallization of Gray Cast Iron. /R Gvetadze, G. Mumladze/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #2(16). – pp 21-26. -rus.; abs.: geo, rus, eng.

The peculiarities of changing temperature, preshrink age expansion and stresses in cast iron samples are considered. The character of kinetics of preshrink age expansion development is stated to cause formation of shrinkage defects.

Auth.

UDC 669.187.26

C4.24. The Effect of Slag Quantity on Metal Desulphurization. /A. Bochorishvili/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #2(16). – pp 27-32. -rus.; abs.: geo, rus, eng.

The researches are carried out for detection of slag quantity effect on metal desulphurization under direct and alternating current. It is stated that in liquid metal-slag system, in the case of different slag quantity, slag desulphurization power decreases with the increase of slag quantity because of temperature drop. Graphical picture of desulphurization level is shown for all given versions.

Auth.

UDC 691.791.5

C4.25. Technology of Orbital Welding of Position Butts of Pipelines with Combined Process. /M. Savitski, A. Savitski, G Melnichuk, A. Lupan, V. Vashchenko/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #3(17). – pp 3-9. -rus.; abs.: geo, rus, eng.

The study shows that one of the directions of improving the quality of root welds in position butt joints, particularly in pipeline repair in difficult-to-access places, is nonconsumable electrode welding using activating flux. This process ensures formation of the root weld in all positions without a substrate at toe thickness of up to 6 mm. Groove filling is performed by gas-shielded consumable electrode or flux-cored wire mechanized welding with forced weld formation. Depending on root thickness welding is performed in pulsed mode or by a constant power arc.

Auth.

UDC 621.791.019:658.562

C4.26. Development of Adhesion-Bonding Methods of Reconditioning and Reinforcement of Elements of Industrial and Transportation Structures. /Y. Vasiliev, L. Parshutina, A. Chukashkin/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #3(17). – pp 10-17. -rus.; abs.: geo, rus, eng.

The currently available methods of repair of metal structures and process equipment using polymer composite materials have been analyzed. Special adhesive compositions and adhesion-bonding technology have been developed for forming multilayer metal-plastic couplings for

repairing local defects in pipelines without interruption of product transportation. The influence of the change of stresses in the defective pipe wall depending on the elasticity modulus and repair coupling thickness has been studied.

Auth.

UDC 620.193

C4.27. Electrochemical System of Active Monitoring of Corrosion State of Main Pipelines. /S. Polyakov, L. Nirikova, A. Klimenko/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #3(17). – pp 18-22. -rus.; abs.: geo, rus, eng.

Electrochemical system of active monitoring of corrosion condition of main pipelines has been developed. Criteria have been singled out which provide quantitative characterization of the proneness of main pipelines to corrosion processes. According to the model of active electrochemical monitoring the pipeline can be divided into three types of sections: with a "very high", "increased" and "low" proneness to corrosion failure. The model of active electrochemical monitoring of corrosion condition of main pipelines has been tried out at examination of "Urengoy-Pomary-Uzhgorod" pipeline.

Auth.

UDC 691.791.5

C4.28. Self-Sufficient Welding-Technological Stations Based on Inductive-Capacitive Transducers. /A. Korotynski, V. Kirichenko, S. Okhrimchuk/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #3(17). – pp 33-41. -rus.; abs.: geo, rus, eng.

Circuits with combined powering of the welding arc have been developed and experimentally tested. They make the basis for development of self-sufficient welding-technological stations (SWTS). Different variants of SWTS embodiment have been studied and optimized, and new structures and their functioning algorithms have been proposed. The proposed structures have been tested in the mode of MMA-welding, multistation MMA-welding and self-shielded wire CO₂ welding. Results of testing of SWTS for CO₂ welding with investigation of its technological and service properties are given.

Auth.

UDC 669.14.018.29.046:557.198

C4.29. Industrial Approbation of Al-Mn-Si Alloy Deoxidation of Tube Mark Steels. /J. Mosia, A. Julukhidze, G. Nikolaishvili, V. Mgeladze/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #3(17). – pp 42-46. -rus.; abs.: geo, rus, eng.

The results of deoxidation of tube mark steels with Al-Mn-Si alloy in industrial conditions are considered. Main attention is paid to accumulation of complex data on physical-chemical properties of the alloy and its interaction with the treated melt and on the steel quality for rolling. The necessity of organization of processing of aluminum containing Ferro-alloys is dictated by both, positive results of their probation and accumulation of unlimited reserves of different types of alumino-silicate raw material.

Auth.

UDC 569.67

C4.30. Investigation of Physico-Mechanical Properties of Si_{99.99}Ge_{0.01} Alloy Doped with Boron. /I. Kurashvili, V. Badzoshvili, I. Baratashvili, G. Darsavelidze/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #4(18). – pp 3-8. -rus.; abs.: geo, rus, eng.

Influence of doping with B on IF spectra, shear modulus and values of microhardness of monocrystalline alloys has been studied. Changes of the defects migration energy and mechanical characteristics, caused by the changes of B concentration have been analyzed from the point of view of blocking and releasing from links of different dislocations.

Auth.

UDC 621.791.92

C4.31. Criterial Equation for Substantiation of Optimum Modes of Worn-Out Members Renewal with Automatic Hard-Facing under Flux Layers. /Sh. Chalaganidze, A. Berechikidze/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #4(18). – pp 9-13. -rus.; abs.: geo, rus, eng.

Using the theory of similarity and dimensions the criterial equation of the technological process of worn-out members' renewal with automatic hard-facing under flux layers is derived for stating mathematical union of wear-out and the factors affecting on hard-facing process.

Auth.

UDC 621.771.8

C4.32. Research of Kinetics of Development of Durability of Steel-Aluminum Connection in Solid Phase. /D. Nozadze, D. Macharadze, I. Tavartkiladze, T. Namicheishvili/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #4(18). – pp 14-19. -rus.; abs.: geo, rus, eng.

Samples of layered composite of steel-aluminum are received by method of diffusion welding and pressure performed and the results of metallographic researches and mechanical tests on the samples are presented. It is stated, that in the zone of steel-aluminum contact an intermetallic layer $FeAl_3$ is formed. For the analysis of the received experimental data on kinetic growth of durability of connection of materials in the solid phase, the technique of definition of kinetic characteristics of the process on the basis of analytical solution of the fundamental equation of kinetic development of a new phase is proposed.

Auth.

UDC 621.791.927

C4.33. Plasma Technology of Wc-Co Melting and Its Spraying on the Steel Surface. /A. Tsilosani, Z. Okrostsvavidze/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #4(18). – pp 20-28. -rus.; abs.: geo, rus, eng.

The development of the technologies of getting of protective coatings of machine unites and components based on wolfram-carbide are extremely urgent in the field of new materials technology.

However, the data about the application in plasma spraying of casting wolfram carbide alloys with the cobalt addition are practically absent in the technical literature. The purpose of this work was getting wolfram-carbide cast alloys with cobalt, their application by plasma spraying and study of the properties of coatings, as well as the structural transformations at coating-base interface after the thermal treatment of samples. The study showed that the most wear resistance had the coating received from WC+4% and WC+8%Co compositions. The increase of cobalt composition in the system causes the decrease of WC composition and the formation of such compounds, as W_2C , W_3CO_3C and of solid solution based on wolfram that have a negative influence on the quality and properties of coatings.

Auth.

UDC 621.745.43:669.131.6

C4.34. Prognostication of Gray Cast Iron Mechanical Properties According Dilatometric and Dynamometric Indicators. /R Gvetadze/. Problems of Metallurgy, Welding and Materials Science. – 2007. - #4(18). – pp 29-36. -rus.; abs.: geo, rus, eng.

An equipment for recording inherent deformations and stresses in the process of gray cast structure forming iron and kinetic curvatures of voltages is developed. It is stated that dilatometric and dynamometric parameters defined through aforesaid curvatures can determine cast iron mechanical features within 10 minutes.

Auth.

UDC 622.235

C4.35. Present State of Detonation Works Abroad and in Georgia. /G. Purtseladze/. Mining Journal. – 2006. - #1-2(16-17). – pp. 36-38. – geo., abs.: geo, rus, eng.

Here are presented the companies producing comparatively ecologically pure simplest explosives and rang of their products that are widely accepted at consumers market. The assortment and the prospects of materials used for explosives manufacturing at Georgian market enabling to develop and create ecologically pure explosives on place are considered.

Auth.

UDC 629.113.004

C4.36. Revealing of the Parameters of Quarry Cars Reliability. /V. Lekiasvili, N. Topuria/. Mining Journal. – 2006. - #1-2(16-17). – pp. 60-63. – geo., abs.: geo, rus, eng.

Parameters of reliability of automobiles “Belaz” working in quarries are determined and the analysis of these parameters is executed. The received data allow improving and optimizing methods of cars reliability control.

Auth.

C5. Mechanical Engineering. Tool Engineering.

UDC 621.791.927

C5.1. Exploration of Durability against Porosity While Fusing with Experimental Powdery Wire. /M. Babutsidze, Z. Sabashvili, D. Tavkheldze, G. Dadianidze, I. Berikishvili/. Transport and Machinebuilding. – 2007. - #1. – pp. 7-10. – rus. abs.: eng., geo.

Porosity is the most widespread defect of arc welding. For major items existence of pores in fused metals is inadmissible. Because of the above, one of the principal criterion of the evaluation of quality of materials to be fused is its disposition to porosity. The results of investigation of stability against porosity of fused materials developed in the Technical University of Georgia are considered in the present paper.

Auth.

UDC 669.35.017

C5.2. Microalloying Effect on Structure and Mechanical Properties of Aluminum Bronze BrAl10Fe3Mn1.5. /V. Kopaleishvili, G. Mumladze, G. Gotsiridze, O. Barbakadze, L. Kotiasvili/. Transport and Machinebuilding. – 2007. - #1. – pp. 11-21. – geo. abs.: eng., rus.

Microalloying (1-0; 2-0.1%Si; 3-0.1%Ti; 4-0.1%Si+0.1 %Ti; 5-0.05%Mo; 6-0.1%Mo; 7-0.1 5%Mo; 8-0.1%Mo+0.1%Ti; 9-0.1%V) of aluminum bronze BrAl10Fe3Mn1.5. is carried out. Mechanical properties of cast samples are tested (σ_β , σ_γ , δ_5 , Ψ , Sk). Metallographic research is conducted. Microalloyng with titanium (Ti=0.1%) and vanadium (V=0.1%) improves hardness and plasticity parameters of aluminum bronze. Combined alloying with molybdenum (Mo=0.1 %) and titanium (Ti=0.1%) increases mechanical properties of this alloy ($\sigma_\beta=691$ N/mm², $\sigma_\gamma=310$ N/mm², Sk=890 N/mm², $\delta_5=22\%$, $\Psi=29\%$): In the alloys with optimum chemical composition (e.g. 5.3-5.8) spheroid microconstituents are observed.

Auth.

UDC 614.05

C5.3. Driving Gear of Coplanar Motion of Rotary-Grinding Machine Cutters. /Z. Balamtsarishvili, Z. Chitidze, T. Mchedlishvili, I. Gelashvili, V. Abaishvili/. Transport and Machinebuilding. – 2007. - #1. – pp. 22-27. – rus. abs.: eng., geo.

Proposed article is dedicated to driving gears of a coplanar motion of grinding lines, in particular, mechanism of a coplanar motion of polishing instruments at processing of circular section bar parts. It is determined, that driving provides the necessary difference in the speed of cam and rotor, as well as necessary speed of a coplanar of grinding instruments.

Auth.

UDC 669.1.017: 621.774.35

C5.4. Controlled Rolling of Smooth (Weldable) Seamless Pipes on Rolling Mill “400” / Z. Kopaleishvili, I. Kvirikadze, I. Kashakashvili, I. Abdushelishvili, V. Kopaleishvili/ Transport and Machinebuilding. – 2007. - #1. – pp. 45-56. – rus. abs.: eng., geo.

New technology (Certificate #1647027 SU) for production of pipe steel is created improving grade of metal and pipes. Aluminum (Al=100 %) and Ferrotitanium (Ti=30%) rates (0,6 kg/ton and 0,5-0,75 kg/ton accordingly) are defined in 0,20C0,02Ti steel (Certificate #1544833 SU) intended for production of smooth (weldable) seamless pipes. Aluminum rate is increased up to 0,90 kg/ton and Ferrotitanium rate up to 1,5-2,0 kg/ton in 0,20C0,02Ti steel for improving separation (breaking) of rolled stock especially in summer. This ensures semibrittle fracture of rolled stock ($a_{0,25}=50+40\text{J}/\text{cm}^2$ -melt. #6511; $a_{0,25}=60+10\text{J}/\text{cm}^2$ - melt.#1536) and improved mechanical properties in the pipe rolling shop ($a_{0,25}=60+110\text{J}/\text{cm}^2$ - melt.#6511; $a_{0,25}=50+80\text{J}/\text{cm}^2$ - melt. #1536). Self-organization of the technological cycle "steel - end product" is evident - production of smooth (weldable) seamless pipes on rolling mill “400” by means of controlled rolling changing chemical composition.

Auth.

UDC 674.05

C5.5. Lengthwise Movement Driving Gear of the Rotary-Grinding Rig Cutters. /Z. Balamtsarishvili, Z. Chitidze, T. Mchedlishvili, I. Gelashvili, V. Abaishvili/. Transport and Machinebuilding. – 2007. - #1. – pp. 69-73. – rus. abs.: eng., geo.

The article is dedicated to driving gear rotor of grinding line, in particular to the lengthwise movement gear of grinding tools. It was established that the driving gear provides the necessary rotating frequency of the lobe and the rotor, as well as the necessary minimal speed of lengthwise movement of the grinding tools.

Auth.

C6. Light Industry

UDC 677.03

C6.1. Research of Strike Strings of High-Designed Fibres. / M. Datuashvili, N. Dolidze, L. Lursmanashvili, K. Chirgadze, I. Ugrekhelidze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 3. – pp. 377-379 - rus., abs.: geo., eng.

In the work there is discussed the strike string tightening process while creating the high-designed fibres on physico-mechanic data of the clothes. The research results showed that the tightening of the string occurs while working and it is stopped when we don't work. To regrow the results of the sewing physico-mechanical showings white exploitation we get the recommends to use the difficult constructions in the sewing.

Auth.

UDC 687.157

C6.2. Study of Material for Overall Fruiterer. /K. Chirgadze, N. Dolidze, M. Datuashvili, I. Ugrekhelidze/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 3. – pp. 380-382 - geo., abs.: rus., eng.

In work is considered actual questions labour guard and necessary sanitary-hygienic rates for professional activity of fruiterer. Explored pesticides used in fruiterer on toxicity and recommended materials for storing up special clothes. On the basis of analyze material's fibrous composition and their action with pesticides draw out a reference: to store up special clothes for the professional group of fruiterer with cotton by special impregnate.

Auth.

C8. Construction. Architecture

UDC 624.044.2

C8.1. Several Issues of Premises Calculation – Taking into Account Plastic Deformation.

/R. Imedadze, L. Zambaxidze, L. Imedadze, I. Gharibashvili/. Building. – 2007. - #2(5). – pp. 15-19- geo., abs.: rus., eng.

Static and dynamic calculation method is given and processed in the work for spatial frame systems. Calculation method of plastic deformation for flat frame constructions in case of loads effecting with great intensity thereon is discussed, which results tensions in some of its cross sections, more than it corresponds to flexible margins.

Auth.

UDC 692.297:691.328

C8.2. Determination of Critical Force in Rectangular Cut Columns of Reinforced Concrete. /L. Avalishvili D. Tsanova V. Tepnadze/. Building. – 2007. - #2(5). – pp. 61-64 - geo., abs.: rus., eng.

In the works on the basis of theoretical investigation there is offered Compact formula for fixing critical force for eccentrically pressed rectangular cut columns of reinforced concrete instead of normative difficult formula.

Auth.

UDC 624.15:681.3.068

C8.3. Automatic Calculation of Foundation of Premises. /G. Lutidze, N. Areshidze, G. Areshidze/. Building. – 2007. - #2(5). – pp. 65-70 - geo., abs.: rus., eng.

Attempt of calculating foundations of premises, namely plate calculation is discussed in the work taking into account physical-mechanical characteristics of foundations. Calculation flow chart is given and operation principle of each block is described in the article, which is thereafter simply realized through computer technologies.

Auth.

UDC 692.53

C8.4. Methodic of Selecting Rational Construction and Type of Floors of Industrial Building. /T. Khmelidze, G. Gureshidze, I. Khmelidze/. /. Building. – 2007. - #2(5). – pp. 77-79 - geo., abs.: rus., eng.

Methodic of selecting rational constructions and types of floors in industrial premises is discussed. List and requirements necessary for the exploitation terms of floors for engineering a building which are specified for the floors taking into consideration a number of specific moments.

Auth.

UDC 691.714

C8.5. About Some Flaws of Rigidity Conditions of Composed, Welded Steel Crosscut Beams. /N. Berishvili, I. Mshvenieradze, Kh. Gorjoladze/. Building. – 2007. - #2(5). – pp. 80-83 - geo., abs.: rus., eng.

In this work it is described a calculation method of welded steel joints having composed cross-sections and a critical analysis of the existing method is given. It is proposed a new, more rational rule of calculation, which is based on a composition of a table of new ranges due to designing cross-section by the recommended method.

Auth.

UDC 694.5

C8.6. Transportation and Enlarged Arrangement of Threejoint Truss Bar Farms. /M. Chanturia, I. Maisuradze, T. Chanturia/. Building. – 2007. - #2(5). – pp. 92-97 - rus., abs.: geo., eng.

Transportation and arrangement variants of threejoint truss bar farms as well as description of various equipment and installation and maintenance conductors and their application methods are specified in the article.

Auth.

UDC 691.54

C8.7. The Influence of the Mineralogical Compositions of Cement and Sand Solutions Solidity and Shearing Strength. /M Turdzeladze, T Nereklishvili, I Khergiani/. Building. – 2007. - #2(5). – pp. 101-109 - geo., abs.: rus., eng.

In the work it investigated the influence of the mineralogical and chemical compositions of shearing strength of the solution. The tests were carried out on the beams made of cement and sand solution, in order to see the kind of bend caused by one concentrated strength. It's proved that the composition of the cement marks the considerable influence on the solidity and deformation of the solution.

Auth.

C9. Agriculture and Forestry. Fishery

UDC 631.471

C9.1. Soil Contamination with Heavy Metals in Imereti Region (Georgia). /T. Urushadze, G. Ghambashidze, W. H. Blum, A. Mentler/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 122-130. – eng., abs.: eng., geo.

Soil contamination with heavy metals – Cd, Cu, Mn, Ni, Pb and Zn was studied in the main soil types of Imereti region. An attention was paid to diffusion pollution and metal distribution along the river valleys representing the major flow paths for transporting different pollutants including heavy metals. The results of the laboratory analyses were compared to maximum permissible concentrations and guide values defined by Georgian legislation. An attempt was made to establish background concentration for heavy metals in studied soils and to use them as reference values in assessment of soil pollution. The comparison shows that the concentrations of Cd, Cu, Mn, Ni, Pb and Zn exceed their background contents in some soil samples.

Auth.

UDC 633.34

C9.2. On a Possibility of Stimulation the Growth Biomass and Yield Seed of Soya by Application of Phillipsite and Phillipsite-Containing Organo-Zeolite Fertilizers. /T. Andronikashvili, M. Kardava, M. Gamisonia/. Proceedings of the Georgian National Academy of Sciences, Chemical Series. – 2007. – vol.33. - # 1. – pp. 105-107 – geo., abs.: rus., eng.

According to the field experiments, the correlation of the podzolic, acid, infertile (pH=3.9 unit) soils of Guria Region and the phillipsite-containing rock and fresh manure mixture have been investigated. This composition neutralizes the acidity of the soil and increases its fertility. The stimulating energy of this composition is demonstrated by its ability to increase biomass and yield seed of soya. When 20 t/ha of phillipsite is applied this gain is 48.4 and 51.7%. With application of "Zeonak F" in the amount of 40 t/ha these values are 58.2 and 138.1%.

Auth.

UDC 633.15

C9.3. Some Agronomical Problems of the Georgian and French Hybrids of Corn. /A. Devidze, D. Tsiklauri, K. Fofkhadze, T. Akhaladze/. Mitsatmokmedebis Institutis Shromebis Krebuli. – 2007. – XXXXV – pp. 18-23. – geo., abs.: rus., eng.

The natural environment in Shida Kartli enables on one place, in one and the same year to receive a grain yield of autumnal barley and corn. Therefore we studied local and French hybrids: "Tserovani-1", "Baltis" and "Optomis". The corn hybrids sown after barley have given a grain yield approximately 5t/ha on a background of a mineral fertilizer N₆₀P₄₀K₃₀, at consistency of stand of plants of 60 thousand on hectare.

Auth.

UDC 632.954

C9.4. The Influence of Herbicides on Kidney Beans Harvest and on Weeds in the Conditions of Gare Kakheti Plateau /I. Kochashvili/. Mitsatmokmedebis Institutis Shromebis Krebuli. – 2007. – XXXXV – pp. 67-72. – geo., abs.: rus., eng.

Due to experiments carried out in Kakheti Experimental Station in 1997-2001, the influence of herbicides different dosage on kidney beans harvest and on weeds amount in it was studied. It was found out that to get rid off weeds and to get a big harvest of kidney beans it is better to take in Fuzifad (3,5 kg. per hectare) when the beans plant is in 3-u leaf fase. The above measure increases the kidney beans harvest bg 33-40% (2.5-3.0 c. per hectare) and gives 1.5-1.6 laris profit for each spent lari.

Auth.

UDC 633.11

C9.5. Tangent Method of Examination Biological Behavior of Seeds and Coarseness of Seeds on Reaction of Plants in Agrocoenosis. /G. Jamburia, N. Machavariani/. Mitsatmokmedebis Institutis Shromebis Krebuli. – 2007. – XXXXV – pp. 85-96. – geo., abs.: rus., eng.

It was examined that the tangent method of biological behavior of seeds, coarseness of seeds on the reaction of the plants in biocenosis, correlative connections between the masses of seeds and their linear measures and, besides, by the new method it is examined that the norm of sowing seeds it is necessary to be corrected it from the quality of survived seeds.

Auth.

UDC 635.34/.36:631.8

C9.6. To Fertilize the Soil for Cabbage By Concentrate Organic Fertilizer. /A. Saralidze, E. Tsimintia/. Mitsatmokmedebis Institutis Shromebis Krebuli. – 2007. – XXXXV – pp. 110-117. – geo., abs.: rus., eng.

There was worked out an organic fertilizer - chicken dung, via reducing dampness by 16-18%. It contains 4,2% nitrogen, 2,8 phosphor, 3,1 K₂O. Before planting sprouts, dung N₃₄ kg is brought in the amount equivalent to superphosphate norm, which is analogous by concentration. The same amount is brought in the first and the second feeding and it guarantees high crop with low cost, which is safe for men's health.

Auth.

UDC 632.937:631.86/.87

C9.7. Guarantee for Rich Harvest. /R. Gakhokidze/. Monograph. – 2008. – pp. 324. – geo. abs. eng.

The possibility of application of bioenergy activators in agriculture is considered. By means of them it is possible to adapt plants to various conditions - even plants on damaged soils are more resistant to diseases and pests and easily conform to adverse weather conditions. The use of bioenergy activators gives possibility to obtain ecologically clean, high quality harvests. Special attention is given to the use of ecologically clean agrochemicals, the test results for new Georgian biostimulator Biorag is given.

Auth.

674.021

G9.8. Dimensioning and Qualitative Specifications of Beech Boards in Georgia. /M. Tepnadze/. Transport and Machinebuilding. – 2007. - #1. – pp. 28-35. –rus. abs.: eng., geo.

The results of research of dimensioning and qualitative specifications of round beech timber made in Georgia, according to which data it has been ascertained that the main sort-formative vices of beech timber is a false heartwood, heartwood rot, twigs, cracks and crookedness. It is mentioned that beech timber is attributed to the group of thick round timber with the average diameter of 65 cm. The data on distribution of vices in timber enable to decide the questions of rational and complex treatment of beech timber aiming at gaining maximum profitable output.

C10. Water Economy. Melioration

UDC 627.841

C10.1. Hydraulic Equation of Streams with Different Densities. /T. Voinich-Syanozhenski/. Hydro Engineering. – 2007. - №1(1). - pp. 22-30. – rus., abs.: geo., rus., eng.

There was given the basic analysis of getting hydraulic equations for flows with different density. With an example of free surface quasihorizontal flows with different density, considered the way of getting the systems of their hydrodynamic equations in case, when don't mentioned diffusion and permit Sen-Venan's approximation on dividing surface ($Bu=0$). Ill. 1, bibl. 7.

Auth.

UDC 627.841

C10.2. Stability of Transient Incurred by Rotation Speed Changes in Centrifugal Pumps. /K. Arobelidze/. Hydro Engineering. – 2007. - №1(1). - pp. 31-35. – eng., abs.: geo., rus., eng.

There is considered the centrifugal pumps with variable rotation speed in pump stations providing more flexibility of water supply systems, as well as less electric power consumption and water losses. The aim of this work is to define a technique for finding the optimal sizes of various parameters necessary for the design of water supply system and provide stability. There is described an approach to a technique based on application of the Routh-Hurwitz criterion.

Auth.

UDC 627.841

C10.3. About Some Peculiarities of the Equation Linearization and Motion Stability of Long Waves Superposed on the Flows. /Sh. Gagoshidze/. / Hydro Engineering. – 2007. - №1(1). - pp. 47-53. – rus., abs.: geo., rus., eng.

There is considered the one-dimensional propagation of long waves on stationary flows of arbitrary depth. An approach to the linearization of a system of basic equations is discussed. A differential equation is derived for long wave oscillations with dispersion, by means of which the criteria are obtained for wave blocking and destruction on the counterblow and for the formation of long interrupted waves on concurrent flows of constant depth. A new relation is derived for calculating conjugate depths of a hydraulic jump, which, as different from the widely used Bakhmeteff formula, is equally suitable both for a "perfect jump" and for a "wave-like jump". Ill. 2, bibl. 5.

Auth.

UDC 627.841

C10.4. An Assembly Type Low Water Head Spillway Dam. /Z. Gedenidze, T. Kvitsiani, S. Avaliani/. Hydro Engineering. – 2007. - №1(1). - pp. 58-63. – geo., abs.: geo., rus., eng.

There is presented a new weighted spillway dam, with the standardized water discharge and height of a dam, which is intended to be manufactured in a factory in the form of sections and then simply to assemble these sections on the site of the construction. The reduction of the volume of concrete in the body of an assembly type thin-walled spillway dam may exceed 50-60%, therefore its use is cost-effective not only for electricity generation, but also for other purposes. Ill. 1, Tabl. 2, bibl. 5.

Auth.

UDC 627.841

C10.5. Stability Conditions for the Dividing Surface of the Streams with Different Densities. /L. Gogeliani, K. Magradze/. Hydro Engineering. – 2007. - №1(1). - pp. 64-70. – rus., abs.: geo., rus., eng.

There is considered the sustainability of contact surface between two flows with different density for specific task about engineering problem concerning determination of stormy stream aeration criteria on inclined fall. It was obtained the additional approximate critical condition for disturbance of sustainability. Bibl. 2

Auth.

UDC 628.1

C10.6. Aspects of Estimation of Pump Stations Work Reliability of Systems of Water-Supply. /L. Klimiashvili, V. Nachkebia, K. Khatiuri /. Hydro Engineering. – 2007. - №1(1). - pp. 71-75. – geo., abs.: geo., rus., eng.

In system of submission and distribution of water, one of the top-ranked constructions is a pump-station on which normal work in many aspects depends on the degree of water support for consumers. In the work of studying, the analysis, an estimation and forecasting it is important the statistic data of water submission and distribution. From operating about 40 pump stations of Tbilisi data of refusals of 7 pump stations were studied statistically during the exploitation, from which was established the percentage parity of refusals of elements of the technical equipment. On the basis of the analysis of these data was made an graph of intensity of refusals and operating time. Using listed above resources gives us the possibility to increase a degree of reliability of water-supply and distribution to the consumers. Ill. 3, bibl. 5.

Auth.

UDC 628.1

C10.7. Wastewater Treatment of the Phenols by Alumina-Silicate. /M. Kobakhidze, M. Tsitskishvili/. Hydro Engineering. – 2007. - №1(1). - pp. 81-88. – geo., abs.: geo., rus., eng.

There are presented the results of researches in the field of application natural and synthetic zeolites and other supports in quality of sorbents of phenol. It has been investigated the absorptive properties of zeolites at removal of phenol from a solution in tetrachloromethane and water. The measurements for water solutions of phenol in concentration of 0,1-0,45 mol/l are carried out also. It was established earlier, that the adsorption grows in these limits and it has linear dependence on factor of refraction. The amount of phenol grows with increase of concentration of solutions. Most active adsorbent is mordenite-H. Silica KCK is active phenol adsorbent, also has appeared inefficient at removal phenol from water solutions owing to adsorption of a plenty of water. The opportunity of oxidation of phenol adsorpted on zeolites by a mix ozone with oxygen is investigated. It will create an opportunity for clearing phenolcontaining wastewater at realization of adsorption and ozonation processes together. It has appeared, that the oxidation passes before complete decomposition of phenol. Even traces of phenol are not found out in water. Tabl. 1, bibl. 7.

Auth.

UDC 551.47

C10.8. Method of Calculation of Water Stormy Flow in Closed Reservoir. /I. Kadaria/. Hydro Engineering. – 2007. - №1(1). - pp. 125-131 – geo., abs.: geo., rus., eng.

There is offered the method of calculation of the water level quasi-static change in lakes and reservoirs after long term influence of wind, which fully satisfies the equation. Maximal water level rise is established by wind direction on opposite side of reservoir and possible denudation conditions of bottom on the near bank. There is brought an example of calculation. In hydro building it is essential to carry such calculations, because in seaside areas material damage caused by water stormy flow is more than the damage caused by wave influence. Ill. 3, bibl. 7.

Auth.

UDC 628.1

C10.9. Using the New Generation's Aluminsilicate Adsorbent for Reducing the Color in Drinking Water. /N. Geladze/. Hydro Engineering. – 2007. - №1(1). - pp. 132-138 – geo., abs.: geo., rus., eng.

According the experimental research is established, that adsorbent made from kaolin has high decolorize activity with the addition of carbonate's activation on the base of magnetite, dolomite or magnum, adsorbent's maximum effectiveness is reached by the activeness addition at 20% amount from the masses of main material (kaolin), burn temperature 800-900⁰C and burn duration 10-20 minute, by the store up technology. At the time of making the alumina-silicate's adsorbent with the industrial scale, by the economic and technologic way is more profitable to use magnetite and dolomite as activation's admixture, as there is difficult chemical process beyond the base carbon. Ill. 2, tabl. 3, bibl. 5.

Auth.

UDC 627.841

C10.10. Stability of a Free Surface of a Turbulent Water Stream. /T. Voinich-Sianozhentski, L. Ghogheliani/. Hydro Engineering. – 2007. - №2(2). - pp. 7-16 – rus., abs.: geo., rus., eng.

It was deducted the condition of existence of stability of a free surface of flat turbulent stream with the uniform mode of current and free surface, in the case when the length of waves, spreading (expansion) on free surface of water stream is small in comparison with its thickness and the layer of air environment over it.

Auth.

UDC 627.841

C10.11. The Movement of Fluid in Pipelines with Various Debit. /T. Kvitsiani, Z. Gedenidze/. Hydro Engineering. – 2007. - №2(2). - pp. 17-22– rus., abs.: geo., rus., eng.

In this paper, on base of theoretical investigation of fluid with variable mass lengthways of flow, the equation, circumscribing the steady-state motion of fluid in the perforated pipelines for various case of segregation of expenditures is obtained. Equation is integrated for the cases of the constant pressure along the pipeline.

Auth.

UDC 627.223.6

C10.12. Waves in Debris Flows. /O. Natishvili/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 66-69. – eng., abs.: eng., geo.

Mixture of structural debris flow is considered in the form of quasicontinuum. Wave phenomena are treated in the limits of one-dimensional problem. The processes of motion of long, continuous, dynamic and monoclonal waves are investigated. The problems of stability of initial uniform motion of debris flow in steep gradient beds are analyzed. Attention is paid to the increase of wave at inlet of pressureless flow in the pressure construction.

Auth.

UDC 631.459

C10.13. Modern Methods of Calculating the Prediction of Water Erosion. /Ts. Mirtskhoulava/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 70-75. – eng., abs.: eng., geo.

The method of predicting erosion is further perfected. The coefficients entering the former equation are specified through the use of the so-called fatigue theory of erosion.

Auth.

C12. Transport

UDC 656.25

C12.1. Theory-Multiple Interpretation of Transport Complex Conception. / A. Dundua, G. Kvantaliani/. Transport and Machinebuilding. – 2007. - #1. – pp. 57-61. – geo. abs.: eng., rus.

In the work, conception of transport complex by means of using methods of modern algebra and logics has been defined. It is shown that transport model appears algebraic grate and structural scheme of stated complex has been worked out by means of its use.

Auth.

C13. Medicine. Healthcare

UDC 616.13-004.6:616-005.1

C13.1. Blood Flow Biomechanics and Initial Factors for the Atherosclerosis Development.

/F. Todua, M. Beraia/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 131-138. – eng., abs.: eng., geo.

It is accepted now that homodynamic forces are the localizing factors in atherogenesis, but conclusions about the reasons of the vessel wall damage are inconsistent. The purpose is to study and reveal the initial factors of atherogenesis in the aortic arch. 25 men from 17 to 45 years old have been investigated by MR angiography on Siemens-Avanto. In the aortic arch at the time of protodiastole the blood flow is separated into opposite directed streams and the flow arrest with the flat flow profile is noted in discrete sites of the aorta. Blood protodiastolic acceleration is 6 times higher than that in the systole, and shear stress exceeds the verge of the endothelial endurance. The circular blood flow at the aortic arch in protodiastole is characterized by high acceleration, and the local pressure in flat profile can damage internal layer of the vessel.

Auth.

UDC 616.1

C13.2. Gene Therapy for Cardiovascular Disease. /N. Kipshidze, P. Iversen/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 139-149.- eng. abs.: eng., geo.

PTCA treatment has become more extensive and gained favor as an alternative treatment for coronary artery bypass grafting (CABG). PTCA leading to wound-healing responses that include thrombosis, smooth muscle proliferation and migration, elastic recoil and vascular remodeling that may contribute to recurrent obstruction or vessel narrowing referred to as restenosis. Recent studies have focused on the use of antisense compounds to prevent restenosis following PTCA. Until recently, the clinical applicability of antisense technology to the problem of restenosis has been limited due to a relative lack of target specificity, slow uptake across the cell membranes, and rapid intracellular degradation of the antisense oligonucleotides. The recently introduced AVI- 4126 (Resten-NG) belongs to a new family of molecules known as the phosphorodiamidate morpholino oligomers (PMO). The most robust of the observations to date include the fact that AVI-4126 is safe and effective in different vascular disorders in multiple species and conducted by multiple investigators. Three different methods for local and systemic delivery have been described, each with advantages and limitations. Efficacy in animal models is encouraging. Further, clinical trials with AVI-4126 indicate that the agent is very safe. The last remaining question if AVI-4126 a place in the future therapeutic regimen for the prevention of restenosis and other disorders remains unanswered.

Auth.

UDC 616-005.4:613.98

C13.3. New Approaches to Treatment of Gerontologic Patients with the Presence of Ischemic Heart Disease (IHD) with Syndrome of Stenocardia. / N. Kipshidze, T. Zubiashvili/.

Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 1. – pp. 150-152.- eng. abs.: eng., geo.

Interest in the quality of life of elderly people and state of health of old-aged patients has recently considerably increased. Special attention is given to cardiovascular pathology which is the main reason of death for this category of patients. The albuminous component acquires an increasing significance in modern representations about atherosclerosis and cholesterol theory is gradually replaced by lipoproteidic one. The purpose of the present work was to study efficiency of joint application of vitamin E intramuscularly and oral administration of the combined preparation "Triovit", containing several antioxidants (β -carotene, vitamin E, vitamin C and selenium), in gerontologic patients with (IHD) and syndrome of stenocardia and hyperlipidemia. It is proved for the first time that vitamin E decreases not only cholesterol, but also low density lipoproteids (LDL) and triglycerides (TG). At the same time, vitamin E increases the level of high density lipoproteids (HDL). The obtained changes are maintained in patients for a long time after termination of reception of the preparation. Application of vitamin E in patients with ischemic heart disease promotes improvement of the clinical period of the disease.

Auth.

UDC 616-089.843:616.13.089

C13.4. Revascularisation of Arterial Prosthesis and Autovenotransplant. /N. Javakhishvili, M. Komakhidze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3. – pp. 107-113.- eng. abs.: eng., geo.

After implantation of prosthesis in the artery, incapsulation and formation of neointima, there develops "vasa vasorum", which penetrates into the prosthesis from the outside and from the inner side – from the prosthesis lumen. Internal initiated vessels, contacting with the external, anastomose with each other. In the prosthesis internal lining original capillary network of hexahedral form is produced. This geometric form depends on decussation of longitudinal and transversal filaments of prosthesis fibers. Practically the importance of neointima vascularization lies in the fragility of capillaries, resulting in small hemorrhages formation. Neointimal capillary topography, their exclusive location to prosthesis lumen, these small hemorrhage foci can simulate a coagulation chain reaction in the prosthesis. After autovenoplasty in the artery and after restoration of blood flow the autovenotransplant sharply extends under arterial pressure, and there was no case of rupture or aneurism development in the transplanted veins. In some weeks the transplanted vein changes sharply, the wall thickens and, which is of great importance, vascularization of vein changes and becomes similar to the vascularization of the artery, into which the vein has been transplanted.

Auth.

UDC 616.89-008.454:616.12-008.331.1

C13.5. Relationship between Depression and Religiousness with the Atherogenic Profile of Lipoproteins in Arterially Hypertensive Patients. /N. Kipshidze, S. Kabisashvili, N. Kakauridze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3. – pp. 114-118. - eng. abs.: eng., geo.

The research carried out during the last two decades made it possible to confirm from the standpoint of the proof-based medicine the relationship of stress, mental depression and anxiety with the cardiovascular system diseases (CVSD). The majority of depressive persons has been found to manifest a higher percentage of a coronary heart disease (CHD), arterial hypertension and other cardiovascular pathologies. According to an analytical forecast of the World Health Organization, by 2020 CVSD and mental depression will be leaders in reducing full-value life in the whole world. Lately, more obvious has become the interest of science in studying the relationship of religion with depression, stress, and AH, since many studies are known to have corroborated the existence of a direct correlation between the said factors. Proceeding from the above, a comprehensive study of the relationship between depression and CVSD presents a rather topical problem of medicine. The purpose of the study is to establish a relationship between religiousness, mental depression and lipids in patients with AH. Elderly patients aged 60 to 74 were subjects of our study. Patients were divided into four groups according to their sex

and religion. The depressive state used to be determined by the Fallstein Geriatric Depression Scale. Religiousness was measured according to personal prayers and the frequency and regularity of participation in religious rituals. The studies revealed these criteria to be most sensitive in terms of evaluation of religiousness. Of biochemical parameters, the following were measured in blood serum: TCh, Tg, HDLCh, LDLCh. As a result of an analysis of the study results, the following data have been obtained: a reliably low depression assessment points are observable in the believers against the non-believers; respectively, in the believer males a low correlation of depression, AH and TCh is observed. In the non-believer males a high direct correlation of depression and AH, AH and TCh, LDLCh and Tg is observed. In the believer females, a negative correlation of depression and TCh, LSLCh and Tg is observed, whereas in the non-believer females such correlation is positive. Proceeding from the above, the favorable impact of religiousness on the manifestations of depression, as well as the AH and lipid metabolism can be assumed.

Auth.

UDC 616.12-008.331:616.379-008.64

C13.6. The Association of Blood Pressure Levels with Peritoneal Insulin Absorption in Diabetic Patients on Peritoneal Dialysis. /T. Pantsulaia, L. Managadze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 3. – pp. 124-126. - eng. abs.: eng., geo.

Intraperitoneal insulin administration is very important for diabetic patients to control blood glucose level and to prevent development of peripheral hyperinsulinemia, which increases the risk of atherosclerosis. Factors affecting intraperitoneal insulin absorption are unclear, and our aim was to study some of the parameters which theoretically can play a role in insulin absorption. One of these parameters is blood pressure, which in itself is associated with the peritoneal transport status. In the results, we give the correlation between insulin absorption and blood pressure; numbers of blood pressure above normal contribute to insulin absorption ($p=0.045$). This fact is very important in the treatment of diabetic patients, to ensure good control of blood glucose level.

Auth.

UDC 616-089.843:616-005.4

C13.7. Intramyocardial and Extramyocardial Autologous Endothelial Cell Transplantation for Treatment of Ischemic Cardiomyopathy (Experimental Investigation). /V. Chekanov, V. Nikolaychuk, N. Kipshidze/. Bulletin of the Georgian National Academy of Sciences. – 2007. – vol.175. - # 2. – pp. 120-127. - eng. abs.: eng., geo.

Regional myocardial perfusion and function may improve after cell transplantation. The objective of the study was to investigate the feasibility and efficacy of autologous endothelial cell implantation into myocardium or transplantation onto myocardium using a fibrin matrix. An ameroid constrictor was placed on the circumflex artery of 48 adult sheep to induce ischemic cardiomyopathy. Four weeks later, the animals were divided into the following six groups ($n=8$ in each group): cardiomyoplasty alone without cell transplantation (CMP), cardiomyoplasty with EC added to a fibrin platform and placed between the myocardium and latissimus dorsi muscle (CMP+EC), autologous EC transplantation (AEC), saline injection with added denaturated cells (SAL), fibrin sealant injection without EC (FS) or a control (CON) group. Eight weeks after treatment the left ventricular function was investigated and the animals were sacrificed. Myocardial blood flow and capillarization were evaluated. Eight weeks after injection (AEC, SAL, FS groups), or cardiomyoplasty (CMP, CMP+EC groups) or control (CON) groups, ventricular function was markedly improved in the CMP, CMP+EC and AEC groups ($p<0.05$ versus baseline, SAL, FS and CON), but had deteriorated in the SAL, FS and CON groups ($p<0.05$ versus baseline). Myocardial blood flow was also deteriorated after ameroid constrictor placement, but 8 weeks later was increased in the EC-group. Myocardial blood flow was also deteriorated after ameroid constrictor placement ($p<0.05$ in all groups vs. baseline), but 8 weeks

later was increased in the EC and CMP+EC groups ($p < 0.05$ vs. before treatment). In the CMP, SAL, and CON groups myocardial blood flow continued to deteriorate for the next 8 weeks. In the FS group myocardial blood flow had a tendency to increase after treatment, but statistically non-significant. Histology and electron microscopy revealed extensive neovascularization and improved myocardial appearance after endothelial cell implantation into myocardium and cell transplantation between myocardium and latissimus dorsi muscle. In the other groups capillary density was considerably deteriorated. These results suggest that intramyocardial transplantation of autologous EC within a fibrin matrix and application of EC to the myocardium during cardiomyoplasty enhances neovascularization, increases myocardial blood flow, and improves the left ventricular function.

Auth.

D. INTERSECTORAL PROBLEMS

D1. Organization and Management

UDC 681.5

D1.1. Graphical Imitation of Controlling Process and Increase of Operator Activity Reliability in the Automated Systems. /O. Shonia, L. Kakashvili/. Georgian Oil and Gas. – 2007. - №21. - pp. 127-128. – geo., abs.: geo., rus., eng.

The method of the paper is representation of graphical information into the automated system AutoCAD. By means of main component - the graphic editor it's possible to create, correct and use a drawing for any difficulty. The system ability is shown according to the solving of this or that task. This system is very comfortable. Thanks to it the minimum of human resources will be used during creating the work drawings of any kind.

Auth.

D2. Nature Protection. Ecology

UDC 628.1

D2.1. Descriptive Modeling of Potable Water Quality According the Data of a Number of International Standards. /Z. Tsikhelashvili, P. Giorgadze/. Hydro Engineering. – 2007. - №2(2). - pp. 29-42. – rus., abs.: geo., rus., eng.

The general state of the problem of environment concerning the contamination of water resources and the provision of population need in potable water is considered. The methodology of comparative analysis of the results of descriptive modeling of potable water quality by the international standards (ГОСТ 2874-82, BO3 1993, EC 95/C 13103, San Pin) is presented. Descriptive models built up by the proposed methodology to the data of the above given standards are presented in annexes.

Auth.

UDC 628.1

D2.2. Wastewater Treatment of the Phenols. /M.Kobakhidze, D.Gurgenidze/. Hydro Engineering. – 2007. - №2(2). - pp. 43-47 – eng., abs.: geo., rus., eng.

It has been introduced the results of research of phenol wastewater treatment via alkylation and ozonation reactions. The chemical conversion is better for alkylations of sorted phenols by alcohols. The ozonation gives the possibilities to destroy phenol till un-toxic compounds.

Auth.

UDC 547.4/5

D2.3. Migration of Heavy Metals into Environment and Prognosis of its State in a Result of Cumulated Substances Emission. /E. Shengelya, L. Gvasalya/. Georgian Chemical Journal. – 2008. –v. 8 - #1. – pp. 73-75. – rus. abs.: geo., eng.

The influence and relationship between the pollution of separate parts of eco-system by copper and health of the human being is discussed. The mathematical model is produced that can define the consistency of copper in separate parts of this system in specified periods.

Auth.

UDC 624.131.6

D2.4. Purification of Quarry Waters From Ions of Heavy Metals Using Sulfide Compounds. /S. Andguladze, V. Gaprindashvili, T. Lomya, M. Chankotadze, L. Chankvetadze, K. Tserodze/. Georgian Chemical Journal. – 2008. –v. 8 - #1. – pp. 76-78. – rus. abs.: geo., eng.

The technology of purification of quarry waters on the basis of reprocessing barite concentrate has been developed. The process enables to obtain sulfide compounds used as sediments chemical reagents. The technological parameters of reprocessing float-barite and purification of quarry waters have been determined. It is established that during the usage of the sulfide compounds as precipitating reagents the deep purification of acid quarry waters from ions of heavy metals with acceptance of copper containing sulfide sediments useful for subsequent use is achieved.

Auth.

UDC 351.777.6

D2.5. Integrated Assessment of Water Quality of Some Rivers in Adjara. /L. Gvasalya, I. Baramidze/. Georgian Chemical Journal. – 2008. –v. 8 - #1. – pp. 79-83. – geo. abs.: rus., eng.

During summer 2006, research was held to determine concentration of dissolved oxygen, OBC₅, nitrate, nitrite, ammonia, phosphate and silicate on the four observed rivers Kintrishi, Korolistskali, Kubastskali, Barckhana (Adjara) in two points. The first point, the upper segment - from the head 2.5 km (Kintrishi 5 km) station and the second point, the lower segment - head zone. Pollution index was calculated from the data. According to the materials, rivers are classified from “very clean” to “polluted”.

Auth.

UDC 628.543

D2.6. Petroleum and Oil Containing Industrial and Domestic Sewage Purification. /N. Makharoblishvili, Z. Tsikhelashvili, N. Makharoblidze, K. Mumladze/. Aghmashenebeli. – 2007. - # 3. – pp. 166-172. – geo., abs.: eng., rus.

The experiments are conducted for purification of petroleum, oil containing industrial and domestic sewage by using minerals extracted in Georgia. The device is examined for using in urban filling station, auto parks, car wash stations and objects of catering with the aim to purify petroleum and oil containing domestic sewage locally before their launching in city drainage system.

Auth.

UDC 628.543

D2.7. On the Chemical Composition and the Pollution of Waste Waters. /A. Dolidze, V. Dolidze, K. Makhashvili/. GEN. – 2007. - #4. – pp. 80-82. – rus., abs.: eng.

There are discussed some issues associated with the specific features of chemical composition of waste and natural waters and also the basic ionized impurities of natural waters and their characteristics. The admissible concentrations of radionuclides in natural and waste waters are given, the maximum permissible concentrations of chemical agents in potable water established by different agencies and services are considered.

Auth.

D4. Other Intersectoral Problems

UDC 551.5

D4.1. Elaboration of Methods and Means of Remote Sensing of Dangerous Meteorological Phenomena and Selecting of Different Objects by Means of Polarization Radar. /K.Tskhakaia, G. Aduashvili, V. Meladze/. Works, 10. – 2007. – pp. 297-300. – rus., abs.: eng., geo.

The task of presented paper is to determine and to search the mechanism of connections the polarization parameters of radar signals and characteristics of atmospheric formations. Through the obtained results the most effective methods and reliable means of detecting the dangerous meteorological phenomena and selecting of different objects by polarization radar are to be worked out.

Auth.

UDC 728.6

D4.2. Nonflexible Deformations of Thick Walled Cylinder Cover in Terms of Permanent Temperature Gradient and Pressure. /T.Bacikadze, N. Murgulia/. Hydro Engineering. – 2007. - №2(2). - pp. 54-59. – geo., abs.: geo., rus., eng.

Strained and deformed state of thick walled cylinder for the effecting conditions of pressure and permanent temperature gradient existing on inner and outer surface has been studied. Flexible as well as flexible-plastic and plastic deformations are considered.

Auth.

UDC 543.53

D4.3. On the Problem for Improvement of the Automatic Line Dynamic Characteristic of the Pneumatic Sampler on the Neutron Multiplier). /T. Sharabidze, T. Cokaya/. Georgian Oil and Gas. – 2007. - №21. - pp. 123-126. – geo., abs. geo., rus., eng.

The article considers the radiation safety problem of the personnel attending the neutron multiplier. On the pneumo-automatic line a damper device has been developed that automatically fixes a capsule with the sample in the radiation zone. 4 ill., bibl. 3.

Auth.

UDC 339.142:519.876.3

D4.4. Using the Net Model to Analyse the Economical Dynamic. /N. Sesadze, V. Sesadze, T. Bazuashvili, V. Gemazashvili, E. Abramidze/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 125-130 – geo., abs.: eng., rus.

Modern economical theory at the level of micro and macro economies, uses mathematical methods and models as the essential and natural elements. Using the mathematics in economy, gives us an opportunity to separate and formally describe especially, important and existing relations between the main economical values of the object. According to the method of deduction, which is based on the initial data and their relations, we shall receive an adequate conclusion about the object, which would be studied by us. The mathematic and the statistic methods give us a chance to receive some new information about the object and to estimate the values and the dependence on their forms and parameters. In this article is considered: The Net model, which gives us an opportunity to investigate the stability of price and volume on the market by using the traditional demand and supply curves, when they are delayed in time. We also investigate the behavior of manufacture volume and the price, while the initial point does not coincide with the equilibrium.

Auth.

UDC 330.3:519.22

D4.5. The Analysis of Economy on the Basis of Solou Model. /N.Sesadze, V. Sesadze, V. Gemazashvili, T. Bazuashvili, E. Abramidze/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 131-136 – rus., abs.: eng., geo.

There is the description of model of economic growth of R. Solou. The article also includes all the basic conclusions, made as a result of the analysis of economy on the basis of given model. It is shown, that a condition of the accelerated growth in a steady condition is speed of technological changes and increase of a level of savings can lead to increase in rates of growth if to use spillovers.

Auth.

UDC 616.31:681.5

D4.6. Development of Computer Network Architecture for Stomatological Service of Georgia. /K. Kamkamidze, M. Manukov, M. Tevdoradze, R. Sanikidze, M. Saldadze /. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 137-142 – rus., abs.: eng., geo. Questions of using of computer technologies in stomatology of Georgia are discussed in the given article. Main aspects of using of computer and characteristics of main types of systems, which are usable in stomatology, are given. On the basis of mentioned questions architecture of computer network, which supports of all possible variants of using of computer in stomatology, is developed. Main problems of using of network are defined and main parameters of estimation of functioning of network are formulated.

Auth.

UDC 342.9:681.5

D4.7. Automation of the Processes of Administrative Jurisprudence. /G. Ghvinepadze, V. Kekelia, N. Leonidze/. Proceedings, Automated Control Systems. - 2007. - #2 (3). – pp. 164-167 – geo., abs.: eng., rus.

Unlike the earlier systems, a computer system which is to be projected, works according to the territorial principle, in a net environment assigned for time distribution. For the so-called actors, a new approach towards the creation of the system has necessitated the requirement of the detailed definition of rules for the work on legal cases. Together with the necessity of taking control of the activity of court personnel, this system is first of all considered to be the device which should be subordinated to the needs of the consumer. It serves as a warning system which notifies about the ‘narrow’ places in advance and retrieves the information having been saved in the base in any desirable form. Computer system is created on the base of SQL Server 2000. Programs are processed by the use of DELPHI 7. An operating system is Windows 2003.

Auth.

UDC 621.643/646:625.091

D4.8. Geoinformation System of Evaluation of Technical Condition and Prediction of Residual Life of Pipelines. /E. Garf, P. Yukhimets, V. Palienko, R. Spitsa, P. Voroshko, S. Kobelski, V. Kravchenko, I. Ruban/ Problems of Metallurgy, Welding and Materials Science. – 2007. - #3(17). – pp 24-32. -rus.; abs.: geo, rus, eng.

The fundamentally new scheme of geoinformation system includes the data base on condition of pipeline sections and analytical block for taking the respective decisions. The distinguishing feature of the system is the capability of evaluation of hazards and risk of accidents, taking into account the residual life predictions based on statistical processing of the results of examination of prospect holes, evaluation of the dynamics of the subsurface part of the lithosphere in regions of pipeline routes, FEM analysis of SSS of typical pipeline elements, also in the presence of surface not crack like defects.

Auth.

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