UNDERGROUND MINING

Malkin A.S., Mysnikov V.V., Agafonov V.V. ACTUAL TASKS OF DESIGNING AND USE OF OBJECTS AT DEVELOPMENT OF UNDERGROUND SPACE IN THE SUBSOIL

The article deals with ways to use the conceptual framework and design flowsheets underground space development of coal mines.

Key words: coal mine, an underground space technology, engineering, mining system.

Maslennikov S.A., Shinkar D.I. CALCULATION OF GROUND WATER PRESSURE ON THE SUPPORTS WITH MANAGE THE OPERATION MODE

The characteristics of the formation of stresses in multilayered lining with inner filter layer from the hydrostatic pressure. The received to determine the dependence of the pressure of groundwater on the supports with controlled operating mode.

Key words: combined lining, vertical shaft, rock pressure, hydrostatic pressure.

Miêheeva À.B., Tiêhonov A.V., Agafonov V.V. THE ANALYSIS OF LEVEL OF LOSSES OF COAL IN OKOLOSTVOLNYH ÖÅËÈÊÀÕ AT VARIOUS SCHEMES OF THE ARRANGEMENT OF TRUNKS IN THE MINE FIELD

In work the analysis of level of losses of coal in околосволовых целях for the purpose of a substantiation of their extraction is made at various schemes of an arrangement of trunks.

Key words: a colliery, court, coal losses, a mine field.

Khalimandik Yu.M., Brui A.V., Chemakina M.V. MONITORING CONDITIONS OF UNDERGROUND EXCAVATIONS WITH ROCK BOLTING

The article reports monitoring of the conditions of underground excavation rock bolting and surrounding rock mass state in order to identify the initial state of the support, the mechanism of change in cross-section of excavations and the features of ground pressure.

Key words: monitoring, rock bolting, surrounding rock mass, underground excavations.

Fedorin V.A., Shahmatov V.J., Anferov B.A. TECHNOLOGICAL ASPECTS OF DEVELOPMENT OF THICK FLAT COAL SEAMS IN DIFFICULT GEOLOGICAL CONDITIONS OF KUZBASS

In article the parameters of room and pillar mining (short-wall) at underground development of thick coal seams in difficult geological conditions on mastering coal deposits are proved. The potential of the technology application to Tom'-Usinsk area of Kuzbass is presented (mine by V.I.Lenin).

Key words: underground development, thick coal seams, short wall, coal mining.

Chernyshov A.V. ANALYSIS OF BASIC METHODS OF STOPE CONSERVATION FOR THE REUSE PURPOSES

Ways of protection of preparatory developments about the purpose of their reuse are considered.

Key words: protection of developments, a reuse.

Shinkar D.I. STUDY OF THE INFLUENCE OF TECHNOLOGICAL FACTORS ON THE CHARACTERISTICS OF COMBINED LINING

The characteristics of the formation of the properties of materials under the influence of roof support and technical factors. The received to determine the dependence of the deformation modulus of concrete lining.

Key words: combined lining, vertical shaft, rock pressure, hydrostatic pressure.
Open-cast
Konnov V.I., Elchaninov E.A. METHOD FOR CONTROLLING COSTS OF WATER AND THE CONCENTRATIONS OF PARTICULATES IN RUSLOOTVDONOM CHANNEL WHEN MINING PLACER GOLD FIELDS......
On the basis of the research developed a method for adjusting the flow of water and the concentration of suspended solids in ruslootvodnom channel when mining of placer gold deposits in the Eastern Trans-Baikal.

Key words: ruslootvodny channel, alluvial gold.

Lebukhov V.I. PERSPECTIVE OF SALVAGING THE TECHNOGENIC HYDROMINERAL SLIMES THE TECHNOGENIC GOLDEN PLACES..................
Results of researches the mineral slimes which formed from destruction of native clayey particles are given in this message. Clay’s degradation appeared as a result of stay this clay in the humid ambience under the positive temperature during 6 of months. Shown, that destruction runs outside the frames of classical mechanism and are accompanied by destroying the clay particles across the plane of joint crystals.

Showed, that clayey particles technogenic places are subjected natural destroying according to notice scenario Therefore, thin clayey slime, which is produced when washing gold places, has a possible to consider as quality technologically raw material, demand in industry of ceramic.

Key words: alluvial deposits, fine hydro raw, clay particles.

Papichev V.I. ABOUT THE COMPLEX INDEX OF ENVIRONMENTAL ASSESSMENT PROCESS HAZARDS IN THE QUARRY..................................
To the integrated index of environmental risk assessment of technological processes in the pit. Integrated index of enviromental risk assessment of technological processes in the pit, which allows to take into account both the duration of exceeding the load or MAC in the evaluation period by means of coefficient of load excess frequency and its intensity by means of coefficient of load excess multiplicity is offered.

Key words: environmental hazards, a quarry, minerals.

Enrichment of minerals
Konnova N.I., Kilin S.V., Elizariev P.V. PLOTTING SEPARATION CHARACTERISTICS OF FLOAT-AND-SINK PROCESS USING TRACER CONTROL METHOD...................................................................................
The article describes a float-and-sink separator that separates particles by their density and the separation criterion $\xi$ is, in this case, the particle density $\rho$. The authors analyze a theoretical separation characteristic and compare it with the experimentally obtained separation characteristics. The derived formula of the theoretic separation characteristic allows comparison of the theoretical and other separation characteristics by means of collation of curvatures of the curves, i.e. based on mean probable error. Using experimental data, the authors relate the mean probable error and the separation density.

Key words: float-and-sink separator, tracer control method, beneficiation.

Konnova N.I., Kilin S.V., Elizariev P.V. CHERNOGORSKOE DEPOSIT COAL WASHABILITY.................................................................
The authors designed a float-and-sink separator to more accurately model the float-and-sink process and the beneficiation results using the experimentally obtained curves of coal washability, separation density, concentrate yield, concentrate ash content, coal middlings yield and tailings output.

Key words: float-and-sink separator, washability, coal, heavy-density medium.

Lukina K.I., Muklakova A.N., Gladkov A.I., Biryukova N.I. IRON-BEARING ORE PROCESSING REFINEMENT.............................................
The authors discuss processing of iron ore at the KMAruda Mining and Processing Integrated Works, considering the ore material constitution. The feasibility of the
Iron-ore processing improvement using spiral separators is illustrated. The laboratory research shows that the first and second stages of the dressing flow sheet with the spiral separators produce different quality concentrates.

Key words: iron-bearing ore processing, spiral separators, concentrate.

Mantsievich M.I., Malinsky R.A., Lapshina G.A., Khersonsky M.I. TECHNOLOGICAL ADVANCE IN BASE METAL ORE PROCESSING TOWARD HIGHER SAFETY OF MINING AND METALLURGICAL WORKS....

Technologies for processing of nonferrous ores have been discussed, which permit to improve the flotation concentrate quality by removal of iron sulfides and improve the environmental performance of the operations. Examples are provided to illustrate development of process flow-sheets and reagent addition conditions for flotation of complex feed materials.

Key words: ore, mineral processing, concentrates, environmental performance, sulfides.

Ryabkin V.K., Cheprasov I.V., Tikhvinskiy A.V. STUDIES TO ACESS THE TECHNOLOGY FOR PROCESSING OF FERROUS AND ALLOY METALS USING POLYCHROMATIC PHOTOMETRIC METHOD OF SEPARATION...

The studies were conducted on the separator Optosort Gemstar 300 for ore practice size -20 +5 mm on the samples of the carbonate manganese ore of Usinskoe deposit, chrome ore of Saranovskoe deposit, complex ores of Khalturinskoe deposit and copper-molybdenum ore of Sorskoe deposit. The results obtained are sufficient for laboratory technical tests on representative samples of ore.

Key words: radiometric separation, polychrome photometric separation, rhodochrosite, chromites, molybdenite, wolframite.

Sklyarova G.F. TECHNOLOGICAL RESEARCHES CONTAINING APATITE ORES OF DEPOSITS OF THE FAR EAST THE RUSSIAN FEDERATION FOR THE AGROCHEMICAL PURPOSES...

In article materials on technological enrichment containing apatite ores of the Far East by the Russian Federation for the purpose of reception concentrates containing phosphorus for the agrochemical purposes are resulted.

Key words: technology, apatites, a deposit.

Trofimov M.N. STUDY OF THE EFFECTIVENESS OF PASTOVYMI BOOKMARKS...

The studies to determine the efficacy and feasibility of the dispersed tailings Agin OF Uchalinskoe Mining and Mining. The studies included the preparation of the cast and pastovymi filling mixtures and compare the properties of the resulting tab.

Key words: tailings, pastovymi backfill mixture, dispersion.

Khainasova T.S. RESEARCH OF BACTERIAL-CHEMICAL LEACHING OF VALUE COMPONENTS FROM SULFIDE ORE OF COBALT-COPPER-NICKEL DEPOSIT SHANUCH...

Research into oxidizing processes using autochtonous associations of acidophih chemotrophic microorganisms A. ferrooxidans and A. thiooxidans in relation to ions of ferrous iron, elemental sulfur and sulfide ore revealed prevailing activity of the associated microorganisms toward ferrous iron and sulfide cobalt–copper–nickel ore. Kinetic studies of the bacterial-chemical leaching of rich sulfide cobalt–copper–nickel ore with high magnetic pyrite content showed extractability of nickel to 56%, copper to 7% and cobalt to 54%.

Key words: bacterial–chemical leaching, acidophil chemotrophic microorganisms.

Building of underground constructions and mines

Kulikova E.Yu. THE CONCEPT OF SAFETY CONTROL WHILE UNDERGROUND CONSTRUCTION...

In this paper the concept and mechanisms of safety control while underground construction are described.
Key-words: safety, risk, natural and technical geosystem “rock mass – technology – underground structure – the environment”, control, techniques.

Prokopova M.V., Tkacheva K.E. MODELLING OF CONCRETE LINING WORK IN VERTICAL SHAFTS UNDER RECONSTRUCTION..................... 110
The analysis of designing reconstruction of vertical shafts in collieries and mines is presented in the article. Requirements for building mathematical models of shafts under reconstruction are formulated to analyze the state of stress and deformation of their lining.

Keywords: vertical shaft, reconstruction, concrete lining, mathematical modeling.

Tomilin A.V. USE OF EXPERT SYSTEMS FOR OPTIMIZED SELECTION OF ROCK MASS PREPARATION METHODS FOR UNDERGROUND CONSTRUCTION IN COMPLICATED MINING AND GEOLOGICAL CONDITIONS 114

The article considers the prospects for the creation of expert information system for the design of underground structures.

Keywords: expert system, underground construction, development of underground space.

Automation and information systems

Goncharenko S.N., Pozdnyakova Y.A. MODELS AND METHODS SUPPORT FOR ASSESSMENT OF PROFESSIONAL QUALIFICATIONS OF TEACHERS IN THE INTRODUCTION FGOS............................................. 118
Implementation of the proposed methodology involves the development of criteria for evaluating procedures and documents to create a model for teacher qualification support procedures within the walls of the educational institution.

The proposed development includes a set of materials that allow teachers to conduct an internal certification for compliance with the position and the requirements of the first and highest qualification categories.

Clear activity - oriented criterion basis for the qualification support of teachers can overcome the subjectivity, and the diversity of incommensurability appraisal ratings.

Keywords: FGOS, internal qualification support, rating - list, qualification category.

Strashun Y.P. STANDARDS OF WIRELESS COMMUNICATIONS IN AUTOMATION SYSTEMS.......................................................... 124
Using wireless communications and, in particular, wireless monitoring (in Russian – БМ) especially justified, when it’s necessary to get an information on equipment functioning, placed, for exchange, at dangerous zone, and provide quality control.

Besides it, combination of technologies Ethernet and WLAN gives a chance to provide soft real time (SRT) functioning with data exchange of order 5-10 msec \([1]\). Technical means, designed on WiMAX specification, will become a wireless alternative to “last mile” decisions in automation systems.

Keywords: wireless communications, process control, telecommunication protocols.

SVENTA AG THE BEST DRIVE - PROGRESSIVE STEPS.............................. 129

Enrichment of minerals

Kilin V.I., Yakubailik E.K., Kilin S.V. THE DIGITAL PHOTO TECHNIQUE - ROUTINE METHOD INVESTIGATION PROCESS MAGNETIC SEPARATION STRONG-MAGNETIC ORES............................................. 130
The results investigation process magnetization (flocculation) and demagnetization (deflocculation) Abagurskoy manufacture products by digital photo technique are presented. It was observer both flocculation induced by external field, and it,s own due to remanent magnetization. Field value equals to 40 kA/m can be considered optimal both for magnetization and for demagnetization of products.
Key words: flocculation, deflocculation, digital photo technique, strong-magnetic ores.

Building of underground constructions and mines

Prokopov A.Yu., Sklepchuk V.L. TECHNOLOGICAL FEATURES OF SINKING AND LINING OF VERTICAL SHAFTS IN THE PRESENCE OF OIL AND GAS.

On the basis of time study, research was conducted into the structure of time spent on performing separate operations of the sinking cycle while building the freight shaft of the Mir underground mine. It is proved that the presence of oil and gas influences the re-allocation of time. Some measures are suggested to increase safety and technical and economic efficiency of sinking shafts in the presence of oil and gas.

Key words: vertical shaft, boring and explosive operations, ventilation, presence of oil and gas.

Automation and information systems

Leontyeva A.V., Temkin I.O. ALGORITHM OF EVALUATING THE REAL EFFICIENCY OF UNIVERSITY BASED ON MULTI-AGENT SIMULATION.

The interaction of the system of higher professional education with the real sector of economy is considered. The educational system is presented as a multi-agent model. The list of criterias for evaluating the effectiveness of a technical university is suggested.

Key words: educational system, higher education, the real sector of economy, multi-agent simulation.

Measurement, control, diagnostics

Movchan I.B., Ykouleu A.A., Petarak D.G., Oprishko D.S. MODIFIED TECHNOLOGY OF GEORADAR METHOD: 3D DEEP VISUALIZATIONS AND STRUCTURAL RECONSTRUCTIONS.

Georadar method is used for tracing the structural peculiarities of top layer of geological cross section and has the profile modification. Under field conditions the set of wave cross sections are compiled into one 3D block-diagram. The features of last one are located on the base of lineament decoding and space-related stationarity parameter of wave cross section.

Key words: ground penetrating radar, interpretation, temporary cut, fracture, flow chart, lineament.

Mining machinery, equipment and transport

Grudachev A.Ya. TO THE 150 ANNIVERSARY OF CREATION OF THE TAPE CONVEYOR.

The history of creation of the transport car which was a prototype of the modern tape conveyor is stated. The design of basic elements of the installation which made and has been started up in operation in 1859-1960 is described.

Key words: history, A.Lopatin, the tape conveyor, the canvas, the tape, the priority, the patent

Osadchyi A.M., Furin V.O., Holodkov A.A. SEMIPORTABLE PRIMARY CRASHER PLANTS OF URALMASH.

An article describes suggested for supply a primary crusher plants. Those are used in a cyclical-and-progressive method and provide conveyor with the feed of preset lump size. As a main part primary crusher plants may include both cone type and jaw type crushers.

Key words: primary crusher plants, cone crushers, jaw crushers.

Ptynyk G.G., Kirichenko V.I., Pilov V.I., Kirichenko V.V., Boroday V.A. DEVELOPMENT OF THE ENERTYENSE TUMBLING MILL OF NEW GENERATION.
Information about the experimental forced autogenous grinding mill is given. Its construction and advantages are described. The perspective of its industrial application is estimated.

Key words: mill, autogenous grinding, construction, advantages.

Semakin M.S. THE VERTICAL BELT CONVEYOR FOR THE LARGE-SIZED BULK MATERIALS.......................................................... 168

The description of the vertical belt conveyor which belt has flat endless sidewalls and transverse cleats is presented. Transverse cleats are attached to sidewalls and to the belt. It gives the chance to increase their height. Thus conveying capacity without increase in width or traverse speed of the belt raises, its weight and the cost price decrease.

Key words: vertical belt conveyor, conveyor transport, mine hoisting

Sukharev V.V. KINEMATIC FEATURES OF THE SCHEME AND THE RESULTS OF RESEARCH PERFORMANCE VNUTRIVALKOVOY CONE MILL VIBRATION OF TYPE.............................................................. 171

The generalised mathematical model of dependences of productivity from the basic signs is received. The position of a fragment in a conical grinding mill in the initial moment of its pinch and destructions is determined. Efficiency of use of vibration in conical grinding mills is shown.

Key words: conical vibration grinding mill, rock, model.

Geology

Sobolev A.A. CURRENT STATE OF DEVELOPMENT OF SMALL-SCALE GOLD DEPOSITS IN THE KHABAROVSK REGION................................. 176

The article stated: state of development, major mining and geological features of small-scale gold deposits in the Khabarovsk region, and defines a set of necessary measures for their effective development.

Key words: gold deposits, gold mining, the Khabarovsk region.

Aerology, methane, safety

Malashkina V.A., Perekatov S.S. ANALYSIS OF EARLY STAGE CAUSES OF BELT CONVEYOR COMBUSTION IN MINES................................. 184

The article is devoted to the detection process fire on mine belt conveyors at an early stage. Defined the basic information parameters of the initial stage of ignition in the ex-operation of belt conveyors.

Key words: belt conveyors, combustion, mine.

Radchenko S.A. Solovieva E.A. INFLUENCE OF GAS-KINETIC PROPERTIES OF COAL ON MINING SAFETY.................................................. 190

The research findings of the Institute of Comprehensive Exploitation of Mineral Resources, RAS, are proved to be of use to designing higher performance advanced instruments for continuous monitoring of various parameters of an operating coal seam, including integrated control of outburst-hazardous seam conditions, prediction of gas emission intensity in excavations and forecasting exploitability of a seam in terms of methane recovery.

Key words: gas content of excavations, methane content, coal seams under mining, mine safety.

Technology mining

Mesyats S.P., Averina O.V. TECHNOLOGY OF OIL FUEL UTILIZATION FROM OIL REMOVERS.......................................................... 198

The technology has been developed of oil fuel utilization out of oil removers of treatment facilities using storage pits with mixture of sand and oil-oxidizing microflora on sorbent-carrier, and following transfer to the open site with water-retaining layer and perennial grasses sowing under polymer cover.

Key words: oil fuel, oil remover, storage pits, oil-oxidizing microflora, sorbent-carrier, polymer cover.
The paper contains the results of the study of underground water purification from heavy metals and sulfites with the use of natural sorbents from the fields of Kazakhstan, namely brown coal, bentonitic clay and sodium humate. The authors have discovered that at the use of the suggested sorbents the level of water purification reaches 95-98%.

Key words: underground water, purification, sorption, natural sorbents.

The development of deposits of liquid hydrocarbons of Far North calls for the creation of underground storages unit volume 3000 and 5000 m³ at a depth of 100 m from the surface.

Key words: storage of liquid hydrocarbons, underground storage.

A concept design of a mining enterprise by taking into account all stages of the life cycle of the mine and an integrated monitor the sustainability of their development. The examples of effective geotechnologies in the developed concept.

Key words: design of a mining facility, vertical shaft, jet grouting.

The carried out scientific researches were directed on the revealing of the optimal physico-chemical conditions of receiving of aluminium, silicon, their compounds and mullite siliceous refractory from local alumosilicate and silicate raw materials. The investigations results were applied at the development of high geotechnologies of complex production of various products.

Key words: alumosilicate and silicate raw materials, nonwaste technologies, aluminium and silicon compounds, mullite siliceous refractory materials, Amur region.

Results of the world potash producers’ total and average costs estimation and analysis are represented in the article. Total costs estimation is based on each firm’s financial information from 2008 – 2012 annual reports. They also contain necessary potash sale volume data. Regression analysis was used to determine a functional dependence between total costs and sale volume. Theoretical average potash cost for the year 2012 were calculated, fixed and variable costs ratio was estimated, which allowed us to determine producers with the best and the worst average costs level and structure.

Key words: potash industry, financial report analysis, regression analysis.

Results of researches on optimisation of reserves of capacities of the mountain-concentrating enterprise on Open Society «Uralasbest» example, and also perspective technologies рудоподготовка with application of grohotilno-reloading points are presented.

Key words: ore preparation, material stocks, auto correlation function, transport flow, grohotilno-reloading item, optimization.
Latipov D.V. FEATURES OF INFLUENCE OF VARIABLES AND CONSTANT EXPENSES FOR ECONOMIC EFFICIENCY CHANGE AT SELECTING TECHNOLOGY OF MANUFACTURE STONEPRODUCTION

The article focuses on two cardinally different stone-working technologies, dissimilar by relations of costs and manufacturing equipment content. The distinction in the stone production technologies (final product) results in the far different payback periods, loss-free production outputs and business entity profits.

Key words: technology with high fixed cost FC and lower variable cost VC per product; technology with low fixed cost FC and higher variable cost VC per product.

Nazarov S.G. AUTOMATION PROBLEMS AND PROSPECTS OF BUSINESS PLANNING FOR ENTERPRISES IN MINING INDUSTRY

The paper describes convenient existing approaches to solutions of some fundamental problems of business planning for enterprises in mining industry and describes prospects and limits in developing such approaches. A new technology of business planning is proposed for expanding these limits.

Key words: Planning problems, planning prospects, automation of planning, planning technologies.


In article the analysis of a condition of coal branch is carried out, theoretical bases of formation of value of the companies are investigated

Key words: value, investment appeal.

Redina M.M. ANALYSIS OF THE ENVIRONMENTAL-ECONOMIC SUSTAINABILITY OF THE OIL AND GAS ENTERPRISES

The authors' definition of the environmental-economic sustainability of the enterprises is resulted. Its criteria, main forming factors, properties and limits are defined. Examples of environmental-economic diagnostics and management of sustainability of the enterprises on the basis of the complex analysis are shown.

Key words: sustainability, indicator, factor, criteria, environmental-economic analysis.

Reischahrit E.I., Lemescheva V.V. ENERGY AUDIT AS A FACTOR OF ENERGY SAVING STRATEGY IMPLEMENTATION IN RUSSIAN FEDERATION

The author briefly reviews stages of energy efficiency strategy implementation in Russian Federation and analyzes challenges of the professional energy auditing service market development.

Key words: energy efficiency, energy saving, energy management, energy audit, self-regulatory organizations.

Saein K.S., Popov M.S. METHODOLOGICAL BASIS OF EVALUATION OF THE ROLE OF COOPERATION AND SPECIALIZATION IN INCREASE OF EFFICIENCY OF DEVELOPMENT OF NATURAL DEPOSITS

Provides a methodological framework based on the principles of determining the efficiency of application of cooperation and specialization of production processes of mining during the development of natural deposits.

Key words: Methodological basis of evaluation of the role of cooperation and specialization. The efficiency of development of natural deposits.

Sedykh N.K., Chaikovskaya I.N. CODE OF ETHICS AND CORPORATE GOVERNANCE OF THE ENTERPRISE

Corporate governance covers various actions connected with management. It influences the economical indicators of the activity of the coal mining enterprise and its ability to attract capital required for economical growth.

The development of the corporate governance can be realized by means of implementing of some definite standards – codes. The aim of the corporate govern-

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ance standards usage is to protect interests of all the members of the business activity of the enterprise. Setting up of the corporate code is one of the methods to provide enterprise with informational exposure and publicity which demonstrates commitment to the high standards of the corporate governance. This is the document that contains standards of relationships with external partners and rules of conduct inside the enterprise. Implementation of the Corporate Governance Code at the coal mining enterprise will let to eliminate weak points in the corporate culture and to gain strategic and tactical goals improving effectiveness of the enterprise.

Key words: corporate governance, corporate ethics, corporate ethics code, code of ethics.

Sekisov G.V., Cheban A.YU. TECHNICAL EQUIPMENT OF THE MINING ENTERPRISES OF THE PRIMORSKY TERRITORY, INVOLVED OF PRODUCTION OF CONSTRUCTION ROCKS................................................................. 283

In work the analysis of the technical equipment of the relevant enterprises of the Primorsky territory, involved of production construction rocks, and also identified a number of enterprises in the subregion, developed their wells and types of mined rock.

Key words: construction rock, excavators, bulldozers, loaders, dump trucks.

Selin V.S., Tsukerman V.A. REGIONAL INDUSTRIAL POLICY OF RESOURCE CORPORATIONS............................................................ 288

Annotation. Industrial policy of resource corporations as open multifunctional structures is considered. Its concept is formulated and its main features are identified including regional ones.

Key words: regional industrial policy, corporations, resources.

Solovieva Yu.V. DEVELOPMENT OF TECHNOPARK STRUCTURES: WORLD AND DOMESTIC EXPERIENCE................................................. 297

In article various approaches to the content of concept "science and technology park", features of creation and development of technopark structures in Russia and abroad are considered. The author analyzes the main models of science and technology parks, and also stages in development of technopark structures. Conclusions about a current state of technopark structures, features of their functioning are drawn.

Key words: science and technology park, technopolis, technopark structure, innovative policy.

Ecology

Arefev N.V., Garmanov V.V., Osipov A.G., Trushnikov V.E. LANDSCAPE-ECOLOGICAL ZONING AND LAND MONITORING LENINGRAD REGION................................................................. 302

The basic principles of landscape-ecological zoning. Justified placing permanent network of polygons, fixed reference and benchmark sites to monitor the negative processes in isolated landscape and ecological areas. To assess the modalities of research subjects are encouraged to use factors, structured in terms of detail. The general sequence of work to create maps of landscape-ecological zoning.

Key words: land monitoring, evaluation functions, the quality of land, landscape and ecological zoning.

Politova N.V., Kirichenko Yu.V. SUBSTANTIATION OF POLLUTION AND DEGRADATION OF WATER OBJECTS OF BIG CITIES OF THE RUSSIAN FEDERATION AND USE OF TOOLS OF ENGINEERING-GEOLICAL DIVISION INTO DISTRICTS BY WORKING OUT METHODS OF RESTORATION OF A NATURAL HYDROGRAPHIC SYSTEMS OF LARGE CITIES.............. 312

The main problems of hydrographic system of large cities and methods of restoration spoiled water (like rivers, lakes, ponds), especially rising of oxygen content in water are presented in this article.
Key words: river, metropolis, restoration of drainage, geotechnical zoning, pneumatic chamber pumps, a device for forced aeration of rivers.

Melnikova, N.D. THE ENVIRONMENT MONITORING OF THE MINING ENTERPRISE AREA ................................................................. 317

The candidate of geological-mineralogy science, associate professor. Mining and minerals concentration department of South-West State University.

There is shown in the article that there are no excess of harmful components in the area of mining enterprise activity.

Key words: mining, environment.

Mathematical and computer modeling

Aristov A.O. ABOUT STRUCTURAL ELEMENTS OF QUASI CELLULAR NETS .............................................................................................. 322

There are structural elements of Quasi cellular nets, such as inflow, outflow, elements of cellular automations, turnstiles. These elements should created with rules of creation quasi cellular nets. It may be us as addition for Quasi cellular nets in different system simulation.

Key words: Quasi cellular net, discrete structure, inflow, outflow, cellular automation, turnstile, simulation.

Miloserdov E.E., Mineev A.V. MATHEMATICAL MODEL OF EVALUATION OF TECHNICAL CONDITION OF BUCKET DIGGER LARGE UNIT CAPACITY THAT IS OUTSIDE THE LIFE .............................................................................. 332

The mathematical model allowing estimating a technical condition of the rotor excavator without stopping production is considered.

Key words: excavator, mechanism, modeling, assessment.

Tsvetkov A.B. IDENTIFICATION ALGORITHM PARAMETERS OF THE MATHEMATICAL MODEL OF INFLUENCE OF THE GAS PRESSURE IN ANISOTROPIC ROCK MASSIF ......................................................................................... 334

A mathematical model of the influence of the gas pressure in the rock mass, which was synthesized from the boundary value problems of gas dynamics and geomechanics. Developed a method for identifying the values of its parameters on the basis of predetermined criteria. To study the proposed model developed a package of problem-oriented programs.

Key words: Mathematical model, rock massif, structural block, coal stratum, adjacent strata, geologic fault, elastic boundary value problem, synthesis, gravitation, anisotropy, identification, gas.

Tsvetkov A.B., Frjanov V.N. NUMERICAL MODELING OF GRAVITATIONAL AND GEOTECTONIC STRESS FIELDS IN COAL MASS ROCK ....................... 339

The paper presents a mathematical model of the stress state of the rock mass with the combined effects of gravitational and tectonic forces. To study the proposed model developed a package of problem-oriented programs. A mathematical model was studied in different variants of lateral compression. For mass rock with underground digging to dig presents the results of simulation of the stress field.

Key words: Mathematical model, rock massif, structural block, coal vein, adjacent strata, boundary value problem, theory of elasticity, numerical simulation, computer experiment, synthesis, geotectonic, gravitation.

Oil and gas


Main types of drilling of oil and gas wells, structure and the principle of operation of the hydraulic zaborny engine are considered.

Key words: turbo-drill, turbine, column, moment.
Zhadan G.U., Toiba R.R., Miloserdov E.E., Maminshev A.S. 

THE HISTORY OF HYDRAULIC DOWNHOLE MOTORS..............................................

The basic principles of drilling of oil and gas wells, types of drilling, their distinctive features are considered, the history of creation optimum working from the point of view of reliability and technological effectiveness of a turbo-drill is considered.

Key words: drilling, well, oil, turbo-drill.

Metallurgy

Vidmanov I.M., Bordyuzhin I.G., Savchenko A.G., Menushenko V.P.

MAGNETIC PROPERTIES AND PHASE COMPOSITION OF THE ALLOY Nd9,5Fe84B6V0,5, OBTAINED BY HIGH ENERGY MILLING AND SUBSEQUENT ANNEALING.................................................................

The regularities of changes in the structure and magnetic properties of the cast alloy Nd9,5Fe84B6V0,5 after grinding in a high energy mill and subsequent annealing at temperatures of 600 and 700°C. Found that the structure of the cast alloy contains two microcrystalline phases: Nd2Fe14B and α-Fe. During mechanical activation is blocked grinding grains and the formation of an amorphous phase. Annealing of the ground powder initiates the collapse of the amorphous phase and the formation of nanocrystalline phases. In particular, after annealing at 600 °C Nd2Fe14B nanocrystals size is 28 ± 3 nm, and α-Fe - 22 ± 2 nm. The aforementioned powders structure corresponds to an increase of coercive force HcI and 1.3 to 2.0 kOe (after annealing at 600 and 700C, respectively) in comparison with HcI = 0.4 kOe cast alloy.

Key words: flocculation, extended DLVO theory, paired interaction energy, wettability of minerals, hydrophobic interaction.

Works of young scientists

Bykova M.Yu. 

ECOLOGICAL EVALUATION PROCEDURE FOR A LOCAL COAL–GAS–ELECTRIC PLANT.................................................................

Based on comparative estimation of mass-equivalents of combustible gases, the ecological evaluation algorithm and procedure for a local coal–gas–electric complex are proposed.

Key words: coal–gas–electricity complex, greenhouse gas emission, greenhouse effect.

Voronchagina K.V. 

SIMULATION AND 3D-MODELING IN SKIING EDUCATION PROCESS.................................................................

There is learning aspects in skiing. There are different senses may be used in educational process. The most interest and effective material it is 3D-modeling.

Key words: skiing, simulation, 3D, learning.

Gritsanenko D.A. 

THE PROBLEM OF THE PREPARATION OF ENGINEERS IN ORGANIZATIONS FOR REPAIR AND MAINTENANCE OF COMPUTER EQUIPMENT.................................................................

The development of computer technology and the growth of supply in recent years. Shows the relevance of the firms to repair computers, as well as engineers need to study the elemental base of discrete mathematics.

Key words: information technology, computer technology, digital computer, discrete mathematics.

Kiryanov A.V. 

ASSESSMENT OF INFLUENCE OF SAMPLING POINT SELECTION ON OUTCOMES OF ENVIRONMENTAL INVESTIGATION OF A SEA GROUND DAMPING SITE.................................................................

The article analyzes the influence exerted by choice of sampling points on estimation of geochemical parameters of sea ground in integrated environmental investigation of a sea ground damping site. The author reviews the existing approaches to choosing sampling points, describes their disadvantages and offers a sampling point selection procedure using bathymetric survey of sea-floor topography.

Key words: bathymetry, sea, ground, sampling, environmental investigation.

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Key words: ecological monitoring, sea ground damping site, sampling scheme, analysis of geochemical parameters, sea-floor microtopography survey, multi-beam echo sounder.

Koshel D.Ya. TECHNOLOGY OF NONFERROUS METAL CONCENTRATE PRODUCTION FROM FERRO-MANGANESE NODULES TAKEN OUT FROM OCEAN

A combined technology of processing deep sea ore has been developed in TSNI-GRI (RF). The technology is based on selective leaching of base metals and manganese from FMF by gas containing 10-12% (vol) sulphur dioxide. The developed leaching regime allows to recover 95-98% Cu, Ni, Co and Mn into solution.

Key words: ferromanganese nodule, metal, manganese, sulphur dioxide, extraction.

Krupoderov I.V., Moseykin V.V. METHOD OF DETECTION AND ESTIMATION OF OIL-PRODUCTS CONTAMINATION OF THE GEOLOGICAL ENVIRONMENT

Methods of detection and estimation of oil-products contamination of the geological environment are considered. There are discussed the techniques of gas surveying while studying groundwater contamination in the zone of aeration and water-saturated medium.

Key words: method, assessment, oil-product contamination, geological environment, groundwater, zone of aeration.

Pankratenko N.A. THE ANALYSIS OF EKOLOGO-ECONOMIC PROBLEMS OF USE OF UNDERGROUND SPACE FOR PLACING OF ENGINEERING COMMUNICATIONS OF THE CITY

Results of the analysis of problems of development of engineering communications in underground space of a city in ecological, engineering, town-planning and economic spheres are resulted.

Key words: engineering communications, the analysis of problems of ecology and economy of use of underground space of a city.

Petukhov V.I. OUTFIT FOR INVESTIGATION OF SEA GROUND DAMPING SITES

The article discusses problems of environmental survey in areas of sea ground damping. Based on the available field survey results, the author offers an approach to ecological monitoring in such areas using high-resolution multi-beam echo sounder.

Key words: ecological monitoring, sea ground damping, sampling, multi-beam echo sounder, environmental survey.

Savin K.S. FORMATION OF ECOLOGICAL-AND-ECONOMICAL ASSESSMENT AND CHOICE MECHANISM FOR PEAT-BOG UTILIZATION TRENDS TOWARDS ABATEMENT OF FOREST AND PEAT-BOG FIRE AFTEREFFECTS

Summarizes the methodological framework and the results of research on ecological and economic justification of the use of peat fields to reduce the risk of forest-peat fires.

Key words: methodological foundations of research, environmental and economic feasibility of use of peat deposits, forest-peat fires.

Tereshchenko E.I. QUANTITATIVE ESTIMATION OF STRUCTURAL CONDITION PARAMETERS OF FERRUGINOUS QUARTZITES USING X-RAY DIFFRACTOMETRY

The article presents the results of examining structural condition parameters of ferruginous quartzites at Lebedinskoe deposit. It is found that different mineral-technological types of ferruginous quartzites have distinctive parameters of structural condition.
Key words: X-ray diffractometry, structural condition, diffraction peak, dislocations concentration, microdistortions, mosaic block.

Shakirova A.H. PROBLEMS DEVELOP EDUCATIONAL COMPLEX IN THE DISCIPLINES OF THE UNIVERSITY................................. 411

Here we considered a problem of development of the training and methodical complex and a problem of access to it is considered. It’s offered to work out software instruments that can facilitate the process of developing and correcting the training and methodical complex and can ensure the access to these materials.

Key words: the training and methodical complex, network technology, remote access.

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There are some problems of accounting of leasing operations, concerning the necessity of a revision of an existing standard governing the reflection in the accounting of leasing operations. In fact, the moment you are using an outdated entries of the short of accounts. The situation is so serious as for the following: both sides of the contract can’t correctly record this transactions. And it is impossible to show and define the real financial position of a company situation without exact information. The problem, first of all, in the different ways of recording this transactions by both sides of contracts. It must be very exact in order to satisfy all sides. But today the situation in this field is too problematic.

Efremova E.I. RELIABILITY ASSESSMENT OF INTERNAL CONTROL SYSTEM FOR SETTLEMENT EMPLOYEE WAGES.............................................. 92

The article analyzes aspects of the assessment of internal control system of settlements with personnel’s wages. Formulated the General plan and programme of the internal review of the plot of settlements with personnel’s wages. The prospects of the process of functioning of the system internal control plot of settlements with personnel salary that allows you to organize and identify business operations related to the evaluation of reliability of the internal control system and eliminate the intentional and unintentional errors.

Key words: evaluation of the reliability of CRS, internal control, audit settlements with employees on payroll, internal audit program.