

CENTRUL UNIVERSITAR NORD DIN BAI A MARE
Facultatea de Inginerie

*NORTH UNIVERSITY CENTRE OF BAI A MARE
Faculty of Engineering*

BULETIN ȘTIINȚIFIC

AL CENTRULUI UNIVERSITAR NORD DIN BAI A MARE

SERIA D

Exploatări Miniere

Prepararea Substanțelor Minerale Utile

Metalurgie Neferoasă

Geologie și Ingineria Mediului

Volumul XXVIII Nr. 1

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Series D

Mining

Mineral Processing

Non-ferrous Metallurgy

Geology and Environmental Engineering

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Times New Roman font, single spacing.
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THE OPTIMIZATION OF THE MATHEMATICAL MODEL FOR PROTECTION PAD DESIGN OF THE SUBLEVEL MINING METHOD

IOAN IOSIF PAȘCA

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Abstract: *This paper presents the design of protection pad by means of a mathematical model which is based on a non linear programming of three influence factors. The efforts upon the sublevel bench is considered as a dynamical gravitational system having as influence factors: the falling hight or the rock block, the weight of it and the double share force of the sublevel bench. These factors have been determined experimentally by means of mathematical model of fix scale.*

Keywords: *optimization, mathematical model design, protection pad, sublevel, bench.*

ADVANCED TECHNOLOGICAL GASES PURIFICATION SYSTEM

JOZSEF JUHASZ

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Abstract: *The technological process of obtaining raw copper, brass and bronze is process in which the basic operation, smelting nonferrous alloys melting is done in rotary kiln. Other machines are used for cooling the gas flow technology and retention of zinc oxide powder and tin in the oven resulting from oxidation reactions of zinc and tin that are part of the raw material supply of the oven. By using filter bags to obtain a clean technology, environmental clean emissions.*

Keywords: *brass and bronzes melting furnace, air pollution, bags filters.*

USING OF INTELLIGENT TECHNOLOGICAL OBJECTS IN MATERIALS`ENGINEERING

ELENA POP

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430083, Baia Mare, ROMÂNIA*

Abstract: *Now that computer-aided design is to be found in every production system, it is easy to determine the qualities of a certain product that we want to create before starting to produce it. Having the chemical composition of a set of copper cathodes as the starting point of our research, we statistically determined the spiral elongation testing depending on the sulphur, tin and nickel from the copper cathodes. We compared these values with those experimentally determined and, as it may be seen, the results indicate close values. Consequently, the sample we obtained may provide spiral elongation testing depending on the sulphur, tin and nickel from the cathodes which are about to be used in obtaining copper wire.*

Keywords: *spiral elongation, copper wire, materials*

COMPUTER PROGRAMME ECOSTAT FOR STATISTICAL PROCESSING (ANALYSIS) OF ECOLOGICAL INFORMATION

LARISA MISHCHENKO, MYHAYILO KRYHIVSKYI

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Abstract: *Any database of a single geosystem component has 20-100 ecological indexes with different dynamics: geological environment changes slowly, but the atmosphere changes many times a day. Total number of ecological indexes can amount to thousands, thus, their analysis and assessment could be done only with the help of modern geoinformation technologies and powerful computers. The authors developed a new computer program ECOSTAT, which allows to automate routine process for determining geochemical background of any chemical element - the pollutant on a specific area. Computer models environmental condition of all 10 components of natural and anthropogenic ecosystems and forecasts their changes.*

Keywords: statistical processing, software, soil.

THE INFLUENCE OF VEGETABLE FIBER ADDITIONS ON THE PHYSICO- MECHANICAL CHARACTERISTICS OF THE ADOBE BRICKS

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Abstract: *Clayey soil type has been used for constructions since ancient times. Starting with the 90s, there have been research regarding the use of sandy clay as material for creating secure and sustainable structures, which would provide thermal comfort. This paper work presents the experimental results regarding the possibility of improving certain physical and mechanical characteristics by introducing in the mixture certain fillers (sand, bone glue, lime paste, hemp fibers, straw), each having a well determined role, sand being essential. The experimental results have shown that the admixture containing hemp fibers is more suited for making the masonry elements that are subject to flexural stresses and the straw one is more suited for thermal insulation.*

Keywords: *sandy clay, fillers, mechanical strength, axial shrinkage, thermal conductivity.*

SOILAPP MONITOR - ENVIRONMENTAL INFORMATION SYSTEM FOR POTENTIAL CONTAMINATED SITES CHARACTERIZATION

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Abstract: *There is a wide range of Environmental Information Systems in industry, public administration and science which can be classified based on the nature of the information and the type of processing. This classification includes: monitoring and control systems, conventional information systems, computational evaluation and analysis systems, planning and decision support systems, and integrated environmental information systems - are not uniquely related to one of the system types mentioned above, because they consist of multiple components serving various purposes, developing an affinity for multidisciplinary.*

For the present paper, according to the impact of the utilization of the New Information and Communication Technologies in the environmental protection domain, we introduce a new platform system, as an electronic field-observation agenda, created with App Inventor software for mobile devices under Android OS.

The new application (SoilApp Monitor) came as answer to the actual necessity and trend to have an efficient approach in data and field-observation acquisition. The application utility is representative for various practical research activities, which consist in politics and strategies correlation with reality on the field, as well as for control and usual monitoring. The SoilApp Monitor application, with SoilIdentifier as the 1st functional version, is capable to help the users in the physical characterization of potential contaminated sites (with heavy metals, oil products etc).

Environmental Informatics by the particular implications in environmental impact assessment, in contaminated soils management, often requires complex, interdisciplinary knowledge as well as profound technical information developed only in multidisciplinary context - environment-informatics.

Keywords: *Environmental Informatics, App Inventor, SoilApp Monitor, contaminated sites*

METHOD OF DETERMINING THE COEFFICIENT OF RESIDUAL WATER SATURATION IN POLYMICTIC SANDSTONES (AN EXAMPLE OF DNEIPER-DONETS BASIN FIELDS)

D.D. FEDORYSHYN, O.M. TRUBENKO, S.D. FEDORYSHYN, O.A. GROMIAK, I.O. PIATKOVSKA

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Abstract: *The article considers the technique of determination the residual water saturation at reservoir rocks with complex structure of Dnieper-Donets depression (DDD). To establish the residual water saturation coefficient ($K_{r,w}$) in reservoir rocks with difficult built cross-sections used three methods: centrifugation, water displacement by hexane and method of nuclear magnetic resonance. Authors established the factors that determine the accuracy of determination $K_{r,w}$ when it using different research methods. In detail highlighted the physical nature of research methods and set relaxation characteristics and their relationship with the residual water saturation of reservoir rocks with difficult structure.*

Keywords: *rock-collector, ratio of residual water saturation, the relaxation time*

STUDY REGARDING THE INFLUENCE OF ORGANIC MATTER FROM WATER ON THE COAGULATION PROCESS

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Abstract: *This study aimed to establish the influence of organic matter on the coagulation process and the degree of reducing the humic substances present in the water. It was identified the aluminum from the sludge resulted in the coagulation process at optimal dose, through treatment of raw water with aluminum chlorhydroxide and calcium hydroxide for pH correction. Raw water turbidities were between 10.0 UNT and 200 UNT. The determination of optimal conditions for coagulation of aluminum sulphate (AS) and alkaline aluminum polychloride (AAP) was performed by the "Jar-test 2" method. The results show a better efficiency in the coagulation process when polychloride aluminum was used at the optimal dose and the turbidities of raw water were between 10.0-30.0 UNT. Only the control of the zeta potential is not enough to fix the problems of the reagents used in the coagulation-flocculation. At turbidities of the raw water between 30.0-200 UNT, the efficiency of organic matter reduction is comparable to optimal doses.*

Keywords: *water, coagulation, turbidity, humic substances,*

SYNTHESIS OF ACETYLSALICYLIC ACID BY TWO ALTERNATIVE METHODS THAT CAN BE USED IN FOOD INDUSTRY

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Abstract: *This paper presents two alternatives for the synthesis of acetylsalicylic acid, by replacing the acetic anhydride with ethyl acetate and acetic acid. In both cases, the synthesis of acetylsalicylic acid was confirmed by the X-ray diffraction analysis, FT-IR and UV spectra, ¹H-NMR and ¹³C-NMR.*

Keywords: *acetylsalicylic acid, original methods, synthesis, characterization*

LANDSCAPE AND GEOCHEMICAL PRINCIPLES OF ENVIRONMENTAL SAFETY IN THE CARPATHIAN REGION

ADAMENKO O., ADAMENKO YA., MANDRYK O., MISHCHENKO L.

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Abstract: *The authors of the article have offered landscape geochemical methods for current environmental situation analysis with the help of geoinformation systems technologies. They will enable to assess 10 components of natural and anthropogenic geosystems. Computerized systems of ecological safety containing databases of analysis of different soil pollutants, surface water, and ground precipitation were created. Landscape technogeochemical (ecological) elaborate electronic maps of environmental situations and conditions were made in order to exercise environmental management under a strict scientific control.*

Key words: *landscape geochemical methods, environmental situation, nature and anthropogenic geosystem, ecological safety, data bases.*



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