

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 XXXVI Nr. 1

Indexat ProQuest, EBSCO, ERIH PLUS

SCIENTIFIC BULLETIN

OF NORTH UNIVERSITY CENTRE OF BAI A MARE

Series D

Mining

Mineral Processing

Non-ferrous Metallurgy

Geology and Environmental Engineering

Volume XXXVI No. 1

Indexed ProQuest, EBSCO, ERIH PLUS

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EDITURA UNIVERSITĂȚII TEHNICE DIN CLUJ NAPOCA - UTPRESS
ISSN 1582-0548, 2022

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FACULTY OF ENGINEERING

SCIENTIFIC BULLETIN
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**PUBLISHING HOUSE OF THE TECHNICAL UNIVERSITY OF
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ISSN 1582-0548, 2022

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1. Papers must be written in English, Microsoft Word and will not exceed 12 pages.
2. Paper includes: title, authors, institution, abstract, keywords, paper content, conclusions and references.
3. Page dimensions A4, top 2cm, down 2cm, left 2,5cm, and right 2cm.
Times New Roman font, single spacing.
4. Paper's title will be written with capital letters 14pts, bold, centered. Authors will be written with 12pts, bold, italic, centered. Affiliation will be written with 12pts, italic, centered. Abstract and keywords with 10pts, italic, justify. After title, affiliation, abstract, keywords leave one line space. Before and after each subtitle leave one line space. Paper text will be written with 12pts, justify, figures/tables included in the text. References will be listed with 10pts.

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PHYSICO-CHEMICAL CHARACTERISATION OF ABIOTIC SUBSTRATE AND OF BIODIVERSITY IN A NATURA 2000 AREA IN SĂPÂNȚA PERIMETER

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ABSTRACT

The paper presents the physico-chemical parameters of the ponds and the ecological characterization of the flora and fauna from a part of the protected area RO-SPA 0143 Upper Tisa NATURA 2000 located in Săpânța, a well known tourist village in Maramureș County, Romania with special attention on amphibians. Biodiversity in this area can be influenced by several factors, such as geographical positioning, water quality and biotic characteristics. The following physico-chemical parameters of the water bodies that can influence the biotic environment were analyzed: pH, dissolved oxygen, oxygen saturation, turbidity, temperature, ammonium concentrations, nitrate, nitrites, free ammonia, total ammonia, free residual chlorine, total chlorine, chlorides, phosphates, iron, copper, total alkalinity and water hardness

Key words: *biodiversity, protected area, pollution, water oxygentation, water hardness, conductivity*

RESEARCH ON LAMINATION FRICTION MECHANISMS

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Abstract

In this paper the author tried to highlight the friction mechanisms of plastic deformation by rolling. After rolling the steel and aluminum strips, under friction conditions, without lubricant and with mineral oil, we calculated the coefficient of friction using a calculation relation.

When analyzing the rolling process of cold steel strips without lubrication, the size of the coefficient of friction was 44% higher than if we used lubricants. When rolling aluminum strips, the coefficient is about 20% higher than for steel strips. Thus, the increase in viscosity and reduction causes a decrease in the coefficient of friction.

Keywords: *laminating, coefficient of friction*

USE OF BENTHIC MACROINVERTEBRATES AS BIOINDICATORS OF WATER QUALITY IN THE BREB VALLEY CATCHMENT (MARAMUREȘ COUNTY)

**OANA MARE ROSCA^{1*}, MONICA MARIAN¹, ALEXANDRA ERICA PUSCAS², EDITA
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Abstract: *The present study was conducted during 2017-2018 in the river basin of the Breb Valley (Maramureș County), aiming to establish the quality of watercourses based on physical and chemical indicators and biological elements in the category of benthic macroinvertebrates. Most of the investigated stations are characterized by a good and very good ecological status, with low anthropogenic impact.*

Key words: *benthic macroinvertebrates, water quality, ecological status*

MEASURES TO REDUCE THE ENVIRONMENTAL IMPACT OF A SMALL ANDESITE EXPLOITATION

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Abstract: *The paper presents an on-going project results in which the authors combined their knowledge on environmental protection and recognised expertise as National Agency of Mineral Resources technical experts in planning, implementing and supporting the small extraction quarries fields as a family opportunity to develop their own business. There is a need of multidisciplinary know-how combination (legislation in mining, environmental, surveying domains) to conquer in a proper time and order the well known tortuous roads of exploitation permissions. Also, new graphical and numerical simulations were done combined with surveying works to provide the proper arrangements in the quarry.*

Keyword: *environment impact, small quarry, andesite, modelling*

STRUCTURAL HEALTH MONITORING HANDBOOK AS GUIDELINE OF THE IMPROVEMENT OF STRUCTURAL MONITORING MANAGEMENT METHODS

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Summary: *Tracking the behavior in time of constructions, which has a tradition of over 150 years, as an activity that ends the process of creating any structure, turned in the so-called 'structural monitoring' activity.. This paper complements an earlier idea of our team, that of the structural monitoring manual, suggesting **SHMH** (Structural Health Monitoring Handbook). Preparation of this handbook was one of the central objectives of the **STRUCTURAL MONITORING** project.*

Keywords: *Structural Monitoring, Management Methods, SHMH, sequential monitoring, continuous monitoring, structures.*

REMARKS ON INDUSTRIAL HAZARDOUS WASTE MANAGEMENT IN MARAMUREȘ COUNTY, ROMANIA

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Abstract

This study approaches issues related to the management of hazardous industrial waste generated in Maramureș County. Thus, in the period 2015-2019, 12 major generating activities of industrial hazardous waste were identified and inventoried, each with a category or more of specific hazardous waste. Of these, the largest share amount is waste from waste treatment plants, wastewater treatment plants and water treatment for water supply and industrial use (code 19). During the reference period, this waste was recovered to a certain extent, after a previous decontamination, and most of it was disposed of both by storage and incineration, as appropriate. In Maramureș County there are no installations for the disposal of hazardous industrial waste, so it is necessary to transport them to other counties. In this sense, at county level there are 16 economic operators authorized to carry out the transport of hazardous waste. At national level the hazardous waste disposal infrastructure includes a number of 11 landfills and 19 incineration plants with a total capacity of 153340 tons/year.

Keywords: hazardous industrial waste, management, transport, recovery, disposal

STUDIES ON THE DETERMINATION OF ALUMINUM IONS IN INDUSTRIAL WATERS RESULTED FROM THE ALUMINUM ALLOY PROFILES RINSING BATHS

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Summary: *The paper mainly focuses on studies conducted in order to determine aluminum ions in industrial waters collected from the aluminum alloy rinsing baths within UACE Dumbravița, Maramureș county, România. The experiment was conducted with the help of a photocolimeter for boilers and cooling towers, for the Class B industrial water sample with low acid pH (pH = 2.5-4). The result obtained for the Al³⁺ was 1.00mg/L, and by using the secondary functions of the device, a value of 1.90mg/L aluminum oxide (Al₂O₃) was obtained, through conversion. For the same industrial water sample, the ion concentration values for nitrates(NO₃⁻), phosphates(PO₄³⁻), phosphorus(P) and phosphorus pentoxide(P₂O₅) were: phosphorus - 0.5mg/L, phosphorus pentoxide – 1.1 mg/L, phosphates – 1.5mg/L and for the nitrates, the values were 11.6 mg/L (NO₃⁻N) and 51.2mg/L NO₃⁻. Also, by using the Combo pH & Ec device on a Grade B industrial water sample with a 6-9 pH, at a temperature of 21.5⁰C, the values obtained were 0.14 mS for conductivity, 8.44 for pH and 0.07 ppt, respectively; conductivity determines the moment of regeneration for the ion exchanger.*

Keywords: *deionized water, rinsing bath, aluminum ions, pH, phosphates, nitrates, conductivity.*

REMARKS ON THE ROAD TRANSPORT OF HAZARDOUS WASTE IN ROMANIA

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Abstract

In the present paper, the road transport of hazardous waste on the Romanian territory is approached from a legislative, administrative, and procedural point of view, highlighting the aspects regarding the organization and security of this type of transport. Currently, there is a procedure for the traceability of hazardous waste and its transport, but both the legislative context and the responsibility of some authorities can be improved by establishing some clear criteria for the transfer and transport of hazardous waste but also by creating an integrated online database and monitoring system so that all the factors involved to have real-time information. An improvement in the current situation could lead to the prevention or, where appropriate, prompt and effective intervention in the event of accidental pollution.

Keywords: road transport, hazardous waste,

EVALUATION OF HYDROGEN OF CONCENTRATION IN ALUMINUM ALLOY 7175 USED IN AERONAUTICAL STRUCTURES

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Abstract: *During the manufacture of aluminum alloy 7175, the melt always interacts with the atmosphere in the furnace, at a point where a balance is formed between hydrogen gas in the air and hydrogen dissolved in molten aluminum. Hydrogen is a harmful element in aluminum melts because it has a high solubility in liquid aluminum and is insoluble in solid aluminum and thus in its ascending path comes out of the melt during solidification causing defects and therefore its removal from aluminum melts is imperative.*

Keywords: *aluminum alloy 7175, hydrogen concentration, porosity.*

PUBLIC INVESTMENT STRATEGIES UTILIZING GEOGRAPHIC INFORMATION SYSTEM

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Abstract: *Territorial management, including management of public investments, cannot be conceived without computerization of all components, the most modern system being GIS. I-GIS can be a customization of GIS tailored to the specific needs of investment projects, starting from the area classification plan, general situation plan, to the digitization of all information at all stages, from pre-feasibility to structural monitoring and introduction thereof into the defined I-GIS system. It should be noted that there are steps required until one can achieve this goal. The public investment activity involves going through distinct stages regardless of its nature: civil, industrial, social, cultural construction, road, railway, dam, etc. The amount, nature, stage, structure and support of all information contained and used in these seven steps enables us to suggest their inclusion in a GIS information system, which we call **I - GIS (Investment - Geographic Information System)**. This paper suggests, based on a real case, a I - GIS simulation model, which will be presented synthetically in order to highlight the benefits of public investment management through a GIS*

Keywords: *Investment Activity, Stereographic 1970 System, Structural Monitoring, GIS, Information System*

STUDIES ON THE PHYSICOCHEMICAL ANALYSIS OF THE DRINKING WATER COLLECTED FROM A WELL IN TISA

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Summary: *The paper presents studies conducted to determine some physicochemical parameters of a drinking water sample collected from the well of a private household in Tisa, Maramureş County, Romania. Among the most important aspects on which the quality of the water we consume depends and which require special analysis, in this paper, three of them were determined, respectively, the salt concentration of 85 mg/l Ca^{2+} and 10 mg/l Mg^{2+} , pH level of 7.66 and total hardness of 207 mg/l $CaCO_3$. The amount of iron ions in the analyzed water sample was determined, the result being 0.05 mg/l; phosphate ions - 0.9 mg/l PO_4^{3-} , phosphorus - 0.2 mg/l P, phosphorus pentoxide - 0.5 mg/l P_2O_5 . At a temperature of 20.9°C, the conductivity had the value of 0.47 mS/cm, TDS = 0.23 ppt, and the pH was slightly alkaline considering the result following the determination. The nitrate content was 0.8 mg/l NO_3^- -N, 5.0 mg/l NO_3^- . The method used was the photometric one, and the devices used in the experiment were purchased from Hanna Instruments.*

Keywords: *Photometric analysis, drinking water, well, ions, physicochemical analysis.*



2022

