

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 XXXI Nr. 2

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*Mining*

*Mineral Processing*

*Non-ferrous Metallurgy*

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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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## **CHARACTERIZATION AND SUSCEPTIBILITY TO INTERGRANULAR CORROSION OF AA2024 ALUMINUM ALLOY**

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***Abstract:*** *In this work, has been performed the characteristics and susceptibility to intergranular corrosion of high strength alloy of AA2024-T3 in alkaline media. Intergranular corrosion can occur randomly over the entire surface of an alloy, but corrosion is limited to the immediate area of the grain boundary and is often not apparent by simple visualization. It can be an important source of limiting the life of the aircraft body where alloys from the 2xxx series are used, which is why they are systematically subjected to intergranular corrosion tests in dedicated laboratories.*

***Keywords:*** *AA2024 aluminum alloy, characterization, intergranular corrosion, artificial seawater.*

## **CRITICAL STUDY OF BOZANTA TAILING POND'S ACCIDENT IN MARAMURES, OCCURRED IN OCTOBER 2017**

***IOAN BUD, IOSIF PASCA, SIMONA DUMA, DOREL GUŞAT***

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Engineering, Mineral Resources, Material and Environment Engineering Department,  
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**Abstract:** *The paper presents the critical analysis of the causes and consequences of the Bozanta Tailing Pond accident in October 2017. This occurred as a result of the breakdown of the last penstock, compromising the last simple and controlled way of exiting the pond water. The gravity of the accident was accentuated by immediate discharges into the nearby river named Sasar.*

**Keywords:** Tailing Pond Bozanta, ecological accident, penstock



## THE QUALITY OF DRINKING WATER IN SIGHETU MARMAȚIEI, MARAMUREȘ, ROMANIA

**VALERIA MIRELA BREZOCZKI<sup>1</sup>, GABRIELA MARIA FILIP<sup>1</sup>**

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**Abstract:** *This paper presents the analysis of the quality indicator of a subterranean raw water source, captured in Crăciunești, Sighetu Marmăției, followed by the description of the technological flow of capturing and chlorinating water with the aim of making it drinkable, and the analysis of the obtained values of the physical, chemical and bacteriological indicators.*

*The period within which water quality was monitored for this paper covers four months (December 2016, March, April and May 2017). Within this period the analyses regarding water quality control were carried out by the laboratory of the Water Treatment Baia Mare.*

*The analysis of the obtained results highlighted a series of problems regarding the existence of certain indicators/parameters with values above the legally admissible threshold with regard to water quality. The manganese found in raw water exceeds the admissible threshold by 160%, in December 2016, and by 120% in March 2017, but it is within limits during the months of April and May. The occurrence of colonies developed at 37 °C and 22°C in the raw water requires chemical treatment of the raw water aimed at disinfecting it. The parameters of drinking water correspond to the values admissible through the laws in force, the water being distributed to the consumers through the Drinking water distribution system in Sighetu Marmăției.*

**Key word:** *water monitoring, water quality, indicators*

## ECOLOGICAL SAFETY OF IVANO-FRANKIVSK URBAN SYSTEM ACCORDING TO ACOUSTICAL AND ELECTROMAGNETIC LOAD FACTORS

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**Abstract:** *The article outlines the directions of the ecological safety formation on the territory of Ivano-Frankivsk urban system according to acoustic and electromagnetic load factors. In order to provide an acoustically comfortable environment for inhabitants of the urban system the authors solved the following tasks: measurements of the equivalent sound level along the highways and near the residential buildings close to the roads were made; special attention was paid to the public transport stops where the audio-boxes of the “Street Radio” are located. In general, an equivalent sound level  $L_{eq}$  was measured at 165 points within the territory of Ivano-Frankivsk urban system. According to the research results separate zones (streets) with the greatest acoustic discomfort within the city were allocated, profiles of acoustic load distribution along main streets were built, taking into account the equivalent sound level in the green zones of the city which are located nearby. Using the software program Surfer a noise map for the territory of Ivano-Frankivsk was built. To ensure a comfortable living environment within the urban system according to the factor of electromagnetic load the following tasks were solved: isotropic measurements of the electromagnetic field components at 122 points of the test-ground were carried out. At each point in terms of maximum and average values the following parameters were measured: electric field strength ( $E$ , V/m); magnetic field strength ( $H$ , mA/m); surface energy flux density ( $W$ , mW/cm<sup>2</sup>). Base cellular network stations were recorded, their contribution to the electromagnetic situation of the city was described. The maps of technogenic electromagnetic pollution were built with the help of the program Surfer for the spatial analysis of changes in the electromagnetic field levels within the urban system. Spline interpolation method was used to build the maps. Moreover, measurements of 5 basic test objects of the urban system were carried out, which are the most vulnerable to the electromagnetic field influence. According to the research results the schematic images of the electromagnetic field distribution inside the objects were built. The most sensitive zones within the test objects were determined. Thus, according to the analysis of the conducted research favorable zones for comfortable and safe residence in Ivano-Frankivsk urban system according to the factors of noise and electromagnetic pollution were determined.*

**Key words:** *acoustic pollution, noise sources, ecological safety, noise map, electromagnetic pollution.*

## **GENERATING SEVERE PLASTIC DEFORMATIONS THROUGH LAMINATION**

***ELENA POP***

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Cluj-Napoca, str. Victor Babes, nr. 62A, Baia Mare*

***Abstract:*** *This paper presents a theoretical and experimental study of the possible occurrence of microstructure up to nanometric level through severe plastic deformations. An aluminium alloy sample was laminated, in the form of a band and it withstood 4 passes through cylinders. As a result, ultrafine grains were obtained and the hardness of the sample increased. By generating severe plastic deformation through lamination, materials with ultrafine grains can be obtained. These materials possess a high potential of coping with many advanced applications in nanomaterials.*

***Keywords:*** *severe plastic deformations, lamination*

## CHARACTERIZATION OF ACTIVE COMPOUNDS FROM CITRUS PEELS BY-PRODUCTS USING CHROMATOGRAPHIC AND OPTIC METHODS

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**ABSTRACT:** *Citrus fruits such as orange, grapefruit, lemon and other citrus fruit are widely cultivated and processed generating large amounts of by-products. Citrus peels contain various compounds of economic importance such as volatile oils, flavonoids, polyphenols, carotenoids etc. It is essential to valorize the wastes of citrus processing. In this purpose, peels of orange, grapefruit and lemon, fresh and dried were subjected to extraction using trichloromethane and dichloromethane as extracting agents and analyzed by thin layer chromatography on silica gel plates. Visualization at 366 nm and 254 nm showed a complex composition of extracts that contain terpenes, oxygen heterocyclic substances derivatives of coumarin and carotenoids. The UV-VIS spectra of the extracts were recorded showing absorption in UV and Visible region.*

**Key words:** *thin layer chromatography, citrus peel, by-products, extraction, UV-VIS spectrometry*

## LANDSCAPE MAP OF BYTKIVSKE OIL FIELD AND NEIGHBORING TERRITORIES OF THE CARPATHIAN REGION

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**Abstract:** *Environmentally safe oil and gas production demands permanent control for the development of ecological situation which should be managed on the basis of existing nature protection requirements and corresponding instruction documents. Purpose of the research and formulation of the problem is to select landscape complexes at the hierarchical levels of locations and facies in the Bykiv oil and gas field to make landscape map with morphological genetic and age features of landscape structure as the basis of environmental assessment of oil and gas field impact on the natural geosystems. Presentation of the main research material with full justification of the received scientific results. Landscape analysis of the investigated area allowed to select, ground and make mapping the following landscape complexes: landscape localities, foothill landscape complexes. Characteristic feature of the Bytkiv oil and gas field and neighborhoods is their high-altitude stratification from middle and low-mountainous to foothills and lowlands. The genesis or origin of the area under study is various – from denudation relics of the top peneplenization surface of leveling much younger pedyplenization surface pediments on the transition from mountainous to foothill relief, to deeply portioned erosionally active steep slopes and stairstepping of the river terraces. Age boundaries of the created landscape structures were determined on the availability of adjoint sedimentary formations from the products of bedrock destruction, resedimented eolian, deluvial, proluvial and alluvial processes.*

**Key words:** *landscapes, localities, facies, oil and gas production, ecological situation, ecological status.*

## **INFLUENCE OF LIMESTONE PARTICULATE MATTER ON ENVIRONMENTAL FACTORS**

**GABRIELA MARIA FILIP<sup>1</sup>, VALERIA MIRELA BREZOCZKI<sup>1</sup>**

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### **Abstract**

*Limestone as a mineral substance does not pose a danger to the environment, contrary sometimes it has a beneficial effect, but limestone dusts as a particulate matter in ambient air can affect the environment and human health depending on particle size and granulometry and their concentration. Softer limestone tended to produce a cloud of dust that some feared might contribute to respiratory problems and may affected the environment to some extent depending on the PM quantity dispersed in ambient air.*

*The main source of lime pollution is the limestone exploitation in the quarry and its subsequent processing by crushing and sorting.*

*In this regard, the present paper presents several determinations regarding the limestone environment scale pollution from limestone processing after its quarry exploitation in the Bucium limestone quarry.*

**Key word:** *particulate matter, limestone pollution, limestone quarry*

## STUDY ON NON-DSTRUCTIVE ULTRASOUND CONTROL

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**Abstract:** *The ultrasonic inspection of aluminum bars is performed according to the method by immersion using longitudinal waves. Immersion of aluminum bars is done in deionized pure water or filtered water. The ultrasonic inspection of extruded rods is manual, using a plastic tube that acts as a transducer mount and is performed on areas indicated by the scan plane at a constant velocity of maximum 10 inches/sec.*

**Keywords:** *ultrasonic testing, visual inspection, aluminum billets.*

## **STUDY OF THE RESTORATION FEATURES OF SOILS THAT WERE INFLUENCED BY FORMATION WATERS**

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Ukraine, Ivano-Frankivsk, str. Pivnicnyi bulvar, no2, arsenpukish@ukr.net*

**Abstract.** *The article presents the studies results on the restoration of saline soils affected by formation waters. Soil restoration was carried out using solutions of various water-soluble salts. The author determined that treatment of saline soils with a solution of magnesium sulfate at a concentration of 0,3 mol/dm<sup>3</sup> helps to decrease the content of chlorides, sodium, calcium, while the content of magnesium and sulfates increases, but the total content of toxic salts in the soil decreases by 60,9%.*

**Key words:** *salinity, soil, leaching, toxic salts, magnesium sulfate*



## **ASSESSMENT OF DAIRY PRODUCTS HEAVY METALS CONTENT IN SOME AREAS SURROUNDING BAIJA MARE TOWN**

***DUMUȚA ANCA<sup>1</sup>, VOȘGAN ZORICA<sup>1</sup>, MIHALY-COZMUȚA LEONARD<sup>1</sup>  
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**ABSTRACT:** *The paper investigated Cu, Ni, Co, Zn and Cd content in milk and cream collected from: Băița (13 km from Baia Mare), Ferneziu (a neighborhood of the city) and Nadiș (60 km from Baia Mare). The results showed the presence of these heavy metals in the studied dairy product in different concentrations. Thus, Cu, Co and Zn accumulated mostly in milk, while Ni and Cd had the highest levels in cream. Also, Zn had the highest level of concentration, of 10,82 mg \*kg<sup>-1</sup>, in the milk collected from Băița and Cd the lowest one, of 0,11 mg \*kg<sup>-1</sup>, in the milk obtained from Nadiș.*

**Keywords:** *heavy metals, milk, cream,*

## **VALENCES OF COMMUNICATION THROUGH STAMPS (I): ECOLOGICAL HOUSE AND TRADITIONAL ARCHITECTURE**

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**Abstract:** *The man viewed through ecology is directly involved and even responsible for his integration and harmony in a healthy natural environment, from which the notion of ecological house, as a result of the concept of a healthy home, can not be missed. The Romanian philately, since its inception, has made known to the world the elements of local architecture (traditional and modern), which we place as the foundation of the ecological house concept. Through this paper, we want to present to the public a series of philatelic programs that have as their foreground the traditional architecture enshrined in more than a century, from 1906 to 2016 - including pavilions and pens, peasant houses and palaces, and other architectural monuments.*

**Keywords:** *ecological houses, philately, the Village Museum, traditional architecture.*

## **ECOLOGIC HOUSE AND PERSPECTIVES OF SPACE ARRANGEMENT: THE PASSING FROM WASTE TO ART**

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**Abstract:** *The present article aims to highlight the novel way in which products and materials, considered at some point as waste, can come from a purely artistic approach to true works of art. With the help of these, in the light of the new trends in space planning, a series of aspects can be highlighted by the personalization of the house, in the transition from waste to art and from house to home.*

**Key words:** *space planning, waste management, artworks.*



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