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BULETIN ŞTIINŢIFIC
AL CENTRULUI UNIVERSITAR NORD DIN BAIA MARE

SERIA D

Exploatări Miniere

Prepararea Substanţelor Minerale Utile

Metalurgie Neferoasă

Geologie şi Ingineria Mediului

Volumul XXXIII Nr. 1

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North University Center of Baia Mare
Faculty of Engineering
Str. Dr. V. Babeş nr. 62A, 430083
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ASSESSMENT OF DEFORMABILITY BY EXPERIMENTAL METHODS

ELENA POP
Tehnical University of Cluj-Napoca, North University Centre of Baia Mare,
Faculty of Engineering str. Victor Babes, nr. 62A, Baia Mare

Abstract*: The paper presents a theoretical and experimental study of experimental methods for the determination of deformability. Thus we determined the degree of deformation of copper wire by testing to traction, the fragility by means of fragility testing and the elongation of the spire sample. The experimental attempts have highlighted the fact that the properties of materials are determined with the help of the experimental methods. These The indicated test methods show the deformability of the material in the process of plastic deformation and they are representative of physical simulation attempts.*

Keywords: *deformability, metal materials, copper*

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POLYPHENOLS, ANTHOCYANINS CONTENT RELATED TO COLOUR CHARACTERISTICS OF WINE AND GRAPE JUICE INCLUDING OTHELLO HYBRID

Cristina Mihali[1*], Zoita Berinde[1], Thomas Dippong[1], Claudia Butean[1] and Linda Toth[1]

[1]Department of Chemistry and Biology, North Universitary Center of Baia Mare, Technical University of Cluj Napoca, Romania.

[*]Corresponding author, e-mail: cmihali52@yahoo.com

Abstract: *Polyphenols are the main contributors for the wines color and also for others characteristics of wines such as astringency and bitterness. Samples of wines (red and white) were analyzed following to assess their polyphenols and anthocyanin's content in relation with their color characteristics. The properties of red (Fetească Neagră) and white wines (Fetească Albă from Cotnari vineyard) were compared to the wine made of grape hybrid cultivar Othello. Also the grape must obtained of hybrid cultivar Othello was analyzed. Polyphenols and anthocyanins were assessed by UV-VIS spectrophotometric methods. Polyphenols content was analyzed using Folin-Ciocalteu method and was expressed as gallic acid. Calibration with gallic acid as standard polyphenolic substance was previously performed. The method for determining anthocyanins is based on their property to be discolored by sulfites. Permanganate index was also determined to evaluate the reducing characteristics of wines by titration against potassium permanganate in the presence of Indigo carmine as redox indicator. Glories chromatic parameters such as color intensity, tonality, %Yellow, %Red and %Blue were established. Polyphenol of the analyzed wines ranged between 47-2653 mg/L polyphenols while the anthocyanins were 0-245 mg/L. Permanganate index was in the range of 14-87 ml $KMnO_4$/L. The polyphenols content of the wine made of hybrid cultivar Othello was lower than that of red wine (Fetească Neagră). The color intensity was significant lower than that of Feteasca Neagră wines.*

Keywords: wines, chromatic parameters, polyphenols, monomeric anthocyanins

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THE INFLUENCE OF HEAT TREATMENT ON THE MECHANICAL PROPERTIES OF ALUMINUM ALLOY 7150-T77 USED IN AEROSPACE

VASILE HOTEA[1], JOZSEF JUHASZ[1]

[1]UTCN Cluj Napoca , North University Center of Baia Mare, Victor Babes 62A Street, Baia Mare, Romania, vasilehotea50@yahoo.com

Abstract: *In this paper, the samples were heat treated by two-stage artificial aging to investigate the effect on the mechanical properties of the 7150-T77 aluminum alloy, and finally subjected eventually to the ESCO corrosion test according to ASTM G34-01 standard. The results have shown that the mechanical properties and corrosion resistance induced by cracking at alloy 7150 can be improved by two-stage customized heat treatment for a specific application in the aeronautical industry.*

Keywords: 7150 aluminum alloy, heat treatment, mechanical properties, corrosion test

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ABOUT USED COOKING OIL – SOCIAL ASPECTS FROM BAIA MARE TOWN

GABRIELA MARIA FILIP[1], VALERIA MIRELA BREZOCZKI[1]

[1]Technical University of Cluj-Napoca, North University Centre at Baia Mare, Faculty of Engineering, Department of Mineral Resources, Material, Environment Engineering, Romania
Corresponding author's e-mail address: gabrielamfilip@gmail.com

Abstract: *Used Cooking Oil (UCO) is one of the biggest factor in degradation of environment, more visible in the urban settlements where are a lot of commercial establishments engaged in the food and beverages sector besides domestic consumers. All of them produce tons of UCO and what's worse is that most of them don't even know about the UCO method of disposal or recycling possibilities. For to find what the citizen and commercial establishments of Baia Mare city know about UCO management we started a documentation campaign. The results of it will be presented in this paper.*

Keywords*: used cooking oil, waste management*,

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EXTRACTION AND CHARACTERISTICS OF THE PINE RESINS COMPOUNDS

CLAUDIA BUTEAN[1], IULIAN HOJDA[1], CRISTINA MIHALI[1], THOMAS DIPPONG[1*], ANCA DUMUȚA[1]

[1]Department of Chemistry and Biology, North Universitary Center of Baia Mare, Technical University of Cluj Napoca, Romania.

[*]Corresponding author, e-mail: dippong.thomas@yahoo.ro

Abstract: *The paper describes the obtaining and characterization of the forest pine resin and of the turpentine oil extracted from it. Pine resine emites some volatil compounds, such as pinen that in some circumstances enhances the toxic effect of some organic air polutant. The purpose of this work is to present different methods used to extract turpentine oil from the resin obtained from a pine wood situated in the vicinity of Moisei village, Maramureș and to put into practice three methods of extracting turpentine oil which were adapted by the authors. Following each extraction, FT-IR analyzes were performed so that the obtained extract could be identified by comparison with a turpentine oil control sample. After collecting the data, they were processed in order to choose the optimal extraction method. This paper will present different methods of production compared to the classical method involving steam distillation, thus the extraction will be achieved with organic solvents such as ethanol and petroleum ether.*

Keywords*: resins, extract, turpentine, FT-IR*

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MODELLING THE WASTE DISPOSAL DEPOSIT – (PART I)

DOREL GUSAT[1], IOAN BUD[1], PASCA IOSIF[1], SIMONA DUMA[1]

[1]Technical University of Cluj-Napoca, North University Centre at Baia Mare, Faculty of Engineering, Department of Mineral Resources, Material, Environment Engineering, Romania

Corresponding author's e-mail address: dorel.gusat@gmail.com

***Abstract**: With the economic development, with the increase of production and consumption, large quantities of waste result annually, which, improperly stored can affect the quality status of the environmental factors. At the same time, improper management of these wastes can lead to serious cases of contamination of water, soil and air and may also threaten the health of the population. Eco-friendly landfills are a safe way to dispose of waste today. In order to limit the harmful effects on the environment, they must be designed and executed in such a way as to meet the current technical, environmental and economic impact requirements. Due to the composition of household waste (paper, plastic, glass, vegetable waste, other flammable substances) the risk of fire occurring and developing inside the warehouse is high. This fire can be based on several origins: anthropogenic, microbial, natural. Thus, the temperature released may damage the component layers of the landfill. Inside the warehouse gases, CO_2, CH_4, as well as volatile organic compounds (VOCs) are born due to the activity of microorganisms.*

***Keywords**: modelling of waste deposits, fire, 2D approaching, bentonite layer*

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STUDY OF THE MICROBIOLOGICAL CONTAMINATION OF THE AIR FROM A FAMILY MEDICAL OFFICE

ZORICA VOȘGAN, ANCA DUMUȚA, MARIAN JELEA, LUCIA MIHALESCU

*Technical University of Cluj-Napoca, North University Center at Baia Mare, Faculty of Sciences, Department of Chemistry and Biology, 76 Victoriei Street, 430122 Baia Mare, Romania, *Corresponding author: zori_v13@yahoo.com*

Abstract: *Indoor air of a family medical office was analyzed in order to investigate the level of the microbial contamination, because a series of diseases and infections can be transmitted to patients through the air. The determinations were made from October 2018 until May 2019, considering the consulting room, the treatment room, respectively the waiting room. For the enumeration of the total germs number and the streptococcal and fungal populations of the air, the Koch sedimentation technique was used. The microbiological contamination of the air within this study shows the surpassof the suggested standard for the air bacterial load from a medical building. The results highlight a high degree of air pollution in the medical unit, especially in the winter months, when the traffic is more intense and the ventilation is deficient. The aeromicroflora in the treatment room has the highest number of germs, respectively hemolytic streptococci and fungi. The microorganisms isolated in this study from the microscopic examination includes: Penicillium sp., Bacillus sp., Streptococcus sp., Tetrads. Thus, it is necessary to permanently monitor the quality of the air inside the medical office, by applying appropriate cleaning and disinfection methods and by the control of the environmental factors that favor the growth and propagation of microbes.*

Keyword: *indoor air, microorganisms, Koch sedimentation, health*

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