

**UNIVERSITATEA DE NORD DIN BAIA MARE**  
**Facultatea de Resurse Minerale și Mediu**

# **BULETIN ȘTIINȚIFIC**

## **AL UNIVERSITĂȚII DE NORD DIN BAIA MARE**

**Seria D**  
**Exploataři Miniere**  
**Prepararea Substanțelor Minerale Utile**  
**Metalurgie Neferoasă**  
**Geologie și Ingineria Mediului**  
**Volumul XXI**

**Baia Mare 2007**

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**MINERAL RESOURCES AND ENVIRONMENT FACULTY**

# **SCIENTIFIC BULLETIN**

**SERIES D**

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## **INFLUENȚA COMPOZIȚIEI IONICE A TULBURELILOR DE FLOTAȚIE ASUPRA ADSORBȚIEI COLECTORILOR LA SUPRAFAȚA UNOR MINERALE SULFURICE**

### **INFLUENCE OF FLOTATION PULP IONIC COMPOSITION TO COLLECTORS ADSORPTION ON SULPHIDE MINERALS SURFACE**

**Assoc.Prof.Dr.Eng. Gabriela Filip**, *North University of Baia Mare*

#### **ABSTRACT**

In the case of the non-ferrous ores' flotation, the presence of heavy metals' ions inside the flotation pulps' liquid phase leads to minerals' flotation properties' modification and influences the flotation process.

This paper presents a few experimental measurements with respect to the surface properties of pure minerals (galena, chalcopyrite, sphalerite, pyrite) in the presence of ions like  $Pb^{2+}$ ,  $Zn^{2+}$ ,  $Fe^{3+}$ ,  $Cu^{2+}$ , being analyzed the variations of the quantity of the collector adsorbed on the mineral surface.

**Keywords:** flotation pulp, ionic composition, collector reagents, sulphide minerals

## **CALITATEA AERULUI DIN BIROURI**

### **AIR QUALITY IN OFFICES**

**Assoc.Prof.Dr.Eng. Gabriela Filip**, *North University of Baia Mare*

#### **ABSTRACT**

A lot of studies have indicated that indoor air is often dirtier and contains higher levels of contaminants than outdoor air because of this and increased awareness regarding poor indoor air quality. It is not surprising that the number of reported employee complaints of discomfort and illness in non-industrial workplace is increasing.

**Keywords:** indoor pollution, office, purification methods

# **PARTICULARITĂȚI CE DETERMINĂ COMPORTAREA LA FLOTAȚIE A MINERALELOR DIN MINEREURILE NEFEROASE COMPLEXE**

## **SPECIFIC FEATURES THAT CAUSES THE FLOTATION BEHAVIOUR OF MINERALS FROM NON-FERROUS COMPLEX ORES**

**Assoc.Prof.Dr.Eng. Mihaela Podariu, North University of Baia Mare**

### **ABSTRACT**

Knowing the specific features of useful mineralization has a significant importance for non-ferrous ores capitalization.

Technological indicators for CuPbZn ores are depending mainly on pyrite's behavior in all stages, behavior that is not yet entirely explained, results that were obtained being contradictory due to pyrite's reactivity that is continuously changing because of the chemical reactions with minerals participation during processing. Big amount of pyrite in ores causes lower quality concentrates and metal losses.

**Keywords:** non-ferrous ores, flowsheet

## **ACTIVAREA ȘI DEPRESAREA MINERALELOR SULFURI LA FLOTAȚIE DIN PUNCT DE VEDERE CHIMIC ȘI ELECTROCHIMIC**

### **ACTIVATION AND DEPRESSION AT FLOTATION OF SULPHIDE MINERALS FROM CHEMICAL AND ELECTROCHEMICAL POINT OF VIEW**

**Assoc.Prof.Dr.Eng. Mihaela Podariu, North University of Baia Mare**

### **ABSTRACT**

Surface mineral layers are in dynamic state, activation and oxidation having as result the formation of a superficial layer that differs by the solids volume from chemical composition and physical features point of view. Minerals surface features that influence minerals floatability can be significantly changed during flotation.

Recovery of copper activated sphalerite decreases along with activation time increases, the more copper from the surface diffuses within mineral particle and loses the ability to react to collector reagent. The presence of thiolic collectors into the system makes copper grounded at the surface, so copper tendency to move to internal part of the solid is decreased.

**Keywords:** sulphide minerals, activation, depression

# **INFLUENȚA FLOCCULANTULUI MAGNAFLOC ASUPRA VITEZEI DE SEDIMENTARE A APEI DE MINĂ SĂSAR, TRATATĂ CULAPTE DE VAR**

## **INFLUENCE OF MAGNAFLOC FLOCCULATING AGENT ON SEDIMENTATION RATE OF SĂSAR MINE WATER, TREATED WITH HYDRATED LIME**

**Assoc.Prof.Dr.Eng. Baciu Dorina**, *North University of Baia Mare*  
**Lecturer Eng.drd. Stecz Ștefania**, *North University of Baia Mare*  
**Eng. Tohătan Adriana**, *S.C. MONS MEDIUS S.R.L.*

### **ABSTRACT**

Mining activities can produce significant changes on the environmental factors: water, soil air. The major challenges of modern mining society, thus consists in the delimitation, extraction and processing of mineral resources so as to cause as little changes on ecosystems. Mining, with its branches of extraction and processing, is an intensive water consumer industry, contributing mainly to the pollution of natural receptors in the area. Natural water courses in mining areas have waters with composition that changes along the way, depending on the quantity and quality of groundwater received, rain water and waste water discharged into them. The main sources of rivers pollution in mining areas are mine waters resulting from ores extraction process. Mine waters are characterized by the following: high acidity and high content of metal ions (Fe, Cu, Zn).

**Keywords:** flocculating agent, mine waters

## **EVALUAREA EFICIENȚEI ȘTAȚIEI DE EPURARE CÂMPURELE PRIN URMĂRIREA CALITĂȚII EMISARULUI VALEA ROȘIE ȘI VALEA BĂIȚA**

### **EVALUATION OF CAMPURELE WASTE WATER TREATMENT PLANT EFFICIENCY BY VALEA ROSIE AND VALEA BAITA EMISSARY QUALITY**

**Assoc.Prof.Dr.Eng. Baciu Dorina**, *North University of Baia Mare*  
**Eng. Alexandra Alexandrescu**, *S.C. DUFIL PROJECT & CONSULTING S.R.L.*

### **ABSTRACT**

The paper tries to establish a correlation between quality of Baita emissary, Red Valley, and the operation of Campurele water treatment plant.

In order to achieve this, were fixed along the Baita emissary and Red Valley, 3 probing points, which were chemically analyzed, making comparison with mine water



treated with hydrated lime. Recoveries for treatment of mine water in treatment plant were of 71% for suspensions treatment, 9.4% for sulphates treatment and 3.4 ÷ 6% for fixed residue treatment. For framing to permitted levels for suspensions content were done laboratory experiments using flocculating agents as Magnafloc, Polifin, Polias, Polyacrylamides and Medasol, recommended to increase the efficiency of the waste water plant in terms of the suspensions treatment.

**Keywords:** waste water treatment plant, flocculating agent

## **EPURAREA APELOR DE MINĂ CU CONȚINUT DE CUPRU CU AJUTORUL SCHIMBĂTORILOR DE IONI**

## **COPPER CONTAINING WASTE WATER TREATMENT USING ION EXCHANGERS**

**Assoc.Prof.Dr.Eng. Baci Dorina**, *North University of Baia Mare*

**Eng. Melega Mihaela Andra Loredana**, *S.C. Salzberg SRL*

### **ABSTRACT**

The paper is a study which shows a copper containing mine water treatment technology, and copper recovery using ion exchangers that have selectivity for this element. Laboratory test were made using ion exchangers type Purolite S – 930 selective for copper.

**Keywords:** mine waters, ion exchangers

## **UTILIZAREA ECHIPAMENTELOR DE MUNCĂ**

## **THE USE OF WORKING EQUIPEMNT**

**Prof. Dr. Eng. Băncilă-Afrim Nicolae**, *North University of Baia Mare*

**Eng. Ropotoaia Dumitru**, *Maramureș House of Retirement*

**Asist. Eng. Drd. Gușat Dorel**, *North University of Baia Mare*

### **ABSTRACT**

The paper presents some important elements regarding to the utilization of the protection equipments about health and safety of the workers in all aspects of the work. In the same time there are presents the obligations of the employers concerning the measures of the working equipments in to the enterprise to correspond with the activity, without to put in danger their health and safety.

**Keywords:** working equipment, safety

# ANIZOTROPIA ȘI BIREFLEXIA PIRITEI DIN ZONA BAIJA MARE

## ANISOTROPY AND BIREFLECTION OF PYRITE FROM BAIJA MARE AREA

**Prof. Dr. Damian Gheorghe**, *North University of Baia Mare*  
**Assoc.Prof.Dr. Damian Floare**, *North University of Baia Mare*

### ABSTRACT

The optically anisotropic effects of the pyrite crystals from the Baia Mare ore deposits were studied under reflected light with microspectrofotometru Zeiss. The results of the reflectance analysis associated with the X-ray diffraction data of the pyrite crystals, sustain relationship between the anisotropy and chemical composition. The presence of the trace elements (As, Co, Ni) and deficiency of the sulphur, in the pyrite crystals analysed, determinated the modification of the "a" reticular parameter in unit cell of the theoretical value "a" $=5.417\text{\AA}$ .

**Keywords:** pyrite, reflectance, X-ray diffraction, chemical composition, unit cell, anisotropy.

## STIBIUL ÎN RELAȚIE CU LEGISLAȚIA DE MEDIU ȘI IMPACTUL ACESTUIA

### ANTIMONY IN RELATION TO ENVIRONMENTAL LEGISLATION AND ITS IMPACT

**Prof. Dr. Eng. Vasile Hotea**, **Eng. Irina Smical**,  
**Lecturer drd. Eng. Gheorghe Iepure**, **Lecturer Dr. Eng. Elena Pop**,  
*North University of Baia Mare*

### ABSTRACT

Antimony is ubiquitously present in the environment as a result of natural processes and human activities. Antimony and its compounds are considered to be priority pollutants interest by the USEPA and the UE. Elevated concentrations of antimony in soil and sediments are either related to anthropogenic sources or associated with high arsenic concentrations in sulphidic ores. Antimony appears to be highly unreactive in soils. Airborne supply of antimony to aquatic and terrestrial systems seems to be drawn on the reactivity and cycling of the element in natural systems and a list of research priorities is given.

**Keywords:** environmental legislation, antimony

# UTILIZAREA TUFURILOR ZEOLITICE DE BÂRSANA LA TRATAREA APELOR DE MINĂ

## BARSANA ZEOLITIC TUFFS USAGE AT MINE WASTEWATER TREATMENT

**Eng. Irina Smical**, *Maramureş Environmental Protection Agency*

### ABSTRACT

The complex research concerning Barsana zeolitic volcanic tuffs were achieved following a methodology used in North University of Baia Mare when other similar rocks from other occurrences were examined as well. For this purpose the samples were processed for laboratory analyses taking into account that the knowledge stage is far from being clarified concerning all pyroclastic rocks. Laboratory analyses by thin sections, microscopic and optic preparation, X- ray diffraction analyses, chemical analyses, in order to set the petrographic and mineralogic features , and for the applicability domains tackling, the research was achieved at laboratory stage.

**Keywords:** zeolitic tuff, physical and chemical features, mine water, treatment.

## ARSENIUL DIN SOLURI ŞI APE ÎN ZONA MINIERĂ BAIA MARE – RISC DE MEDIU ŞI DE SĂNĂTATE PUBLICĂ

### ARSENIC IN SOILS AND WATERS IN BAIA MARE MINING AREA - ENVIRONMENTAL AND PUBLIC HEALTH RISK

**Eng. Viezer Rafael**, *S.C. MONS MEDIUS S.R.L.*

**Assoc.Prof.Dr. Alexandrina Fülöp**, *North University of Baia Mare*

### ABSTRACT

The paper deals with the mining pollution in Baia Mare area. Ilba, Nistru and Baita zones have been chosen as case studies, in order to show the effects of pollution with metals provided by the mining activity and to emphasize its environmental risk. Water and soil sampling and analyses show a high risk of arsenic pollution in Ilba area and the decreasing risk in Nistru area and Baita area, respectively. Some methods of remediation are listed at the end of the paper.

**Keywords:** pollution, mining, arsenic, risk

# **CERCETĂRI PRIVIND ATACUL DĂUNĂTORILOR BIOLOGICI ASUPRA CONSTRUCȚIILOR DIN LEMN**

## **RESEARCHES OVER THE ATTACKS OF BIOLOGICAL PEST ON WOOD CONSTRUCTIONS**

**Assoc.Prof.Dr.Eng. Mirela Coman**, *North University of Baia Mare*

### **ABSTRACT**

The paper presents the results of researches which made in 2003-2005 period in the frame of "Conservation-Restoration-Salvation (GERES)-Saving Cultural Goods and Wood Monuments". The place of research was The Open Air Museum from Baia Mare City, a division of The Maramures County Museum. The work method was the observation of itinerary of direct measurements done in the study zone and in some measure points. The researches have been made with instruments that are usually used in biological expertises, biological identifications for different species, monitoring and statistic work that includes data interpretation.

The conclusions of our work since now have demonstrated the importance of a consequent application of prevention methods against biological pest, a monitoring of infestation-if it is necessary-, a monitoring of the applied treatments. The best solutions depend on the each site conditions, from economical random and, last but not the last, the high qualification of forestry sector specialists.

**Keywords:** biological pest for wood, alternative responding technologies

## **CU PRIVIRE LA CONDIȚIILE DE FAVORABILITATE PENTRU DEZVOLTAREA ECOSISTEMELOR FORESTIERE ÎN ZONA PERIURBANĂ A MUNICIPIULUI BAIAMARE**

### **REGARDING CONDITIONS OF FAVORABILITY FOR FORESTRY ECOSYSTEMS DEVELOPMENT IN THE SURROUNDINGS OF BAIAMARE CITY**

**Assoc.Prof.Dr.Eng. Mirela Coman**, *North University of Baia Mare*  
**Dr. Eng. Maftai Leșan**, *North University of Baia Mare*

### **ABSTRACT**

The paper presents the results of researches made in the polluted surroundings of Baia Mare City, on long time period (between 1966 and 2000).

The strong effects of pollution on ecosystems in general and on vegetation, especially, have imposed reforestation and forestation with resistant species at the pollution factors through the use of some specific technologies. The monitoring made over time, forestation composition, testing surfaces and applied technologies made a valuable data base for the ecological reconstitution activity. The success or failure of the reforestation work has allowed us to select and recommend for the environment protection the results of this long term work.

We can say that through the reforestation of polluted zones we have the effect of ecological reconstruction of intense polluted zones and also attractive views, recreation forests and trust in human power that can make a good nature manager.

**Keywords:** ecological reconstruction, forestry ecosystems, long term monitoring