GLYCOMICS AND SYSTEMS BIOLOGY: NEW TARGETS FOR MICROFLUIDICS/MASS SPECTROMETRY

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Advanced mass spectrometry (MS) has the potential to provide key answers addressing structure-to-function relationship for various bio-glycoconjugates, role(s) of glycosylation(s) in regulation of cell physiological processes as well as implications of aberrant glycosylation in cell pathology and/or transformation. In the past decade, capillary nanoelectrospray ionization (nanoESI) MS developed as an effective tool in glycomics. However, the disadvantages of the method include low sample throughput, potential sample carryover and, in some cases, poor reproducibility due to a variable shape of the spraying capillary tip.

The recent introduction of chip-based nano- and microESI in biological MS is driven by the high-performance, efficiency, throughput, sensitivity, and speed of analysis. The analytical potential of these assemblies were lately largely proven in proteomics, direct bioanalyses of drugs, drug development, and small molecule characterization. For the MS ionization/separation of quantity-limited complex glycoconjugate mixtures derived from biological matrices, our group implemented in the last few years several novel methodologies based on microfluidics and lab-on-a-chip systems.

In this study microfluidic ESI systems operating in the negative ion mode, in combination with Fourier-transform ion cyclotron resonance (FT-ICR) at 9.4 Tesla and hybrid quadrupole time-of-flight (QTOF) tandem mass spectrometry (MS/MS), are introduced for detailed glycoproteome and glycolipidome determination in biomedical research. Two different chip ESI systems: a fully automated chip-based nanoESI robot and a thin-chip microsprayer have been coupled each to both QTOF MS and FT-ICR MS. The feasibility of both chip MS approaches was tested for glycoprotein/glycopeptide mapping in human body fluids in health and disease as well as for the determination of ganglioside differential expression in human brain regions and primary brain tumors along with the elucidation of the region-and tumor-specific structures.

The obtained data indicate that the high sensitivity and ionization efficiency provided at nano- and microscale level by the chip MS infusion in combination with tandem MS make this new approach ideal for studies aiming the detection and structural identification of yet unknown and minor species in complex native mixtures and detailed characterization of disease biomarkers.

POWERFUL METHOD TO OBTAIN STABILE GOLD NANOPARTICLES

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Abstract

This paper presents a powerful method to obtain gold nanoparticles - radiolytic synthesis. The samples were prepared using $HAuCl_4 \cdot 3H_2O$ in water, under argon atmosphere, then they were exposed to a ^{60}Co gamma source (for low dose rate) or electron beam (for high dose rate). The results by transmission electron microscopy correspond with the UV-Vis spectral data (extinction coefficient and λ_{max}).

STUDIES OF POLYESTER FIBRE MORPHOLOGY BY THE CRITICAL DISSOLUTION TIME

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Abstract

Critical Dissolution Time (CDT) of polyester yarn in phenol or phenol/tetrachlorethane (TCE) mixture was found to be an extremely sensitive technique for measuring fiber cristallinity and for detecting small morphological differences between untextured fibers and differences due to heat treatment.

Key words: CDT, polyester fibre, phenol, TCE, cristalinity, morphology

ILLEGAL WASTE LANDFILL. LEGISLATION, PROBLEMS AND ECOLOGICAL RECONSTRUCTION

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Abstract

For many EU countries and for Romania illegal landfill are a reality. The ecological impact on the environment and society is enormous, and the negative effect are easily to be spotted. The actual legislation is presenting the waste types which are accepted in the deposit and if there is a good landfill management the impact is reduces. In the situation of illegal landfills considerable measures have to be taken. The waste is excavated and moved on to a controlled landfill. The affected soil will be ecological reconstructed and protected for a future degradation.

STATISTICAL MATHEMATICAL MODELING OF SUNFLOWER OIL OXIDATION DYNAMICS. THE ANTIOXIDANTS ADDITION INFLUENCE.

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Abstract

Lipid oxidation is a degradation process, and as oxidation progresses the number of degradation products dramatically increases. Results showed increase in lipid oxidation during storage. The highest values for applied measurement of oxidation were observed in the control sample without antioxidants. Also the paper purpose is to develop mathematical statistical models in correspondence with analyzed situations.

ENVIRONMENTAL IMPACT AND STRENGTH VARIABILITY OF GLASS

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Abstract

In this work, the effects on the strength of pyrex and soda-lime-silica glass rods, after prolonged exposures at 120°C in autoclave conditions, in acidic, alkaline and neutral environments are investigated. Three-point bending tests are carried out on the rods, to determine their strengths. Weibull analysis was employed to assess strength consistency of the glasses for each test condition. In addition, Scanning Electron Microscopy is used in order to elucidate the environmental effects on the glass surfaces. The main observations reveal that for several conditions there was strengthening of the rods, whereas subsequent weakening occurred in the alkaline environment. Conclusively, there are effects on the glass surfaces, when solutions with various pH values attacked the rods.

RECYCLING GLASS USED FOR FOOD PACKAGING

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Abstract

Glass is one of the first materials used for packaging, while it remains the most environmentally friendly packaging material. Even though Egyptians were the first to realize the potential of glass as packaging material 4000 years ago, glass still remains one of the main packaging materials. Glass although fragile and heavy is acid resistant, inactive, tasteless and totally biodegradable, since when exposed to the environment breaks down to small fragments of silicon and sand, two of the most common materials in our planet.

Glass is widely used as packaging material, and although is a degradable material, its reuse and recycling improve its environmental performance.

ANALYTICAL APPLICATIONS OF ASYMMETRICAL DIOXIMES

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Abstract

In the present work there are shown spectrometric methods for determining the nickel with aliphatic asymmetric dioximes, namely the methyl-ethyl-dioxime, respectively methyl-isopropyl-dioxime. The asymmetric dioximes may set up potential organic reagents in the analytic determinations of nickel, as they are extremely sensitive and selective for this metal.

HEMICELULASES AND XYLANASES INFLUENCE ON TECHNOLOGICAL PROPERTIES OF THE BREAD FLOUR

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Abstract

The effect of pentosanases on pentosans is known. The results of this effect is a transformation of insoluble pentosans into soluble one. In these experiments were used different doses of pentosanases from different sources of microbiological species. Effect of pentosanases formulation was carried out in respects of rheological behaviour of doughs and finished goods.

RESEARCHES REGARDING THE POSIBILITY TO FERTILIZE SOILS DEGRADED BY MINING ACTIVITY FROM ROSIA JIU MINING SITE

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Abstract

This paper shows two experiments with the purpose of proving the possibility of improving degraded soil quality and fertility. For that were used polymers and organic substances obtained from lignite.

ENZYMES – ANTISTALING ADDITIVES USED IN BREADMAKING

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Abstract

In this study, our objective was to determine the effects of incorporating different enzymes into wheat bread dough on the bread firming. So, we had added into wheat bread dough: glucose oxidase, hemicellulases, xylanase, cellulose, α-amylase, amyloglucosidase. The glucose oxidase, xylanase and amiloglucosidase were not effective on reducing the bread stalling rate. The best effects had hemicellulase extracted from Trichoderma viride and α-amylase.

BIOTECHNOLOGY APPLICATIONS IN COTTON PROCESSING

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Abstract

Sustainable development generates new approaches in all type of industries. A balance between the economical aspects and those concerning the environment has now to be implemented in all industrial fields.

Textile industry is known as a polluting one. Starting from the synthesis of raw materials realized through chemistry and continuing with all the processes needed to arrive at the fabrics and then further on, pollution is generated during all these transformations. Waste water with high inorganic and organic contents, acidic, alkaline resulted after textile processing. Dyes used during finishing process are dangerous pollutant not so much by toxic aspects but by the fact that water transparency is destroyed and the chlorophyll synthesis stopped. All the processes developed at high temperature are also energy consumers.

Alternative solutions for better environmental results in this field are searched. Among these new solutions biotechnology plays a key role. Aspects of biotechnology applications in cotton processing are discussed. Comparisons between classical and biotechnological treatments are presented.

PANI-MODIFIED ANION EXCHANGE MEMBRANES FOR DIRECT METHANOL FUEL CELLS

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Abstract

Anion exchange membranes were modified by the deposition of a thin film of conducting polyaniline. The polymerization process has been performed in hydrochloric acid media using peroxydisulfate as oxidizing agent. The influence of working parameters (polymerization time, stirring and ultrasonication) on the composite membranes properties has been studied. The resistance of the composite membranes has been determined by DC measurements using a four-electrode technique and the methanol permeability by gas chromatography. The resistance values depend on the polymerization conditions i.e. film thickness. The methanol permeability of all samples was lower than that of the unmodified membrane.

ATMOSPHERIC SULFUR DIOXIDE ANALYSIS

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Abstract

In the atmosphere sulfur dioxide can be determined continuously using automatic sampling and recording apparatus. The reaction of sulfuros acid with pararosaniline hydrochloride and formaldehyde produces a red-violet color which is measured colorimetrically. At pH = 1.5 this reagent is stable and exhibits good resistance to interferences at concentrations found in the atmosphere. Concentration limits for the instrument were established up to 5 ppm but these can be considerably extended or reduced.

THE COLLECTION OF SULFUR DIOXIDE ON IMPREGNATED FILTERS

GABRUŞ Iuliu Radu, BODESCU Adina Maria

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Abstract

The continuous interest in sulfur dioxide as an atmospheric constituient and the availability of sensitive and selective analitycal methods for its determination dictated its selection. The obtained results when known concentrations are sampled using impregnated filters are evaluated.

A DIDACTIC PROJECT FOR APPLIED CHEMISTRY DIVULGATION: HONEYBEES AND BIOLUMINESCENT BACTERIA AS BIOINDICATORS OF ENVIRONMENTAL CONTROL.

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Abstract

The objective of this divulgation projects was to illustrate to high school students the experimental approach to the study of molecular, biochemical, physiological and ecological aspects of environmental pollution monitoring.

We employed two kinds of bioindicators, the bioluminescent bacteria and the honeybees, to reveal the presence of various environmental pollutants.

Four forms of the scientific high school "N. Copernico", in Bologna, were involved in the project carried out by the Analytical Chemistry Section of the Department of "Metallurgic Sciences, Electrochemistry and Chemical Techniques" (SMETEC) of the Faculty of Pharmacy, University of Bologna, in collaboration with INCA (National Interuniversity Consortium "The chemistry for the Environment").

SPECTROPHOTOMETRIC STUDY IN THE CIELAB UNIFORM COLOUR SPACE OF SYMMETRICAL DISAZOIC STILBENE DYE

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Abstract

A spectrophotometric study of a new disazo stilbene dye obtained using 4,4'-diaminostilbene-2,2'-disulfonic acid as middle component, and 3-hydroxy- naphthalene-2- carboxylic acid as coupling component is presented. The study was carried out in the CIELAB uniform colour space and the dye was characterized by means of lightness (L*) redness (a*) and yellowness (b*), using D_{65} (natural day light), A (tungsten light) as illuminants and a 10' observer. The chroma (C*), the hue angle (h^o), and the colour difference (ΔE_{ab}*) were derived from these values.

THE AGEING OF POLYPROPYLENE FIBRES UNDER THE UV RADIATION

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Abstract

The effect of UV radiation on the molecular and supermolecular structure of polypropylene fibres is characterised by various macroscopic features, colours and additives. Based on the measurements performed, the general conclusion can be drawn that UV radiation under the exposure conditions used in our experiments causes changes in both the molecular and supermolecular structures of the investigated fibres. The changes extent is clearly dependent on the initial fibre structure, the modifiers added and the macroscopic features.

BIOACTIVE NANOPARTICLES (8). ESSENTIAL OIL FROM CUPRESSACEAE FAMILY PLANTS/ *β*-CYCLODEXTRIN SUPRAMOLECULAR SYSTEMS

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Abstract

The paper presents the nanoencapsulation of the essential oils from Cupressaceae family plants (juniper, different plant parts) in *β*-cyclodextrin, using the ethanol-water solution method. Essential oil/*β*-cyclodextrin complexes were analyzed by thermogravimetry (TG) and the raw essential oils and those extracted from the complex were analyzed by gas chromatography-mass spectrometry (GC-MS). The best yields for nanoencapsulation were obtained for whole plant (79.4%). The profile of the TG analysis for all supramolecular systems clearly indicate de formation of complexes, the mass loss being in the range of 7.1-8.1%, comparatively with the value of 14% for the pure *β*-cyclodextrin up to 200°C. The main compounds identified in the raw essential oils were *α*-pinene and limonene. All compounds were encapsulated in higher relative concentrations (the ratio between the GC concentrations of the compound from the complex extract-recovered essential oil-and from the raw essential oil, $c_{recovered}/c_{raw} > 1$).

MACRO AND TRACE METALS CONTENT IN BEE'S POLLEN FROM DIFFERENT LOCATION IN BANAT COUNTY

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Abstract

It was analyzed the total metals (Na, K, Ca, Mg, Fe, Mn, Zn, Cu) content in 4 bee's pollen samples collected from 4 different location in Banat county. From macroelements, the major metal is Ca followed by Mg, Na and K. From micronutrients, major metal is Fe followed by Zn, Ma and Cu. The toxic heavy metal, Pb is present only in small amount in one sample.

HYDROMETALLURGICAL PROCESS FOR THE TREATMENT OF LEAD-ACID BATTERY PASTE NOT POLLUTION

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Abstract:

This study proposes the use of hydrometallurgical process for the treatment of lead-acid battery paste not pollution. One solution to the environmental problems associated with the direct smelting of lead-acid battery paste is to leach the associated lead with sodium hydroxide. Lead was separated from alkaline solution as $PbSO_4$ using H_2SO_4 as precipitation agent and transformation pure $PbSO_4$ in tribasic sulphate of lead using NH_4OH as precipitation agent.

IMPLEMENTATION OF IPPC DIRECTIVE IN NON FERROUS FOUNDRIES

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Abstract

The minimization of emissions, efficient raw material and energy usage, optimum process chemical utilization, recovering and recycling of waste and the substitution of harmful substances are all important principles of the IPPC Directive. The paper deals with Integrated Prevention and Pollution Control (IPPC) Directive and its application in non ferrous foundry industries. The following major activities are discussed from the point of view of specific pollution of environment: melting and metal treatment, casting of molten metal into the mould, finishing of the raw casting.

PEACH GERMPLASM FOUND AT SCDP – BANEASA

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Abstract

Collecting, preserving and using peach sources from the germplasm found in SCDP-Baneasa is focused on the diseases and pests resistance (especially to *Taphrina deformans, Sphaerotheca pannosa var persicae, Monilinia, Cytospora cincta, Myzus persicae, Cydia molesta, Anarsia lineatella*), on the fruit quality (especially taste and flavour), on the seasonality (with a ripening calendar that exceeds 3-4 months), on adaptability of cultivars and rootstocks to adverse environmental conditions and also on high yield potential. The use of sources of genes, including germplasm from China, or other areas with large biodiversity confers resistance to the diseases of the new peach and nectarine varieties created in Romania.

Open pollination, hybridizations and back-cross have been used as breeding methods, combined with the screening of the progenies in the juvenile stage in greenhouse to reduce selection cycles and evaluations.

New fruit typologies (related to shape, texture, flesh colour, ripening date, storability) such as: Congres, Victoria, Triumf, Alexia, Amalia, Antonia, Tina, Dida, Eugen, Mihaela have been released, patented and promoted in Romania in the last 5 years.

DECOLOURATION AND DETOXIFICATION OF VINYLSULPHONE DIAZO REACTIVE DYE BY LACCASE *TRAMETES VERSICOLOR*

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Reactive dyes represent about 20 - 30 % of the total textile dye market share. Among 12 classes of chromogenic dye groups, the azo type with up to 70 % of all textile dyestuff produced is the most important one [1]. Reactive dyes occur in textile dyehouse wastewater due to their poor fixation to fabrics and/or water hydrolysis (5-45 %) so creating major aesthetic problems for the industry. There are two goals in treating of textile wastewaters containing dyes, colour removal and dye mineralization. Reactive dyes degradation is usually initiated by anaerobic reduction of azo linkage to generate aromatic amines that shall be mineralized in additional aerobic oxidation reactions providing COD and toxic substances removal [2]. Although the commonly used azo dyes may not produce cytotoxic, mutagenic or carcinogenic effects, reductive cleavage of azo bond result in formation of non-coloured metabolites which may be toxic and carcinogenic [3]. The use of lacasses (benezenediol:oxygen oxidoreductase, EC 1.10.3.2) has attracted increasing scientific attention in last decade due their ability to catalyse the oxidation of a variety of toxic organic compounds including dyes, and can be broaden remarkably in the presence of small molecule redox mediators like ABTS [4- 6]. The reaction products of the mediator-involved mechanism are not clarified yet, and mostly a decolouration is reported leading the possibility of producing less toxic compounds [7-8]. In the contribution, the effect of different forms (un-hydrolysed and fully hydrolysed) of vinylsulphone diazo reactive dye C.I. Reactive Black 5 on its decolouration and degradation will be presented using a laccase of *Trametes versicolor*. The dyes degradation will be followed over different treating times and discussed with regard to the changing of colour (SAC, UV-VIS range), inhibition of bacterial luminescence (i.e. EC_{50}), TOC and BOD_5/COD values. In order to examine the reuse of enzymatically decolorized liquors after individual wastewaters (after dyeing, rinsing, acid neutralizing and washing) the eco-toxicological suitability of the water after optimal conditions of enzyme exposure will be studied.

THE USE OF PHASE TRANSFER CATALYSIS METHOD FOR SYNTHESIS OF 3-CHLORO-PHENYLAZOPHENYLPHOSPHINIC ACID

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Abstract

In this paper a new method for the coupling reaction between an aromatic amine, 3-chloroaniline, and a phosphorus compound, e.g. the phenylphosphinic acid, is presented. The novelty of this method is the phase transfer catalysis. Phase transfer catalysis is a well established technique in preparative chemistry, but has been confined almost exclusively to non-electrophilic reactions. Preliminary studies of the reaction and resulted compound are presented. Coupling reactions in aqueous media are accelerated by using a two-phase water-dichloromethane system containing sodium 4-dodecylbenzene sulfonate as a transfer catalyst for the diazonium ion. Coupling reaction was realized at room temperature, at pH~7. The resulting compound was characterized by means of IR spectroscopy and UV-VIS spectrometry.

DETERMINATION OF THE REDOX POTENTIAL OF SOME LACCASES

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Abstract

Electrochemical studies of some laccases have been performed. Direct (mediatorless) electrochemistry of laccases on graphite electrodes has been investigated with cyclic voltammetry. For all potential laccases direct electron transfer (DET) has been registered at highly ordered pyrolytic graphite electrodes. The characteristics of DET reactions of the enzymes were analysed under aerobic conditions.

THE UNECOLOGICAL WASTE DUMP IN ARAD CITY: I. DETERMINATION OF POLLUTANTS

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Abstract

A waste disposal in Arad city was evaluated to assess its suitability as landfill site and its impact on the groundwater. Both physico-chemical analyses for parameters like pH, conductivity, nitrates, nitrite, ammonium, alkalinity, chemical oxygen demand, and microbiological tests, on characteristics known to impact human health and the environment, indicate high levels of pollution**.**

REMOVAL OF ZN(II) IONS BY USING SPECIFIC SORBENTS

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Abstract

The aim of this work was the study of new specific sorbents for the removal of Zn^{2+} ions from aqueous solutions. Poly(styrene-divinylbenzene chloro methylated) microbeads was used as carrier matrix, and Direct Red Dye (RDC) as the ligand. Direct Red Dye-attached to copolymer microbeads (RDC-SVB) were characterized by UV-VIS spectroscopy. Dye-attached microbeads were used in the adsorption/desorption of the Zn^{2+} ions. The maximum adsorption of Zn^{2+} ions onto the Direct Red Dye-attached poly(SVB) microbeads was about 11.3 mg Zn^{2+} ions per g copolymer. The desorbtion of Zn^{2+} ion was studied by using 0.1 M HNO_3 (pH 1.0). Adsorption/desorption cycles showed the feasibility of repeated use of this novel sorbent system.

ENZYMATIC MIXTURES UTILISATION IN SUPERIOR RED WINES OBTAINING TECHNOLOGY

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Abstract

In the purpose to obtain extractive wines and intensely coloured, external pectolitic enzymatic mixtures was experienced during the maceration and fermentative processes, and for some technological phases improvement for primary wine making process.

The researchers that were done regarded the evolution of phenolic compounds at superiors red wines from Burgund variety, obtained in Minis vineyard.

External pectolitic enzymatic mixture were applied to the must. During the hole period of study physical and chemical analyses were done to superior red wines obtained from Burgund variety, beginning with the end of alcoholic fermentation, malolactic fermentation, at 3 months, 6 months, 9 months, 12 months, 18 months and after that yearly, as for the wines obtained with external enzymatic mixtures used during the maceration – fermentation process, as for the one which weren't treated with enzymes.

The utilisation of exogenous enzymatic mixtures in contributing to superiors red wines quality improving, especially for the colour and extractive character.

THE USE OF LACTOSCOP FTIR, FOR THE DETERMINATION IN REAL TIME OF THE CRYOSCOPIC POINT OF RAW MILK

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Abstract

The present paper is presenting a study concerning the evolution of the cryoscopic point of raw milk, obtained in exploitations of milk cows from the West of Romania, randomize sampling, during the two years of testing samples, using the infra-red technology. This method allows the test to be done through a quick procedure, the obtained results being directly transmitted to the responsible factors of the biosecurity of milk intended to process. The taken measures have meaningfully decreased the appearance of falsification situations when water is added into raw milk, the angle of incidence falling from 11,35% to 1,27%. The use of Lactoscop FTIR (Delta Instruments - Holland), for the determination of the cryoscopic point, conferring the getting the certain results, the time of one sample examination being 1 – 2 minutes.

PROBLEMS IN FE-ZSM-5 PREPARATION: FERRIC AND FERROUS OXALATE METHODS

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Abstract

This paper presents a comparative study between technical hitches of two methods of Fe-ZSM-5 catalysts preparation that involves the use for ferrous, respectively ferric oxalate as iron precursors in aqueous exchange processes. Each method has its own advantages and disadvantages, but the ferric oxalate method seems to be more suitable than the ferrous oxalate method, since it doesn't have reproducibility problems. A strong argument pleading in favour of ferric oxalate method is its simplicity. The major drawback for using ferric oxalate as precursor is connected with the photochemical instability of this compound. The results show that in presence of light, ferric oxalate either in solid state or solution decays into insoluble ferrous oxalate.

SEM ANALYSIS OF FLAT FACES IN GARNETS

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Abstract

$Ca_3Cr_2Si_3O_{12}$ – crystals were obtained from gel method in a HTP experiment. Using SEM were studied the flat faces.

OBTAINING AND ANALYSING SPESSARTINE [$Mn_3Al_2Si_3O_{12}$] WITH Na AS GARNET

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ABSTRACT

In the present paper is presented the experiment for obtaining spessartine ($Mn_3Al_2Si_3O_{12}$) with different percentage of Na. After obtaining, was done an XRD analysis and an SEM analysis of the obtained crystals .

REFINING AND AUTOMOTIVE TRANSPORT ENVIRONMENTAL POLICIES IN ROMANIA

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Abstract

Environmental pollution in urban areas has been remarkably regarded as a major problem in Romania. Most environmental problems, especially air pollution in urban areas, are arisen in totally from transportation, which is caused by congestion in road networks. Implemented environmental policies can improve the fuel quality and reduce the rate of fuel consumption. These policies give effect to the purification and reduction of gas emission but they have little effect to a change of the selection of engine type. Romanian refiners will need advanced refining technologies that will allow them to meet the challenges imposed by new petroleum products specifications. The environmental effect of a new possible policy, changing the proportion of engine types, and the quality of reformulated fuels is challenging to analyze.

STUDIES ON THE EFFECT OF GLUCOSE OXIDASE IN BREAD MAKING

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Abstract

The usage of enzymes like bread making improvers of chemical ones is more convenient from healthy point of view. They are inactivated into oven and their improved effects during bread making have been already registered. Depending on the flours'quality (referring biochemical composition and functional properties) and estimated effects in relantionship with range and quality of end products, a suitable choosing of enzymes and doses is mandatory. The purpose of this study have been verifying the exogenous glucose oxidase effect accordingly with different doses of glucose oxidase products in bread making, using flour with an average quality, like staring material.

TOTAL ANTIOXIDANT ACTIVITY DETERMINATION OF SOME COMPOUNDS FROM "FAVIDIAB" TEA

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Abstract

Evaluating the antioxidant properties of the vegetable products, it can be obtained a useful information on the antiradicalic and antioxidant effects of some compounds.

Taking into account the hipoglicemic effects of „Favidiab" tea, we've chose this product for studing. Estimation of total antioxidant activity is based on measurement of the Fe^{2+}, obtained from Fe^{3+} in present of the antioxidant prepared.

TARGU JIU AIR QUALITY CONTROL – MAIN REQUEST FOR EU INTEGRATION

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Abstract

This paper presents pollution sources from Târgu Jiu city and the researches made to evaluate air quality. After determining gas pollutants (SO_2, NO_2, NH_3) and deposing and flying powders, it was proved that their concentrations are below maximum allowed, excepting flying powders. Because the air quality is good enough, it matches the EU regulation.

THE INDUSTRIAL NOISE – AN ENVIRONMENTAL PROBLEM

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Abstract

General aspects and requirements for the assessment of the industrial noise are presented in the context of new and harmonized European regulations for management of environmental noise. In relation with the general effort of reducing noise exposure and its effects on health, a noise study was conducted in an industrial area. Some results, obtained by simulation and measurement, for the noise field models are presented in the paper.

USING CAD SOFTWARE FOR INDUSTRIAL NOISE STUDIES

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Abstract

The paper focuses on the study of the noise emitted by machines and equipment in the mechanical industry, supported by CAD software. A simple model of the 3D distribution of sound around a machine or equipment is developed, starting from the virtual prototype and using a sound field calculation. The method can be used by engineers in the assessment of noise emission of a future product, during the work to its project.

STUDY ABOUT THE INFLUENCE OF WHEAT GERMS UPON THE INVERTASE (E.C. 32.1.26) FROM YEAST CELLS

POP Gabriela

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Abstract

In biotechnology of food, practical doesn't exist technological process which doesn't involve the endogens one′own enzymes of biological materials used or of microorganisms needed for them processing. The main invertase producers are yeasts, especially Saccharomyces strains, cultivated on fermentative medium, which contain different sources of carbon, nitrogen, growth factors and minerals. The scope of the experiments was to establish the consequences for the invertase potential of yeasts when wheat germs are adding in different amounts in growth medium. So, I demonstrated the fact that wheat germs could be considered a valuable and inexpensive growth promoter for the invertase potential of yeast cells.

BIOTECHNOLOGICAL ASPECTS OF USING THE MICROORGANISMS FROM J. STREPTOCOCCUS IN ORDER TO OBTAIN NONALCOHOLIC DRINKS

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Abstract

A lactic bacteria cocktail, oats and some vegetal ingredients were used to obtain nonalcoholic drinks with prophylactic properties, rich in vitamins, microelements and active biological substances. The elaboration of a technological process, allows obtaining nonalcoholic drinks-non pasteurized, pasteurized, and concentrated, with different storage period without using chemical preservatives. The physical-chemical and microbiological changes of drinks B-1 (with different production date) were studied in order to establish specific storage periods.

HACCP STUDY FOR A NEWLY INSTALLED MILK POWDER PRODUCTION LINE

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Abstract

This paperwork presents a HACCP study that was carried out at a dairy plant where was newly installed a milk powder production line in an already existing factory producing sweetened condensed milk. The steps that were followed in order to provide the consumer with a safe milk powder are emphasized, from the hazard analysis to establishing Critical Control Points (CCPs) and critical limits to be monitorised, until the corrective action and verification procedures establishment.

Finally, the documentation concerning all procedures and records appropriate to these principles and their application was established.

THE INFLUENCE OF PREBIOTIC'S BIOZIME X 1000 ON QUALITY PARAMETERS OF PORK

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Abstract

The present workpaper is a study concerning the effect of using some fodder prescriptions with a high level of wheat in the food of pigs, which were substituted with **Biozime X 1000**, an enzyme which contains the active substance Beta – Xylanasa obtained through fermentation with a selected stalk of Tricoderma longibrachiatum (Biomin GTI – Austria). The use of these rations beginning with the age of 28 days of the young pigs and carring on the whole period of exploitation, has pointed out a semnificant rise of the majotity of zootechnic parameters but also a considerable influence of the indicators of meat quality, comparatively with the bystander's lot.

TRANGENOMIC WAVE™ DNA FRAGMENT ANALYSIS – A SCREENING METHOD APPLIED IN INVESTIGATION OF A C/EBPB GENE PROMOTER REGION TO IDENTIFY NEW POLYMORPHISMS IN THE CAUCASIAN POPULATION FROM WESTERN ROMANIA CHARACTERIZED FOR ATHEROMA

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Abstract

The actual research is focused on understanding of gene regulation mechanisms and the molecular networks responsible for that. In our study, in order to investigate how the C/EBPβ gene promoter polymorphisms are reflected in biological effects, we focused on the screening of 395bp from C/EBPβ gene promoter. The screening was performed using Trangenomic WAVE™ DNA Fragment Analysis to identify the gene polymorphisms possible associated with atherosclerosis and other cardiovascular risks factors in 144 subjects with significant atheroma (having 1, 2, or 3 major coronary arteries with >50% obstruction, and/or peripheral artery lesions and/or at least one atheromatous carotid stenosis demonstrated by angiography and echography) and in 150 subjects with no significant atheroma. The Trangenomic WAVE™ DNA Fragment Analysis method was successfully applied, in the analyzed region being identified the -3429 C/T *C/EBPβ* polymorphism.

Although, there was no difference in the genotype distributions of patients with and without significant atheroma, the study has reported an association of the C allele with others cardiovascular risks factors such as: high level of cholesterol (p=0.04) and a trend of association with obesity p=0.07.

EVALUATION BY MEANS OF LINEAR REGRESSION ANALYSIS OF THE THERMODYNAMIC PARAMETERS OF THE COTTON FIBRE DYEING WITH AN AZO DIRECT DYE.

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Abstract

In the present work, the dyeing process of a cellulosic substrate with a direct azo dye was studied. The choice of the most appropriate classic model of the dye sorption and the evaluation of the most important thermodynamic parameters of the dyeing process (affinity, enthalpy and entropy) were performed by linear regression analysis. The best results were obtained by the Langmuir adsorption model.

SYNTHESIS AND TOXICITY EVALUATION OF A DISAZO DYE DERIVED FROM 4,4'-DIAMINOBENZANILIDE.

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Abstract

In this work, 4,4'-diaminobenzanilide was used as substitute of benzidine in the synthesis of a symmetrical disazo dye. 1-amino-4-naphthalene sulfonic acid was used as coupling component. The dye was characterized by means of electronic spectra (VIS) and thin layer chromatography (TLC), and its structure was confirmed by mass spectroscopy (FABS). The toxicity of the synthesized dyes and of its precursors was evaluated by biological tests, using the process of metamorphosis in the marine Hydrozoon Hydractinia echinata. The concentration, (termed by MRC_{50}) at which the synthesized dye and its precursors antagonizes methamorphosis induction, were determined. The obtained results indicate that the synthesized dye does not display a strong antagonising influence on metamorphosis induction and thus, it may be ranged as an ecological product.

BIOGENIC AMINES IN FOOD, SOURCES AND TOXICITY

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Abstract

This work presented refers to the presence of biogenic amines in food. The most important biogenic amines and their effect on the human health are presented. The content of biogenic amines in different wines is illustrated. Different methods for analyzing the biogenic amines content are described.

BIOLOGY ASPECTS OF MAIN PEACH TREE DISEASES IN BANEASA AREA, BUCHAREST ROMANIA

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Abstract

The peach tree has a lot of important biological and agronomical characteristics: precociousness, lacking of crop periodicity, big and constant productions each year under favorable soil and climate conditions.

The peach tree is a very valuable species from the food point of view, which through a good range choose and crop methods can adapt itself with success to different environment conditions: quick crop, stable in fruits obtaining, especially if the technology is correctly applied.

DPPH ANALYSIS FOR ANTIOXIDANT EFFECT OF MINT, BILBERRY AND BLACK TEA, AQUEOUS EXTRACTS

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Abstract

The antioxidant activity of the aqueous extract from dried mint leaves and dry bilberry fruits has been studied in comparison with the black tea extract. The obtained results recommend their use for the food industry, because of the special antioxidant and sensorial properties.

NEW METHOD FOR THE CALCULUS OF THE ANTIOXIDANT ACTIVITY IN THE DPPH SPECTROPHOTOMETRIC ASSSAY

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Abstract

In this paper a new method for the calculus of the antioxidant activity in the DPPH (1,1-diphenyl-2-picryl-hydrazyl) assay is proposed; experimental results can be reported in terms of BHT (2,6-Di-tert-butyl-4-methylphenol) concentration, a well known antioxidant .

NMR STUDIES OF SOME METAL ION – LIGAND SYSTEMS: EQUILIBRIUM, STRUCTURE AND DYNAMICS

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According to our knowledge the NMR Spectroscopy is the most widely used experimental method in chemistry research including the field of metal-complexes. Using the vastly different NMR technics (often developed for organic chemistry) many questions raised in preparation and characterisation of metal-ligand coordination compounds can be answered. Several aspects of such kind of science are: equilibrium constants, the stoichiometry of species including solvation, constitution, i.e. binding mode and denticity of a ligand, isomers, rate of the formation, ligand exchange reactions, fluxionality etc.

Selected examples mainly from our own experimental work done in the last decade are going to be presented. Without the technical details we try to show the advantages and limitations of the multinuclear 1D and 2D NMR spectroscopy in coordination chemistry.

Although NMR does not usually have the precision of potentiometric measurements in order to **determine the stability constants**, it can provide an important independent check on their accuracy, e.g. Al(III) – F^- system.[1] Combination of the two methods can provide complete speciation of very complicated systems, e.g. Mo(VI) – H^+ – H_2O_2 – SO_4^{2-} – PO_4^{3-} system.[2]

High resolution NMR spectroscopy is superior **to study the structure of complexes** in solution, but there is an obvious need to take into account the intra molecular isomerisation / fluxionality of the complexes, because a fast rearrangement of the donor atoms (including the water) in the inner sphere might virtually increase the symmetry. Examples of metal-metal bonded cyanides, $(CN)_5Pt\text{-}Tl(CN)_n^{n-}$ (n=0,1,2,3)[3] for **symmetry**, whilst Al(III)-citrate[4] and $M(edta)^-$ (M = Al, Ga and In) complexes[5] for **fluxionality** will be mentioned.

Ligand exchange reactions can also be studied by NMR using the line shape analysis (T_2 time scale) or the magnetisation transfer methods (T_1 time scale, selective MT or 2D EXSY). Selected examples include U(VI)- carbonate[6] and Tl(III) – cyanide[7] systems.

VOLTAMMETRIC STUDY OF Ni-Cu ALLOY DEPOSITION FROM SULPHATE BATHS

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Abstract

In the paper are presented the experimental determinations related to the study of kinetics of electrode processes in alloys electrodeposition through linear voltammetry. From polarization curves, the influence of main parameters has been determined: current density, respectively potential, as well the influence of the evolution of hydrogen on the electrochemical process of Ni-Cu alloy deposition. Also, the influence of metallic ions concentration in the galvanic bath on the electrode kinetic process has been studied. The obtained results allowed to point out some correlations between the composition of galvanic baths, the value of current density and the efficiency of the process.