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NEWS AND EVENTS

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THE GOLD MEDAL WAS AWARDED TO "CHEMISTRY JOURNAL OF MOLDOVA. GENERAL, INDUSTRIAL AND ECOLOGICAL CHEMISTRY" AT THE TECHNICAL-SCIENTIFIC, ARTISTIC AND LITERARY BOOK SALON "EUROINVENT 2015"

May 14-15, 2015, Iasi, Romania

NEWS AND EVENTS

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THE XVIIIth INTERNATIONAL CONFERENCE "PHYSICAL METHODS IN COORDINATION AND SUPRAMOLECULAR CHEMISTRY"

October 8-9, 2015, Chisinau, Republic of Moldova

DEADLINE FOR REGISTRATION

JULY 1, 2015

DEADLINE FOR ABSTRACT SUBMISSION

AUGUST 1, 2015

DEADLINE FOR FULL PAPER SUBMISSION

SEPTEMBER 15, 2015

REVIEW PAPER

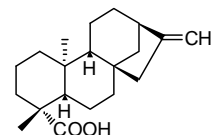
NATURAL PRODUCT CHEMISTRY AND SYNTHESIS

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SYNTHETIC TRANSFORMATIONS OF ENT-KAURENOIC ACID

Olga Morescu

This review presents a synthetic transformations of *ent*-kaurane diterpenes, covering various aspects of the chemical and microbiologically transformations of native *ent*-kaur-16-en-19-oic acid, namely, its reactions via COOH groups, double bonds and rearrangements of the carbon skeleton, what we offer a wide range of natural and synthetic derivatives potentially biologically actives and convenient synthon for their synthesis.



FULL PAPER

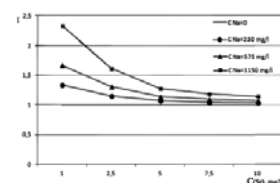
ECOLOGICAL CHEMISTRY

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DETERMINATION OF STRONTIUM IONS IN WATERS WITH A HIGH CONTENT OF SODIUM IONS

Tatiana Mitina, Nadejda Bondarencu, Diana Grigoras, Elena Botizat, Tudor Lupascu

This paper dwells upon the influence of sodium ions on experimental results regarding the concentration of strontium ions in waters with a high content of sodium ions by emission flame photometry and atomic absorption spectroscopy. The metrological characteristics of both methods are evaluated.



FULL PAPER

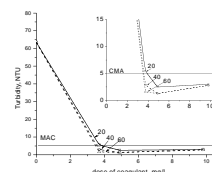
ECOLOGICAL CHEMISTRY

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IMPROVEMENT OF COAGULATION PROCESS FOR THE PRUT RIVER WATER TREATMENT USING ALUMINUM SULPHATE

Larisa Postolachi, Vasile Rusu, Tudor Lupascu, Alexei Maftuleac

The following factors which can improve the process of coagulation were studied: (i) the influence of stirring speed during coagulation and (ii) the influence of the concentration of the coagulant solution added in the process of coagulation. The coagulation process was studied on raw water of the Prut River. Application of the recommended procedure contribute to the reduction of the coagulant dose, the contact time, the aluminum concentration in water and the expenses for water treatment.



FULL PAPER

FOOD CHEMISTRY

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EQUILIBRIUM AND KINETIC PARAMETERS FOR THE SEDIMENTATION OF TARTARIC SALTS IN YOUNG WINES

Ecaterina Covaci, Gheorghe Duca, Rodica Sturza

In young wines potassium hydrogen tartrate is always present in supersaturating concentration and crystallizes spontaneously. The aim of this study is to obtain kinetic parameters, which explain the stability of young wines during the stabilization treatments. The kinetic and equilibrium parameters were evaluated and discussed. According to the obtained experimental results, the optimal regime for production and stabilization of young wines has been established.

THERMODYNAMIC PARAMETERS OF POTASSIUM BITARTRATE DURING THE YOUNG WINES COLD STABILIZATION

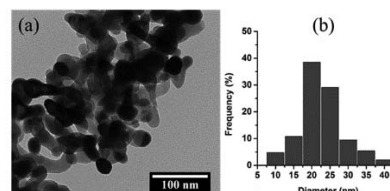
Ecaterina Covaci

The present work was undertaken to study the effect of the treatment temperature on the potassium bitartrate stability and composition of young wines. The thermodynamic parameters, namely ΔG° , ΔH° , ΔS° were calculated to predict the nature of potassium hydrogen tartrate (KHT) precipitation. According to the achieved results, the exothermal nature and thermodynamical feasibility of KHT precipitation in young wines were established. Based on thermodynamics, negative ΔG° , ΔH° values and positive ΔS° value give a spontaneous KHT process at lower temperatures.

SONOCHEMICAL SYNTHESIS OF HEMATITE NANOPARTICLES

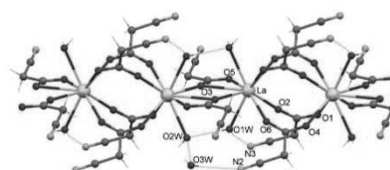
Mihail Iacob

Hematite nanoparticles were prepared by a procedure consisting in sonication of μ_3 -oxo trinuclear iron(III) acetate of composition $[\text{Fe}_3\text{O}(\text{OOCCH}_3)_6(\text{H}_2\text{O})_3]\text{NO}_3 \cdot 4\text{H}_2\text{O}$, $\{\text{Fe}_3\text{O}\}\text{NO}_3$, as iron source, in strong basic conditions followed by thermal treatment at 600°C. The formation of the hematite was confirmed by IR spectroscopy, X-ray powder diffraction and Raman spectroscopy while the shape and size of the nanoparticles and their agglomeration were evidenced and estimated on the basis of the images taken with TEM technique.

**CRYSTAL STRUCTURE OF $\{[\text{La}_2(\text{CNCH}_2\text{COO})_6(\text{H}_2\text{O})_4] \cdot \text{H}_2\text{O}\}_n$ COMPLEX**

Ana Lazarescu, Elena Melnic, Sergiu Shova, Victor Kravtsov, Constantin Turta

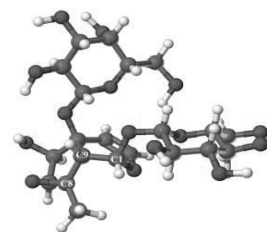
A lanthanum(III) cyanoacetate complex $\{[\text{La}_2(\text{CNCH}_2\text{COO})_6(\text{H}_2\text{O})_4] \cdot \text{H}_2\text{O}\}_n$ (**1**) was synthesized and characterized by X-ray single-crystal analysis. The complex **1** exhibits one-dimensional coordination polymer structure. Cyanoacetate ligands coordinated in the bidentate bridging and tridentate-chelating bridging modes. The cyano-group of ligand is not coordinated to the lanthanide ion.

**IRIDOID GLYCOSIDES FROM LINARIA GENISTIFOLIA (L.)MILL. IN BIOLOGICAL CONTROL OF SOIL-BORNE FUNGAL PATHOGENS OF WHEAT AND SOME STRUCTURE CONSIDERATIONS**

Natalia Mashchenko, Angela Gurev, Galina Lupascu, Elena Gorincioi

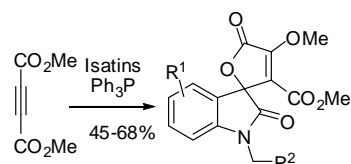
This article is dedicated to the memory of Prof. Pavel Kintia

The paper relates on the discovered bioactivity of the iridoid glycosides extract (IGE) from *Linaria genistifolia* (L.) Mill, namely its stimulating influence on the resistance of the winter wheat Odesschi 51 plant to the caused by the *F. oxysporum* and *H. avenae* pathogenic fungi root rot. ^1H and ^{13}C NMR characteristics of 5-O-allosylantirrinose in Py- d_5 are for the first time presented. Structures of two conformers of the IGE main component, 5-O-allosylantirrinose in D_2O and Py- d_5 solutions are proposed, based on the experimental NMR evidence and molecular modeling studies.

**THE SYNTHESIS OF NEW SPIROLACTONES FROM SUBSTITUTED ISATINS**

Natalia Sucman, Vsevolod Pogrebnoi, Mykola Obushak, Elena Melnic, Victor Kravtsov, Fluir Macaev

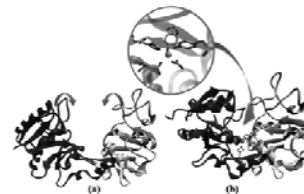
Described synthesis of 5-bromo substituted oxindoles linkages in spirocyclic butenolides exhibit relatively dependence of the structure-reactivity relationships of *N*-substituted isatines, dimethyl acetylenedicarboxylate and triphenylphosphine. The study of the stereochemistry of the atom C(2) of the spiro compounds was also unambiguously confirmed by single crystal X-ray analysis.



AN INVESTIGATION OF THE PROTONATION STATES OF HUMAN LACTOFERRIN IRON-BINDING PROTEIN

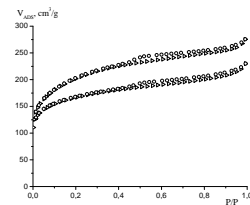
Lilia Anghel

In this study, the protonation states of ionizable groups of human lactoferrin in various conformations were investigated theoretically, at physiological pH (7.365). These calculations show that the transition of the protein from a conformation to another one is accompanied by changes in the protonation state of specific amino acid residues.

**OXIDATION AND CHARACTERIZATION OF ACTIVE CARBON AG-5**

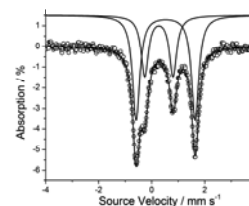
Tatiana Goreacioc

The surface chemistry of the commercial active carbon AG-5 has been modified by oxidation with concentrated nitric acid. The structural changes caused by oxidative treatment were estimated on the basis of nitrogen adsorption-desorption isotherms and thermal analysis. Boehm titration method and infrared spectral analysis have been used in order to evaluate surface chemistry characteristics of active carbon samples.

**TEMPERATURE DEPENDENCE OF ⁵⁷Fe-MÖSSBAUER SPECTRA FOR A Fe^{II}_{Fc} – Fe^{II}_{tpy} – Fe^{II}_{Fc} TRINUCLEAR SYSTEM**

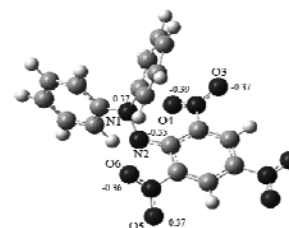
Dumitru Sirbu

⁵⁷Fe Mössbauer spectra were recorded for 1'-terpyridine ferrocenecarboxylic acid and [bis(1'-terpyridine ferrocenecarboxylic acid) Fe(II)]²⁺ in the temperature range 7 – 293 K. The temperature dependence of the Quadrupole Splitting, Isomer Shift and Debye-Waller factor are discussed. The Debye temperature, θ_D , for the iron nuclei in the investigated compounds was determined.

**ANTIOXIDANT PROPERTIES OF DIHYDROXYFUMARIC ACID AND ITS DIMETHYL ETHER: A COMPARATIVE DFT STUDY OF THEIR REACTIONS WITH THE STABLE RADICAL DPPH***

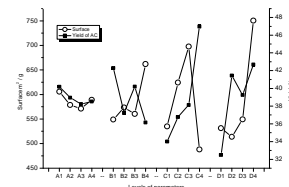
Mikhail Gorbachev, Natalia Gorinchoy, Ion Arsene

The preferred mechanism of the reaction of dihydroxyfumaric acid and its dimethyl ether with the free stable radical 1,1-diphenyl-2-picrylhydrazyl (DPPH*) was revealed by means of Density Functional Theory (DFT) calculations. The proposed mechanism has an ionic character and includes the formation of charge-transfer complexes as the main stage. It is also shown that the lower antioxidant activity of dimethyl ether of dihydroxyfumaric acid is caused by both its lower acidity (as compared with its precursor acid) and formation of more stable intermediates during its reaction with DPPH*. Our results allow one to rationalize the available experimental data.

**APPLICATION OF TAGUCHI OPTIMIZATION METHOD IN THE PREPARATION OF ACTIVATED CARBON BY MICROWAVE TREATMENT**

Oleg Petuhov

Taguchi experimental design method was applied to optimize the preparation of the activated carbon. The optimization parameters were: the microwave power, the activation time, the concentration of the phosphoric acid solution and the fraction of the nut shells. Thermal analysis of the intact and impregnated with phosphoric acid walnut shells was used for the simulation of activation process. Activated carbon with the optimal parameters was obtained, being characterized by gas adsorption method and scanning electron microscopy.



FULL PAPER

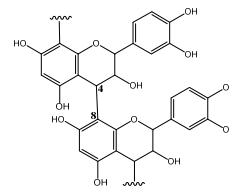
PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

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TOWARDS SCREENING THE ENHANCE OF LUMINESCENCE PROPERTIES OF MODIFIED TANNINS IN ALKALINE SOLUTION BY A FENTON-LIKE REACTION

Alexandru Gonta

After modification of enotannins, flavonols monomer units could be obtained with polyfunctional properties. Moreover, polyphenols are known to generate H_2O_2 and other ROS under alkaline conditions. ROS generation and catalytic influence of ferrous ions enhance the chemiluminescence light. Therefore in this work, Tox/Tris-Edta/ Fe^{2+} ions have been used for screening luminescent properties of oxidized tannins.



SHORT COMMUNICATION

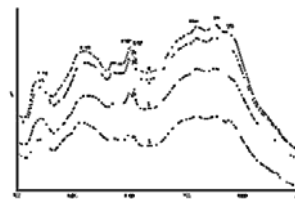
ANALYTICAL CHEMISTRY

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METHOD OF INFRARED SPECTRA REGISTRATION OF ACTIVATED CARBONS IN POTASSIUM BROMIDE PELLETS

Diana Shepel, Tatiana Goreacioc, Tudor Lupascu, Mihail Filippov, Maria Rusu

This communication is devoted to the elaboration of a new optimal technique of infrared spectra registration of activated carbons in potassium bromide pellets. Authors investigated the dependence of the intensity of the least overlapping infrared bands of activated carbons on the conditions of preparation, recording of the spectrum, and the degree of homogenization with potassium bromide.



IN MEMORIAM

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**IN MEMORY OF ACADEMICIAN OF ACADEMY OF SCIENCES OF MOLDOVA
PROFESSOR CONSTANTIN TURTA**

Tudor Lupascu, Aculina Aricu

A dedication in memoriam of Academician Constantin Turta, Doctor habilitate in chemistry, Professor, famous scientist, world-renowned chemist, Laureate of the State Prize of the Republic of Moldova, person of a exquisite culture and noble attitude. Scientist Constantin Turta was a worldwide specialist in the field of bioinorganic and coordination chemistry. He became known in the scientific community by his fundamental pioneering work on the application of Mössbauer spectroscopy in inorganic and coordination chemistry. Merits of academician Constantin Turta were appreciated both by the scientific community and the government. He is the Knight of the Order "Labour Glory" and Medal "Dimitrie Cantemir" of the Academy of Sciences of Moldova.

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INSTRUCTIONS FOR AUTHORS