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NEWS AND EVENTS

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FIRST ANNOUNCEMENT - INTERNATIONAL CONFERENCE “ACHIEVEMENTS AND PERSPECTIVES OF MODERN CHEMISTRY”

October 2019, Chisinau, Republic of Moldova

REVIEW PAPER

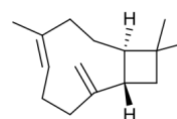
NATURAL PRODUCT CHEMISTRY AND SYNTHESIS

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CHEMICAL COMPOSITION AND BIOLOGICAL ACTIVITIES OF SOME *MARRUBIUM* SPECIES ESSENTIAL OIL: A REVIEW

Benalia Yabrir

This paper reviews information on essential oil of *Marrubium* species (except *M. vulgare*) described until now regarding extraction, chemical composition and biological activities. *Marrubium* essential oils, although quantitatively poor, are rich in chemical composition. This composition consists especially of sesquiterpenoids and a little amount of monoterpenes. It varies from one species to another, sometimes within same species. *Marrubium* essential oils exhibit antioxidant and antimicrobial activities. However, because the lack of literature concerning essential oil of these species, further studies are necessary, particularly regarding their activities.



RESEARCH PAPER

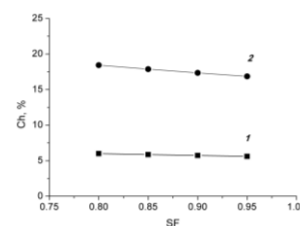
INDUSTRIAL CHEMISTRY

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THE EFFECT OF RICE HUSK ON THE PHASE FORMATION AND CEMENT CLINKER PROPERTIES

Lev Chernyak, Liubov Melnyk, Natalia Dorogan

The features of the cement clinker containing rice husk are investigated. The dependence of the raw mixture composition on the set product burning characteristics has been analysed using the software “CLINKER”. The mixture compositions have been identified on the basis of the chalk–clay–rice husk system, with the introduction of man-made stock of 6.0–18.0 mass %. The features of the phase composition and the binder properties, by varying the rice husk content, mixture ratio and burning temperature were studied.



RESEARCH PAPER

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METALLURGICAL COKE MAKING WITH THE IMPROVED PHYSICO-CHEMICAL PARAMETERS AT AVDEEVKA COKE PLANT

Oleg Zelenskii, Yuriy Vasil'ev, Alexey Sytnik, Natalia Desna,
Elena Spirina, Andrey Grigorov

The article presents the results of studies regarding the improvement of the qualitative characteristics of blast furnace coke obtained from modified coal blend in industrial conditions of Avdeevka Coke Plant. Inorganic corundum powders are applied to modify the coal blend, namely electrocorundum (α -Al₂O₃) and carborundum (α -SiC). The introduction of a specific quantity (0.25 wt %) of non-clinking additives allows the modification of the processes that occur when the coal blend is plastic, with consequent improvement in coke strength.



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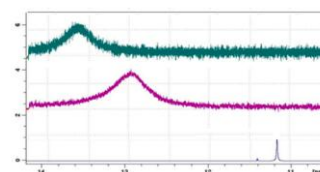
INORGANIC AND COORDINATION CHEMISTRY

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NMR STUDIES OF SOME Zn AND Cd COORDINATION COMPOUNDS BEARING 1,2-CYCLOHEXANEDIONEDIOXIME

Elena Gorincioi, Eduard Coropceanu

A series of homobi- and polynuclear zinc and cadmium coordination compounds supported by 1,2-cyclohexanedionedioxi- and bridging bidentate ligands: 4,4'-bipyridyl, 1,2-bis(4-pyridyl) ethane, 1,3-bis(4-pyridyl) propane and dipiridil sulfide were characterized by the experimental techniques of ¹H and ¹³C NMR spectroscopy. Individual NMR data of compounds are consistent with their assignment as complexes.



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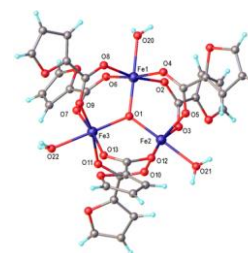
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SYNTHESIS AND X-RAY CHARACTERISATION OF A NEW MIXED-VALENT TRINUCLEAR IRON CLUSTER

Olesea Cuzan-Munteanu, Silvia Melnic, Sergiu Shova

This paper reports on the synthesis of a new trinuclear homometallic mixed-valent iron carboxylate cluster with furan-2-carboxylic acid. The complex with the formula $[\text{Fe}_2^{\text{III}}\text{Fe}^{\text{II}}\text{O}(\text{C}_4\text{H}_3\text{O}_2\text{COO})_6(\text{H}_2\text{O})_3] \cdot 0.5\text{CH}_3\text{CN} \cdot 2.25\text{H}_2\text{O}$ was characterized by X-ray analysis which revealed that the compound crystallizes in the triclinic centrosymmetric group *P*-1, with the following unit cell parameters: $a = 10.2758(6)\text{Å}$, $b = 11.5991(9)\text{Å}$, $c = 19.7349(15)\text{Å}$, $\alpha = 105.060(7)^\circ$, $\beta = 94.216(6)^\circ$, $\gamma = 101.662(6)^\circ$.



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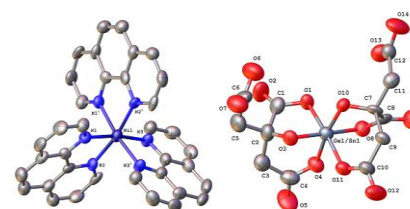
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SYNTHESIS AND CRYSTAL STRUCTURE OF BIS(CITRATO)GERMANATE AND STANNATE WITH TRIS(PHENANTHROLINE)NICKEL(II) CATION

Elena Martsinko, Inna Seifullina, Elena Chebanenko, Olha Pirozhok, Viktoriya Dyakonenko, Svitlana Shishkina

The new complexes $[\text{Ni}(\text{phen})_3][\text{Ge}(\text{HCit})_2] \cdot 2\text{H}_2\text{O}$ (**1**), $[\text{Ni}(\text{phen})_3][\text{Sn}(\text{HCit})_2] \cdot 3\text{H}_2\text{O}$ (**2**) (where phen is 1,10-phenanthroline, H_4Cit is citric acid) were obtained. The identity, composition, and thermal stability of the complexes were established by elemental analysis, thermogravimetry, and IR spectroscopy. According to the X-ray diffraction data, the bis(citrate)germanate / bis(citrate)stannate $[\text{Ge}/\text{Sn}(\text{HCit})_2]^{2-}$ carries out the role of the dianion while two halves of the nickel complexes with phenanthroline $[\text{Ni}(\text{Phen})_3]^{2+}$ are cations.



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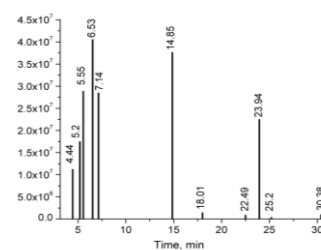
NATURAL PRODUCT CHEMISTRY AND SYNTHESIS

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CHEMICAL COMPOSITION AND ANTIMICROBIAL ACTIVITY OF THE LEVISTICUM OFFICINALE W.D.J. KOCH ESSENTIAL OIL

Alexandru Ciocarlan, Ion Dragalin, Aculina Aricu, Lucian Lupascu, Nina Ciocarlan, Violeta Popescu

The chemical composition of industrially obtained *Levisticum officinale* W.D.J. Koch (lovage) essential oil of Moldovan origin was analysed by means of chromatographic (GC-MS) and spectral (IR, ^1H and ^{13}C NMR) methods. The obtained results show that the main components of *L. officinale* essential oil are monoterpenic hydrocarbons which make up to 53.50% of the total number of components. Antibacterial and antifungal activities of mentioned oil were evaluated *in vitro* on five strains of microorganisms. It was found that lovage volatile oil (*L. officinale*) exhibits high antibacterial and antifungal properties in the range of concentrations 0.015-0.030%.



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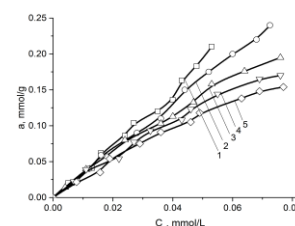
PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

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ADSORPTION OF STRONTIUM IONS FROM AQUEOUS SOLUTIONS ON NUT SHELLS ACTIVATED CARBONS

Gheorghe Duca, Mihai Ciobanu, Tudor Lupascu, Igor Povar

The adsorption of strontium ions from aqueous solutions on nut shells activated carbons (samples CAN-7 and CAN-8) at different temperatures has been studied. The isotherm of adsorption of strontium ions from aqueous solutions on activated carbon CAN-7 has two inflection points at relatively small and high equilibrium concentrations. As the temperature increases, the adsorption values decrease, which indicates that the adsorption process is exothermic.



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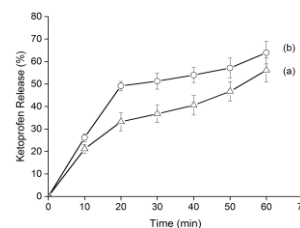
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MULTICOMPONENT CRYSTALLIZATION OF KETOPROFEN-NICOTINAMIDE FOR IMPROVING THE SOLUBILITY AND DISSOLUTION RATE

Yudi Wicaksono, Dwi Setyawan, Siswandono Siswandono

The study was aimed at increasing solubility and dissolution rate of ketoprofen by using multicomponent crystallization approach with nicotinamide as additional material. The multicomponent crystallization was carried out by solvent evaporation method using 2-propanol as solvent. The solubility and dissolution test showed that the ketoprofen-nicotinamide multicomponent crystal has solubility and dissolution rate significantly higher than the solubility and dissolution rate of the pure ketoprofen.



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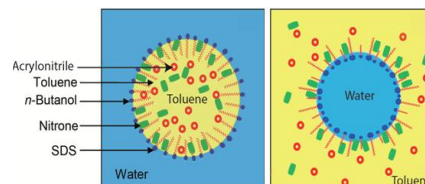
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EFFECT OF THE NATURE OF SURFACTANT ON THE REACTIVITY OF C,N-DIPHENYLNITRONE TOWARDS ACRYLONITRILE IN DIFFERENT MICROEMULSION SYSTEMS

Kahina Hamza, Abdelkader Touati, Ahmed Ait-Yahia, Michel Baltas, Christiane André Barres, Saâd Moulay

The present work provides an insight into the effect of the nature of surfactant (cationic, anionic), a component of water- and oil-borne microemulsions, on the reaction rate of 1,3-dipolar cycloaddition of C,N-diphenylnitron with acrylonitrile. The electrostatically attractive character of the cationic surfactant, would bring the reactants closer to each other; hence, a rate enhancement would ensue, particularly within the water-rich zone. Besides the fact that acrylonitrile played a dual role, as a component of the microemulsion and a dipolarophile in the cycloaddition reaction, made the work-up advantageously sound. Additionally, the increase in reagents molar ratio was found to promote higher reactivity.



SHORT COMMUNICATION

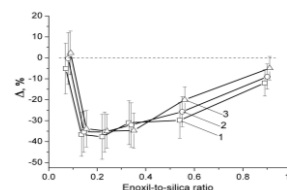
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HYGROSCOPIC PROPERTIES OF ENOXIL-SILICA COMPOSITES

Oksana Stavinskaya, Iryna Laguta, Olga Kazakova, Pavlo Kuzema, Tudor Lupascu

Enoxil-silica composites with various Enoxil-to-silica ratios were prepared by mechanical mixing of the biologically active Enoxil and fumed silica powders. The hygroscopic properties of the composites were studied by the gravimetric method. It was found that hygroscopicity is reduced by 30÷40% when the Enoxil-to-silica mass ratio in the composites is 0.15÷0.35.



INSTRUCTIONS FOR AUTHORS