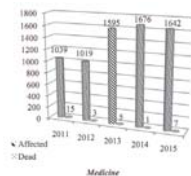


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SPECIAL ISSUE DEDICATED TO THE 6TH INTERNATIONAL CONFERENCE "ECOLOGICAL & ENVIRONMENTAL CHEMISTRY" 2017

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| EDITORIAL | | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ECOLOGICAL AND ENVIRONMENTAL CHEMISTRY Gheorghe Duca | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REVIEW PAPER | <i>ECOLOGICAL CHEMISTRY</i> | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PROCESSES UNDERLINING THE ACTION OF PESTICIDES ON ECOSYSTEMS AND HUMAN ORGANISM Elena Saratovskikh This article is devoted to the study of the mechanism of action of pesticides as compounds with a high complexing capacity for metals, nucleotides and enzymes. The sum of these effects is the cause of almost all diseases of modern man, and including - cancer. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| RESEARCH PAPER | <i>ECOLOGICAL CHEMISTRY</i> | 29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ACUTE CHEMICAL POISONINGS IN THE REPUBLIC OF MOLDOVA: 5 YEARS REVIEW Iurie Pinzaru, Tatiana Manceva, Raisa Sircu, Ion Bahnarel, Elena Sanduleac The incidence and the type of acute chemical poisoning in Republic of Moldova during 2011-2015 were assessed. The analysis of poisoning cases involving of various types of chemical substances causing the intoxication reveals that the medicines-related poisoning accounts for the highest record of cases (6971), followed by alcohol poisoning, 6556 cases, gas poisoning is the third, with 1860 cases, and pesticide-related poisoning, with 707 cases. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | |  <table><tr><th>Year</th><th>Medicine</th><th>Alcohol</th><th>Gas</th><th>Pesticide</th></tr><tr><td>2011</td><td>1039</td><td>12</td><td>1</td><td>1</td></tr><tr><td>2012</td><td>1019</td><td>12</td><td>1</td><td>1</td></tr><tr><td>2013</td><td>1385</td><td>12</td><td>1</td><td>1</td></tr><tr><td>2014</td><td>1576</td><td>12</td><td>1</td><td>1</td></tr><tr><td>2015</td><td>1042</td><td>12</td><td>1</td><td>1</td></tr></table> | Year | Medicine | Alcohol | Gas | Pesticide | 2011 | 1039 | 12 | 1 | 1 | 2012 | 1019 | 12 | 1 | 1 | 2013 | 1385 | 12 | 1 | 1 | 2014 | 1576 | 12 | 1 | 1 | 2015 | 1042 | 12 | 1 | 1 |
| Year | Medicine | Alcohol | Gas | Pesticide | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2011 | 1039 | 12 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2012 | 1019 | 12 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2013 | 1385 | 12 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2014 | 1576 | 12 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2015 | 1042 | 12 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RESEARCH PAPER | <i>ECOLOGICAL CHEMISTRY</i> | 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NEW COMPOSITE SORBENTS FOR CAESIUM AND STRONTIUM IONS SORPTION Mykola Kartel, Vita Galysh Composite lignocellulose-inorganic sorbents derived from vegetal residues of agriculture and food industry, modified with ferrocyanides of d-metals and hydrated antimony pentoxide were prepared. Caesium and strontium ions removal from water was tested by radiotracer method. Sorption of heavy metal ions, methylene blue, gelatin, vitamin B12 was also studied. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | |  <table><tr><th>Sorbent</th><th>Efficiency (%)</th></tr><tr><td>LC-PPK4</td><td>~4.5</td></tr><tr><td>LC-PPK4-2</td><td>~5.0</td></tr><tr><td>LC-PPK4-3</td><td>~4.5</td></tr><tr><td>LC-PPK4-4</td><td>~4.5</td></tr><tr><td>LC-PPK4-5</td><td>~4.5</td></tr><tr><td>LC-PPK4-6</td><td>~3.5</td></tr></table> | Sorbent | Efficiency (%) | LC-PPK4 | ~4.5 | LC-PPK4-2 | ~5.0 | LC-PPK4-3 | ~4.5 | LC-PPK4-4 | ~4.5 | LC-PPK4-5 | ~4.5 | LC-PPK4-6 | ~3.5 | | | | | | | | | | | | | | | | |
| Sorbent | Efficiency (%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LC-PPK4 | ~4.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LC-PPK4-2 | ~5.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LC-PPK4-3 | ~4.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LC-PPK4-4 | ~4.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LC-PPK4-5 | ~4.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LC-PPK4-6 | ~3.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RESEARCH PAPER | <i>ECOLOGICAL CHEMISTRY</i> | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REMOVAL EFFICIENCY OF CONSTRUCTED WETLAND FOR TREATMENT OF AGRICULTURAL WASTEWATERS Michal Šereš, Tereza Hnátková, Jan Vymazal, Tomáš Vaněk This study describes performance of a hybrid constructed wetland (CW) for treating wastewater from small farm in Czech Republic. The CW consisting of two horizontal filters, one vertical filter and three shallow ponds and reduced inflow values of 25400 mg/L COD and 2640 mg/L BOD5 by up to 99%. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | |  <table><tr><th>Pollutant</th><th>Removal Efficiency (%)</th></tr><tr><td>COD</td><td>~99</td></tr><tr><td>BOD5</td><td>~99</td></tr><tr><td>SS</td><td>~99</td></tr><tr><td>NH4+</td><td>~99</td></tr><tr><td>NO3-</td><td>~99</td></tr><tr><td>PO43-</td><td>~99</td></tr><tr><td>Fe</td><td>~99</td></tr><tr><td>Mn</td><td>~99</td></tr><tr><td>Zn</td><td>~99</td></tr><tr><td>Cu</td><td>~99</td></tr><tr><td>Pb</td><td>~99</td></tr><tr><td>Cr</td><td>~99</td></tr></table> | Pollutant | Removal Efficiency (%) | COD | ~99 | BOD5 | ~99 | SS | ~99 | NH4+ | ~99 | NO3- | ~99 | PO43- | ~99 | Fe | ~99 | Mn | ~99 | Zn | ~99 | Cu | ~99 | Pb | ~99 | Cr | ~99 | | | | |
| Pollutant | Removal Efficiency (%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| COD | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BOD5 | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SS | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NH4+ | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NO3- | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PO43- | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fe | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mn | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zn | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cu | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pb | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cr | ~99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RESEARCH PAPER | <i>ECOLOGICAL CHEMISTRY</i> | 53 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| THE IMPACT OF THE TREATMENT WITH CÂMPENI RED PETROLEUM ON A XVIII-TH CENTURY ICON Cosmin-Tudor Iurcovschi, Marius Munteanu, Cristiana Manea (Amariei), Maria Modesta Lupașcu, Irina Crina Anca Sandu, Viorica Vasilache, Ion Sandu This paper presents the study regarding the impact of the treatment with Câmpeni red petroleum on an XVIII-th Century icon made of wood, with the aim of active preservation and restoration. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | |  <table><tr><th>Time (h)</th><th>Concentration (mg/L)</th></tr><tr><td>0</td><td>~1.5</td></tr><tr><td>50</td><td>~0.5</td></tr><tr><td>100</td><td>~0.2</td></tr><tr><td>150</td><td>~0.1</td></tr><tr><td>200</td><td>~0.1</td></tr></table> | Time (h) | Concentration (mg/L) | 0 | ~1.5 | 50 | ~0.5 | 100 | ~0.2 | 150 | ~0.1 | 200 | ~0.1 | | | | | | | | | | | | | | | | | | |
| Time (h) | Concentration (mg/L) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | ~1.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | ~0.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | ~0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | ~0.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | ~0.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

RESEARCH PAPER

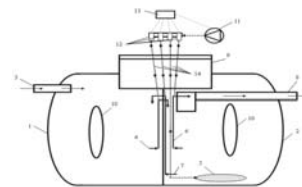
INDUSTRIAL CHEMISTRY

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A PERSPECTIVE FOR POOR WASTEWATER INFRASTRUCTURE REGIONS: A SMALL-SCALE SEQUENCING BATCH REACTOR TREATMENT SYSTEM

Narcis Barsan, Valentin Nedeff, Antonina Temea, Emilian Mosnegutu, Alexandra Dana Chitimus, Claudia Tomozei

This paper examines the possibility of using Sequencing Batch Reactor (SBR) process to treat the municipal wastewater characterized by low flow. This paper also presents a comparative analysis of the degree of purification achieved in a SBR wastewater treatment plant, as well as legislative regulations in Romania and Senegal. Finally, the paper identifies the possible uses of the treated wastewater in different household activities.



RESEARCH PAPER

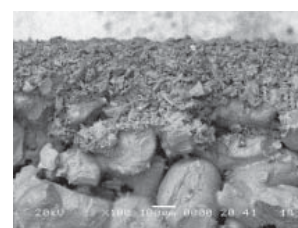
INDUSTRIAL CHEMISTRY

67

PREPARATION AND CHARACTERIZATION OF MICROFILTRATION CERAMIC MEMBRANES BASED ON NATURAL QUARTZ SAND

Andrei Ivanets, Vladimir Agadekov

The effect of phase and chemical composition of natural quartz sand, binder and burnable additives was studied. The conditions of application of the membrane and biocide layers on the formation of porous ceramic and microfiltration membranes were investigated. It is shown that a crystalline oxide of Si(IV) is determinant for obtaining the ceramic materials. The presence of carbonates (calcite, dolomite, aragonite, etc.) and crystalline aluminosilicates (microcline, albite, phlogopit, etc.) leads to a decrease in mechanical strength of ceramics.



RESEARCH PAPER

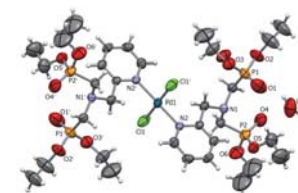
INORGANIC AND COORDINATION CHEMISTRY

74

SYNTHESIS AND CHARACTERISATION OF A NOVEL PHOSPHONATE LIGAND AND ITS PALLADIUM(II) COORDINATION COMPOUND

Olesea Cuzan

A novel N-(methylene-2-pyridine)-N,N-bis(diethoxyphosphorylmethyl)amine ligand (L) was obtained through a double Kabachnik-Fields reaction, starting from 2-aminomethyl pyridine (2-picolyamine). Based on the L ligand, a new palladium(II) coordination compound $[Pd(L)_2Cl_2]$ has been synthesized and comprehensively characterized by spectroscopic methods (1H NMR, UV-Vis), ESI mass spectrometry and X-ray crystallography.



RESEARCH PAPER

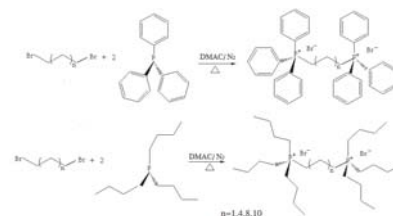
ORGANIC CHEMISTRY

81

SYNTHESIS OF ALIPHATIC SYMMETRIC DIPHOSPHONIUM SALTS AND BACTERICIDAL ACTIVITY OF SELECTED PRODUCTS

Bin Yuan, Wei Hu, Song Lv, Jieyang Huang, Kecheng Huang

Eight new aliphatic symmetrical diphosphonium salts were synthesized by reacting ω,ω' -dibromoalkanes with triphenylphosphine or tributylphosphine using N,N-dimethyl acetamide as a solvent at 140-150°C for 17-24 h under a nitrogen atmosphere. Product characterization and bactericidal tests against saprophytic bacteria, sulphate reducing bacteria and iron bacteria were performed.



RESEARCH PAPER

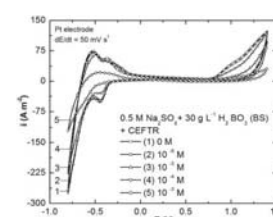
PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

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REUSE OF EXPIRED CEFORT DRUG IN NICKEL ELECTRODEPOSITION FROM WATTS BATH

Delia-Andrada Duca, Mircea Laurentiu Dan, Nicolae Vaszilcsin

In this paper, the possibility to use the ceftriaxone (CEFTR) active compound from expired Cefort® drug as additive in nickel electrodeposition from Watts bath has been investigated. Electrochemical behaviour and the influence of CEFTR on nickel electroplating were studied by electrochemical methods. Experimental data recommends CEFTR as additive in nickel electroplating from Watts baths.



RESEARCH PAPER

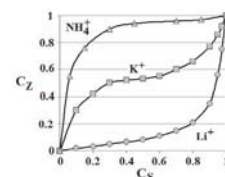
PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

95

ION EXCHANGE PROPERTIES OF GEORGIAN NATURAL ZEOLITES

Vladimer Tsitsishvili, Nanuli Dolaberidze, Spartak Urotadze, Maia Alelishvili, Nato Mirdzveli, Manana Nijaradze

Ion exchange properties of natural zeolites of Georgia with a relatively low Si/Al ratio have been studied: analcimes are characterized by selectivity series: $\text{Na}^+ > \text{K}^+ > \text{Ag}^+ > \text{NH}_4^+ > \text{Ca}^{+2} > \text{Sr}^{+2} > \text{Li}^+$; for phillipsites selectivity sequences are different for calcium- and potassium forms; selectivity sequence for scolecite is: $\text{Sr}^{+2} > \text{Ba}^{+2} > \text{Rb}^+ > \text{Ca}^{+2} > \text{Cs}^+ > \text{K}^+ > \text{NH}_4^+ > \text{Na}^+ > \text{Mg}^{+2} > \text{Li}^+ > \text{Cd}^{+2} > \text{Cu}^{+2} > \text{Mn}^{+2} > \text{Zn}^{+2} > \text{Co}^{+2} > \text{Ni}^{+2}$.



RESEARCH PAPER

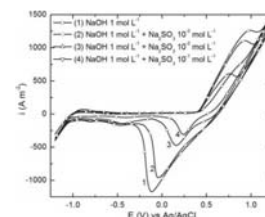
PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

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ANODIC OXIDATION OF SULPHITE IN ALKALINE MEDIA ON PLATINUM NANOPARTICLES MODIFIED NICKEL ELECTRODE

Andreea-Floriana Enache, Mircea Laurentiu Dan, Nicolae Vaszilcsin

In this paper, anodic oxidation of sulphite ions on smooth nickel based platinum nanoparticles electrode in aqueous alkaline solution was investigated in order to clarify the oxidation mechanism and to find optimal parameters for sulphite oxidation process, by applying various electrochemical methods of analysis.



SHORT COMMUNICATION

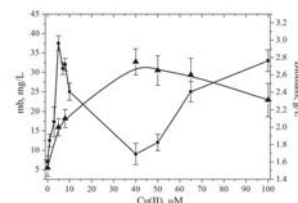
ECOLOGICAL CHEMISTRY

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EFFECT OF COPPER CONCENTRATION ON THE GROWTH OF METHYLOCOCCUS CAPSULATUS (STRAIN M)

Lidia Avdeeva, Rudolf Gvozdev

Growth of cells *Methylococcus capsulatus* (strain M) under deficiency and exposure to various concentration of copper (concentration range 0-100 μM) in the culture media was studied. Morphocytological analysis has shown that the excess of copper ions is accumulated as granules concentrated near the cell surface and in the cytoplasm. Growth of *M. capsulatus* (M) cells under copper-excess (60-100 μM) growth conditions is also accompanied by increase of methanobactin secretion into the growth medium.



SHORT COMMUNICATION

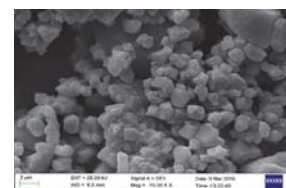
PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

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A NOVEL GREEN SYNTHESIS OF NICKEL OXIDE NANOPARTICLES USING ARABIC GUM

Saeid Taghavi Fardood, Ali Ramazani, Sajjad Moradi

Present work involves synthesis of NiO nanoparticles using Arabic gum by the sol-gel method. The synthesized NiO nanoparticles were characterized by Fourier transform infrared spectroscopy (FTIR), field emission scanning electron microscopy (FESEM) and X-ray powder diffraction (XRD). It was shown that the synthesized NiO nanoparticles of cubic phase have a spherical shape and an average size of 34 nm.



IN MEMORIAM

119

EULOGY TO A MAN OF EXCELLENCE: ACADEMICIAN PAVEL VLAD

Gheorghe Duca, Tudor Lupascu

A dedication *in memoriam* of Academician, Professor, Doctor Habilitatus, Editorial Board member of ChemJMold, Pavel Vlad (1936-2017). Academician Vlad brought essential contributions to the field of bioorganic chemistry, expanding the fame of Republic of Moldova far from its borders by the remarkable achievements of the promoted by him scientific school – School of bioorganic chemistry, chemistry of natural and biologically active compounds.

INSTRUCTIONS FOR AUTHORS

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