

ISSUE CONTENTS LIST WITH GRAPHICAL ABSTRACTS

RESEARCH PAPER

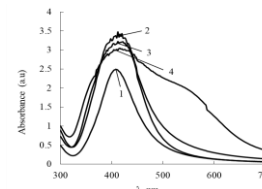
ECOLOGICAL CHEMISTRY

7

PLASMA-CHEMICAL SYNTHESIS OF SILVER NANOPARTICLES IN THE PRESENCE OF CITRATE

Margarita Skiba, Alexander Pivovarov, Anna Makarova, Victoria Vorobyova

The contact non-equilibrium low-temperature plasma technique is used to synthesize silver nanoparticles (AgNPs) employing trisodium citrate as capping agent. The AgNPs were characterized using UV-Vis spectroscopy, scanning electron microscopy, X-ray diffraction and zeta potential analysis. Additionally, the antibacterial properties of the synthesized AgNPs were assessed.



RESEARCH PAPER

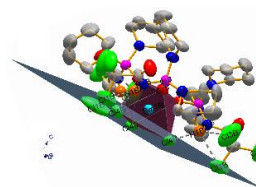
INORGANIC AND COORDINATION CHEMISTRY

15

LANTHANIDE COORDINATION COMPOUNDS WITH MONODENTATE COORDINATED β-DIKETONE HETEROANALOGUE - (2,2,2-TRICHLORO-N-(DIPYRIDIN-1-YL-PHOSPHORYL)ACETAMIDE: SYNTHESIS AND SPECTRAL INVESTIGATIONS

Olena Litsis, Vladimir Ovchynnikov, Tatiana Sliva, Svitlana Shishkina, Vladimir Amirkhanov

New mononuclear six-coordinate lanthanide coordination compounds [Ln(HL)₃Cl₃] (HL = (2,2,2-trichloro-N-(dipiperidin-1-yl-phosphoryl)acetamide CCl₃C(O)N(H)P(O)[N(CH₂)₅]₂, carbacylamidophosphate (CAPH) type ligand) have been synthesized from non-aqueous solutions. The complexes have been characterized by elemental analysis, spectroscopic methods (FTIR, ¹H- and ³¹P-NMR, UV-Vis). The structure of [Sm(HL)₃Cl₃] has been further confirmed by single crystal X-ray diffraction analysis.



RESEARCH PAPER

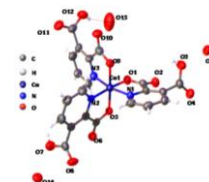
INORGANIC AND COORDINATION CHEMISTRY

24

CRYSTAL STRUCTURE AND CHARACTERIZATION OF NEUTRAL COBALT(III) 2,3-PYRIDINEDICARBOXYLATE COMPLEX

Natalia Terenti, Marilena Ferbinteanu, Ana Lazarescu

A new Co(III) complex [Co^{III}(2,3-pdcH)₃(H₂O)₃] (2,3-pdcH – monoanion of 2,3-pyridinedicarboxylic acid) has been synthesized from Co(II) salt at room temperature by using nonhydrothermal method and (NH₄)₂S₂O₈ as oxidant. The complex was characterized by elemental analysis, IR and UV-Vis spectroscopy, single crystal X-ray diffraction and methods.



RESEARCH PAPER

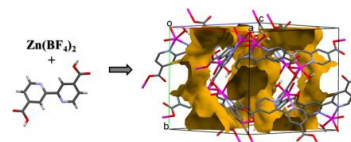
INORGANIC AND COORDINATION CHEMISTRY

30

A NOVEL 2D ZINC(II) COORDINATION POLYMER BASED ON 2,2'-BIPYRIDINE-4,4'-DICARBOXYLIC ACID: SYNTHESIS, CRYSTAL STRUCTURE AND PHOTOLUMINESCENCE PROPERTY

Aliona Vitu, Lilia Croitor, Anatolii Siminel, Eduard Coropceanu, Paulina Bourosh

A new two dimensional 2,2'-bipyridine-4,4'-dicarboxylate Zn(II) coordination polymer was obtained by hydrothermal synthesis and characterized by IR spectrum and single-crystal X-ray diffraction. The crystal lattice hosts the dmf and water solvent molecules. The new material reveals blue-orange luminescence upon excitation with ultraviolet light.



RESEARCH PAPER

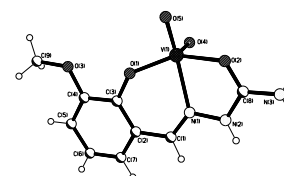
INORGANIC AND COORDINATION CHEMISTRY

36

OXIDO- AND DIOXIDOVANADIUM(V) COMPLEXES WITH O-VANILLIN SEMICARBAZONE: SYNTHESIS AND CRYSTAL STRUCTURE

Lidia Cuba, Paulina Bourosh, Victor Kravtsov, Elena Gorincioi, Diana Dragancea

Two vanadium(V) complexes comprising VO³⁺ and VO²⁺ cores with o-vanillin semicarbazone (H₂L) have been synthesized and characterized by IR, NMR spectroscopies and single-crystal X-ray diffraction. The coordination polyhedra are a O5N distorted octahedron in the mono-oxidovanadium complex [VO(HL)(EtO)(EtOH)_{0.6}(H₂O)_{0.4}][VO(HL)(SO₄)(EtO)]·0.4EtOH (1) and a O4N square-pyramid in the dioxidovanadium compound [VO₂(HL)]·2H₂O (2).



RESEARCH PAPER

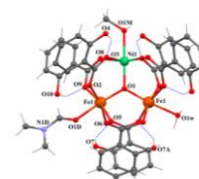
INORGANIC AND COORDINATION CHEMISTRY

46

HETEROTRINUCLEAR [Fe^{III}Ni^{II}]- μ_3 -OXO-CLUSTER BASED ON SALICYLIC ACID. SYNTHESIS, STRUCTURE AND PHYSICO-CHEMICAL PROPERTIES

Viorina Gorinchoy, Vera Zubareva, Elena Melnic, Victor Kravtsov

The reaction between iron and nickel salts with ammonium salicylate results in the formation of a new trinuclear heterometallic complex [hexa- μ_2 -salicylato- μ_3 -oxo-(methanol)(dimethylformamide) aquadiiron(III) nickel(II)] methanol dimethylformamide. The synthesized [Fe₂NiO(SalH)₆(CH₃OH)(DMF)(H₂O)]·DMF·CH₃OH complex crystallizes in the monoclinic space group C2/c. The IR and Mössbauer spectra and thermal properties were studied.



RESEARCH PAPER

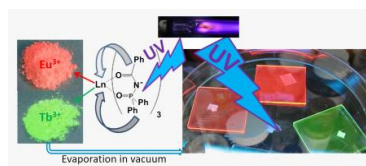
INORGANIC AND COORDINATION CHEMISTRY

54

LUMINESCENT THIN FILMS BASED ON N-(DIPHENYLPHOSPHORYL)BENZAMIDE Eu^{III} AND Tb^{III} COMPLEXES FOR LIGHT EMITTING DIODE TECHNOLOGY

Nataliia Kariaka, Olena Litsis, Yuriy Kolomzarov, Paula Gawryszewska, Sergii Smola, Nataliia Rusakova, Victor Trush, Tatiana Sliva, Vladimir Amirkhanov

The lanthanides coordination compounds LnL₃, LnL₃Phen and LnL₃Dipy with bulky aryl-functionalised carbacylamidophosphate (CAPH) ligand N-(diphenylphosphoryl)benzamide (HL=PhC(O)N(H)P(O)Ph₂) were synthesized for luminescent thin films producing. The films were obtained by vacuum evaporation and spin coating methods and exhibited intensive monochromatic photoemission with decay times equal to 0.78-1.34 ms.



RESEARCH PAPER

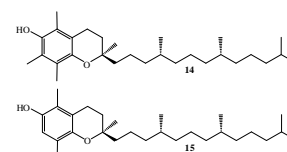
NATURAL PRODUCT CHEMISTRY AND SYNTHESIS

63

CHROMATOGRAPHIC ANALYSIS OF SILYBUM MARIANUM (L.) GAERTN. FATTY OIL

Alexandru Ciocarlan, Ion Dragalin, Aculina Aricu, Nina Ciocarlan, Cristina Stavarache, Mariana Deleanu

The present paper describes biochemical (fatty oil) composition of *Silybummarianum* (L.) Gaertn. of Moldovan origin. The oil content of the seeds was approximately 25%. Based on the obtained results, it was shown that the extracted oil from milk thistle seeds is rich in essential fatty acids (about 50%) and tocopherols (29.09 mg/100g) and it can be used in food preparation.



RESEARCH PAPER

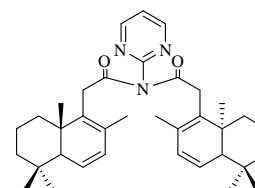
ORGANIC CHEMISTRY

69

SYNTHESIS OF NEW HOMODRIMANE SESQUITERPENOID CONTAINING DIAZINE, 1,2,4-TRIAZOLE AND CARBAZOLE RINGS

Gheorghe Duca, Aculina Aricu, Lidia Lungu, Nadejda Tenu, Alexandru Ciocarlan, Yacob Gutu, Ion Dragalin, Alic Barba

The study describes the synthesis of 11-homodrim-6,8-dien-12-oic acid *N*-substituted amides containing diazine, 1,2,4-triazole and carbazole rings based on commercially available sclareolide. The mentioned compounds were prepared for the first time by interaction of the generated *in situ* acyl chloride with some heterocyclic amines: 2- and 4-aminopyrimidine, 2-aminopyrazine, 3-amino-1,2,4-triazole and *N*-aminocarbazole. Their structure was fully elucidated by elemental and spectral analyses (IR, ¹H and ¹³C NMR).



RESEARCH PAPER

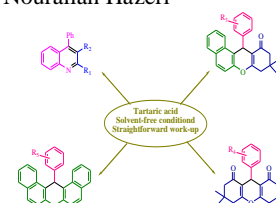
ORGANIC CHEMISTRY

74

GREEN SYNTHESIS OF POLYSUBSTITUTED QUINOLINES AND XANTHENE DERIVATIVES PROMOTED BY TARTARIC ACID AS A NATURALLY GREEN CATALYST UNDER SOLVENT-FREE CONDITIONS

Farzaneh Mohamadpour, Malek Taher Maghsoodlou, Mojtaba Lashkari, Reza Heydari, Nourallah Hazeri

This method reported the use of tartaric acid as a green and highly efficient catalyst for the convenient synthesis of polysubstituted quinolines and xanthenes derivatives in excellent yields under solvent-free conditions. The main advantages of this one-pot procedure are the green and economic availability of the catalyst, simple experimental and work-up procedures.



RESEARCH PAPER

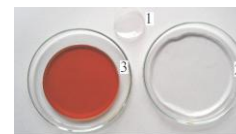
PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

87

WATER BINDING THROUGH POLYACRYLAMIDE HYDROGEL AND THE INFLUENCE OF ITS PRELIMINARY SATURATION BY ENOXIL

Volodymyr Turov, Viktor Bogatyrev, Tatiana Krupska, Mariia Galaburda, Tudor Lupascu, Igor Povar, Natalia Kokosha

The state of water in a polyacrylamide (PAA) gel has been studied by the ^1H NMR spectroscopy. It is shown that the PAA gel can serve as a container for prolonged retention of the Enoxil preparation without changing its chemical composition. At the same time, the molecular structures of Enoxil bind strongly to polymer chains, probably due to the formation of hydrogen-bound complexes with amino and imino groups.



1 - initial dry PAA, 2 - hydrogel PAA, 3 - hydrogel PAA-Enoxil

RESEARCH PAPER

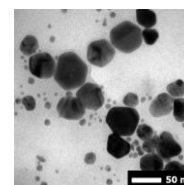
PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

95

SILVER NANOPARTICLES SYNTHESIZED USING LANTANA CAMARA FLOWER EXTRACT BY REFLUX, MICROWAVE AND ULTRASOUND METHODS

Is Fatimah, Nurul Indriani

Green synthesis of silver nanoparticles (AgNPs) using *Lantana camara* yellow flower extract *via* microwave irradiation and ultrasound methods was conducted. Analysis of the obtained nanoparticles was performed using UV-Vis spectroscopy, transmission electron microscope, particle size analyzer, and Fourier transform infrared spectroscopy. The present results support the advantages of plant extract and the green method for AgNPs synthesis.



RESEARCH PAPER

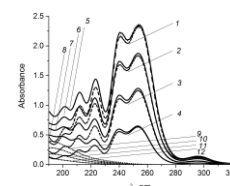
PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

103

THE POSSIBILITY OF Ce^{3+} AND Mn^{2+} COMPLEX IONS FORMATION WITH IODINE SPECIES IN A DUSHMAN REACTION

Iurie Ungureanu, Gheorghe Duca, Ionel Humelnicu, Gelu Bourceanu

This contribution presents investigations into possible effects of Ce^{3+} and Mn^{2+} on the reduction of UV-spectral signal for I_3^- observed *e.g.* in the Dushman reaction. The potential of the metal ions to form complexes with iodine-containing species was analysed. It was shown that no complex ions are formed between Ce^{3+} and Mn^{2+} metals ions with IO_3^- , I^- , I_2 species. Only the formation of a very weak CeI_3^{2+} complex ion was found to occur.



SHORT COMMUNICATION

ANALYTICAL CHEMISTRY

111

STRUCTURAL ASPECTS OF LACTOFERRIN AND SERUM TRANSFERRIN OBSERVED BY FTIR SPECTROSCOPY

Gheorghe Duca, Lilia Anghel, Raul Victor Erhan

In this work Fourier transform infrared spectroscopy was used to study the structural differences between the human lactoferrin and human serum transferrin. The mathematical data analysis method of the second derivative spectra allowed exploring the details of the secondary structures of both proteins. The results clearly indicate structural differences between human lactoferrin and human transferrin.



SHORT COMMUNICATION

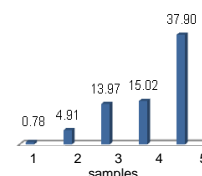
ECOLOGICAL CHEMISTRY

117

IMPROVEMENT OF FILTRATION PROPERTIES OF GHIDIRIM DIATOMITE (REPUBLIC OF MOLDOVA)

Larisa Postolachi, Vasile Rusu, Tudor Lupascu, Oleg Petuhov

The aim of the study was to modify the diatomite from Ghidirim village (Ribnita district, Republic of Moldova) with purpose to use it as filter material. The initial diatomite was modified by alkaline treatment with sodium carbonate, and the filtering capacity was evaluated by suction filtration method. The treatment of diatomite by sodium carbonate resulted in an increased filtration rate, recording the most pronounced filtering capacity for diatomite treated with 20% solution of sodium carbonate.



Values of filtration rate (mL/m²)

INSTRUCTIONS FOR AUTHORS

122