International Publications Awards Cairo University

Issue III-A

October 2008

International Publication Awards
Cairo University

Dear colleagues,

This is the third issue of the international Publication of Cairo university staff members durian the year 2008 .

The purpose of issuing these Publications is mainly to introduce your work to the academic community ,demonstrate the different research abilities of Cairo university researchers, and to encourage them to increase the quality and quantity of their research .

As part of our future Plan , We aspire to build on our current success ; as the weightier challenge is still to come . So in order to keep our rank in its high level we are compelled to continue on Publishing high quality research .

Issue III-A, October 2008

We would like to assure you that the administration will spare no effort to support and reinforce these goals. We congratulate all the colleagues who were granted the awards for their international publications of the year 2008 and wish them all the best for their future endeavors.

We are also pleased to inform you that this policy will continue to be in effect for the year 2009.

Prof . Hussein M. Khaled

Vice - President for graduate studies and research
Cairo university

Prof. Hossam Kamel

President
Cairo university

International Publication Awards
Cairo University

Table of Contents

Faculty	Page
Science	1
Agriculture	165
Veterinary Medicine	180
National Institute of Laser Enhanced Sciences	203
Statistical Studies and Research Institute	215
African Research and Studies Institute	223
Index	225

Issue III-A, October 2008

Faculty of Science

International Publications Awards
Cairo University

Name : **Prof . Abdel Aziz Abdel Salam El-Maghraby**

Dep. : **Chemistry**

Title : **Study of the Electrochemical Redox Characteristics of some Triazolopyrimidines**

Abdel Aziz Abdel Salam El-Maghraby, G. M. Abou Elenien and K. I. Shehata.

Journal : **Korean Electrochemical Society**

ISSN : 1229-1935 **Impact Factor :**

Abstract :

An electrochemi~l study related to the redox characteristics of Ethyl-3-acetyl-6-methyl-l, 4-diphenyl-4, 3a¬dihydro-I, 3, 4-triazolino[3, 4-a] pyrimidine-5-carboxylate ester and its derivatives (Ia-f) and (2a-e) in nonaqueous solvents such as I,2dichloroethane (DCE), dichloromethane (DCM), acetonitrile (AN),dimethylsulphoxide (DMSO) and tetrahydrofurane (THF) using 0.1 mol dm-) tctrabutylammonium perchlorate (TBAP) as a supporting electrolyte at platinum, glassy carbon and gold electrodes, has been performed using cyclic voltammetry (CV). Controlled poten¬tial electrolysis (CPE) is also carried out to elucidate the course of different electrochemical reactions through the separation and identification of the intermediates and final electrolysis products. The redox mechanism is suggested and proved. It was found that all the investigated compounds in all solvents are oxidized in a single irreversible one electron donating process following the well known pattern of the EC-rnechanism to give a dimer. On the other hand, these compounds are reduced in a single irreversible one electron step to form the anion radical, which is basic enough to abstract proton fiom the media forming the radical which undergoes tautomerization and then dimer¬ization processes to give also another bis-compound through N-N linkage formation.

Keywords :

Cyclic voltammetry; Oxidation; Reduction; Triazolopyrimidine; Non-Aqueous media; Platinum electrode; Glassy carbon electrode; Gold electrode

International Publications Awards
Cairo University

Name : **Prof . Abdel Gawad Ali Fahmi**

Dep. : **Chemistry**

Title : **Possibility of Mesophase Formation in Some Model Compounds Based on the N-Aryl Benzamide Group**

S. Z. Mohammady, M. Al-Aasar and Abdel Gawad Ali Fahmi

Journal : **Thermochimica Acta**

ISSN : 0040-6031 **Impact Factor :** 1.417

Abstract :

Five series of N-aryl-4-alkoxybenzamides [RO–C6 H4 –CONH–C6 H4 –X] were prepared where the terminal alkoxy group (RO) possesses a number of carbon atoms (n) that varies between 8, 10, 12, 14, or 18 carbons, while the other terminal substituent (X) alternatively changes from CH3 O, CH3 , H, Cl, and NO2 . The terminal group X was introduced once in position 4- with respect to the anilide C O group, furnishing, as expected, linear molecules, and others in the 2- (or 3-) positions aiming to induce some steric hindrance to the linear association of the rod-shaped molecules, specially in the solid phase. Further replacement of the anilide-H atom with a methyl (CH3) group was performed into the unsubstituted derivatives) X H) in order to disrupt any unfavourable hydrogen bonding between any two neighboring molecules. Compounds prepared were characterized by elemental analyses, infrared, and 1 H NMR spectra, and their phase behaviour investigated by differential scanning calorimetry and polarized-light microscopy. The results were discussed in terms of mesomeric, steric, polarity, and polarizability effects. Independent of the polarity or position of the substituent X, all compounds prepared were found to be non mesomorphic. The N-methyl derivative (that excludes the possibility of hydrogen bond formation) was also found to be non-mesomorphic. In all five series of compounds, their tendency to form a mesophase (smectic or nematic) was estimated from their binary phase diagrams with either of the smectogenic compound, 4-n-C16 H33 O–C6 H4 –COO–C6 H4 –OOC–C6 H4 –CN, or the nematogenic compound, 4n-C16 H33 O–C6 H4 –COO–C6 H4 –OOC–C6 H4 –CH3 . Dipole moment calculations for the core structure (benzanilide) revealed that such a group of compounds exists in a non-linear, non-planar conformation.

Keywords :

Mesophase formation; 4-Alkoxybenzarylamides

Name : **Prof . Abdel Monam Ahmad El-Araby**

Dep. : **Geology**

Title : **Depositional Framework and Sequence Stratigraphic Aspects of the Coniacian–Santonian Mixed Siliciclastic/Carbonate Matulla Sediments in Nezzazat and Ekma Blocks, Gulf of Suez, Egypt**

M. H. El-Azabi and Abdel Monam Ahmad El-Araby

Journal : **African Earth Sciences**

ISSN : 1464-343X **Impact Factor :** 0.982

Abstract :

Superb outcrops of mixed siliciclastic/carbonate rocks mark the Coniacian–Santonian Matulla Formation exposed in Nezzazat and Ekma blocks, west central Sinai. They are built up of various lithofacies that reflect minor fluctuations in relative sea-level from lower intertidal to slightly deep subtidal settings. Relying on the facies characteristics and stratal geometries, the siliciclastic rocks are divided into seven depositional facies, including beach foreshore laminated sands, upper shoreface cross-bedded sandstone, lower shoreface mas- sive bioturbated and wave-rippled sandstones, shallow subtidal siltstone and deep subtidal shale/claystone. The carbonate rocks com- prise lower intertidal lime-mudstone, floatstone and dolostone, shallow subtidal skeletal shoal of oyster rudstone/bioclastic grainstone, and shoal margin packstone. Oolitic grain-ironstone and ferribands are partially intervened the facies types. Deposition has taken place under varied conditions of restricted, partly open marine circulation, low to high wave energy and normal to raised salin- ity during alternating periods of abundant and ceased clastic supply. The facies types are arranged into asymmetric upward-shallowing cycles that record multiple small-scale transgressive–regressive events. Lime-mudstone and sandstone normally terminate the regressive events. Four sequence boundaries marking regional relative sea-level falls divide the Matulla Formation into three stratigraphic units. These boundaries are Turonian/Coniacian, intra-Coniacian, Coniacian/Santonian and Santonian/Campanian. They do not fit with those sequence boundaries proposed in Haq et al.'s global eustatic curves (1988) except for the sea-level fall associated with the intra-Coniacian boundary. Other sequence boundaries have resulted from regional tectonic impact of the Syrian Arc Fold System that has been initiated in north Egypt during the Latest Turonian–Coniacian. These boundaries enclose three well-defined 3rd order depositional sequences; their enclosing shallowing-upward cycles (i.e. parasequences) record the 4th order relative sea-level fluctuations. 34 and 20 parasequence sets, in the order of a few meters to tens of meters thick, mark the Matulla sequences in Nezzazat and Ekma blocks respectively. Each sequence shows an initial phase of rapid sea-level rise with retrogradational sets, followed by lowering sea-level and progradation/aggra- dation of the parasequence sets. The transgressive deposits display predominance of deep subtidal lagoonal facies, while highstand deposits show an increase in siliciclastic and carbonate facies with the progressive decrease of lagoonal facies. The sedimentary patterns and environments suggest that the regional, partly eustatic sea-level (i.e. intra-Coniacian) changes controlled the overall architecture of the sequence distribution, whereas changes in the clastic input controlled the

variations in facies associations within each depositional sequence.

Keywords :

Depositional facies; Matulla formation; Coniacian–Santonian; Sea-Level change; Sequence stratigraphy; Gulf of suez

Name : **Prof . Abdel-Alla Abdel-Salam Mohamed**

Dep. : **Physics**

Title : **Signatures of Target Fragmentation of Nuclear Emulsion by Light Nuclei**

Abdel-Alla Abdel-Salam Mohamed, M.S.El-Nagdy, N.Rashed and B.M.Badawy

Journal : **Chinese J. Physics**

ISSN : 0577-9073 **Impact Factor :** 0.238

Abstract :

The interactions of a proton (3.7 GeV) with an emulsion can reveal the behavior of the nucleon–nucleus interactions. Furthermore, the interactions of 4He (2.1A GeV) and 7Li (2.2A GeV) with an emulsion introduce adequately a manner-representing nucleus–nucleus interactions. On the other hand, a major part of this work concerns the target fragmentation process. Thus, the yields of the target fragmentation (heavily ionizing particles Nh) have been studied on the basis of a comprehensive analysis of the data in the literature. The complete destruction of Ag nuclei (heaviest target in the emulsion) is achieved at a limiting value of Nh (Nh $\geq$ 28) for the nucleus–nucleus interactions. This study gives an indication of being a rich source of information on nuclear structure.

Keywords :

Target fragmentation; Light nuclei; Nucleon; Nucleus interactions; Heavily ionizing particles

Name : **Prof . Abdel-Alla Abdel-Salam Mohamed**

Dep. : **Physics**

Title : **Study of Hadrons Emission in 4.5 AGeV/c 32S Interactions with Emulsion**

Abdel-Alla Abdel-Salam Mohamed, .M.Badway and E.EL-Falaky

Journal : **Canadian J. of Physics**

ISSN : 0008-4204 **Impact Factor :** 0.756

Abstract :

An experimental study of the forward and backward emission of relativistic and fast hadrons in the interactions of 4.5AGeV/c 32S with emulsion was carried out . The study supports the conclusion that a collective mechanism is responsible for the production of particles in the backward hemisphere (which is restricted beyond the kinematics limit). The backward emission of both shower and grey particles can be described by an exponential decay law independent of the projectile size. The experimental results suggest that the backward particles result from the decay of the system in a latter stage of the interaction. While the average multiplicities of the shower particles emitted in the forward hemisphere are strongly dependent on the projectile size and incident momentum , the average values of those emitted into the backward hemisphere are found to be only a function of the target size (i.e., impact factor). Thus ,the backward particle production can be considered as a yield of a highly excited target system , in its rest frame .

Name : **Prof . Abdou Othman Abdelhamid**

Dep. : **Chemistry**

Title : **Synthesis and Reactivity of N-[3-amino-4-(b enzoxazol-2-yl)pyrazol-5-yl]phenylamine**

Abdou Othman Abdelhamid, Victorin B. Baghos and Mervat M.A. Halim

Journal : **Chemical Research**

ISSN : 0308-2342 **Impact Factor :** 0.21

Abstract :

Pyrazolo [5,1-a] pyrimidines and pyrazolo [5,1-c][1,2,4] triazines containing benzooxazole moiety are synthesised from N- [3-amino-4-(benzoxazol-2-yl) pyrazol -5-yl] phenylamine or its diazonium chloride with the appropriate active methylene compounds. The newly synthesised compounds were elucidated by elemental analysis, spectral data and alternative synthetic route whenever possible.

Keywords :

Pyrazolo [5,1-a] Pyrimidines; Pyrazolo [5,1-c][1,2,4] Triazines; Benzoxazoles; Activated nitriles.

International Publications Awards
Cairo University

Name : **Prof . Abdou Othman Abdelhamid**

Dep. : **Chemistry**

Title : **Reactions with hydrazonoyl halides 601: synthesis of thieno[2',3':4,5] pyrimidino[1,2-b][1,2,4,5]tetrazines, [1]benzothieno[2',3' : 4,5]pyrimidino [1,2-b][1,2,4,5]tetrazines, pyrazolo[3',4':4,5]pyrimidino[1,2-b] [1,2,4,5]tetrazines and pyrazolo[3,4-d]pyridazines**

Abdou Othman Abdelhamid, Zeineb H. Ismail and Anhar Abdel-Aziem

Journal : **Chemical Research**

ISSN : 0308-2342 **Impact Factor :** 0.21

Abstract :

Thieno[2',3':4,5]pyrimidino[1,2-b][1,2,4,5]tetrazine,[1]benzothieno[2',3':4,5] p yrimidino[1,2-b][1,2,4,5]tetrazine,pyrazolo [3',4':4,5]pyrimidino[1,2-b][1,2,4,5] t etrazine,triazolo[4,3-a]pyrimidin-5(1H)-one,1-{[2-(1-benzofuran-2-yl)-5-phenyl-4,5-dihydro-1H-pyrazol-1-yl]-4-substituted-1,3-thiazol-5-yl}-2phenyldiazene, 3-acy l-4-(1-benzofuran-2-ylcarbonyl) pyrazole and pyrazolo[3,4-d] pyridazine derivatives could be obtained via reactions of hydrazonoyl halides with the appropriate pyrimidine-2-thione, 3-amino-5,6-dimethyl-2-lfanylthieno[2,3-d] pyrimidin-4(3H)-one, 5-amino-6-mercapto-1-phenyl-1,5-dihydropyrazolo[3,4-d] pyrimidin-4-one and 1-(benzofur an-2-yl)-3-(dimethylamino)prop-2-en-1-one. Structures of the products have been determined by elemental analyses, spectral data studies and alternative synthesis whenever possible.

Keywords :

Tetrazino[2,3-A]Thieno[2,3-D]Pyrimidine; Triazolo[4,3-A]Pyrimidine; Pyrazolo[3,4-D]Pyrimidines; Pyrimidine-2-Thione; Hydrazonoyl halides

Name : **Prof . Abdou Othman Abdelhamid**

Dep. : **Chemistry**

Title : **New Routes to Steroidal Heterocyclic Derivatives: Synthesis of Biologically Active Pyrazolyl- and Isoxazolylpregnene Derivatives**

Abdou Othman Abdelhamid, Mervat M. Abdelhalim and Gamal A. Elmegeed

Journal : **Heterocyclic Chem**

ISSN : 0022-152X **Impact Factor :** 0.776

Abstract :

Pyrazolyl- and isoxazolylpregnene derivatives were synthesized from the appropriate hydrazonoyl chlorides and hydroximoyl chlorides with enaminoprogesterone derivative. The newly synthesized compounds were elucidated by elemental analysis, spectral data and chemical transformation. Some products were tested towards some bacteria and some Fungal-plant pathogens.

International Publications Awards
Cairo University

Name : **Prof . Abdou Othman Abdelhamid**

Dep. : **Chemistry**

Title : **Reaction of Hydrazonoyl Halides 52: Synthesis and Antimicrobial Activity of Some New Pyrazolines and 1,3,4-Thiadiazolines**

Abdou Othman Abdelhamid and Abdelwahed R. Sayed

Journal : **Phosphorus, Sulfur, and Silicon**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

[5-Substituted 2-(3-phenyl-5-substituted 2-pyrazolinyl)(1,3-thiazol-4-yl)] phenyldiazeneand 2,3-dihydro-1,3,4-thiadiazoles were synthesized via reactions of hydrazonoyl halides with 5-substituted-3-phenyl-4,5-dihydropyrazole-1 carboximidothionicacid and {[2-2-{aza-2-((methylthioxomethyl)-amino] vinyl}phenyl)- 1-azavinyl]amino} methyl thiomethane-1-thione, respectively. All structures of thenewly synthesized compounds were elucidated by elemental analysis, spectral data,X-ray single crystal, and alternative synthesis methods whenever possible. Some ofthe new compounds were tested towards bacteria. In general, all tested compoundswere capable of a high inhibiting the growth of gram positive and gram negative.

Keywords :

2,3-Dihydro-1,3,4-thiadiazoles; Arylazothiazoles; Hydrazonoyl halides; Pyra- zolines

Name : **Prof . Abdou Othman Abdelhamid**

Dep. : **Chemistry**

Title : **Reactions with Hydrazonoyl Halides 53:1 Synthesis and Antimicrobial Activity of Triazolino[4,3-a]pyrimidines and 5-Arylazothiazoles**

Abdou Othman Abdelhamid, Zeineb H. Ismail, Marwa S. El Gendy and Moustafa M. Ghorab

Journal : **Phosphorus, Sulfur, and Silicon**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

6-(2-Naphtyl)-1-phenyl-4-3,5-disubstituted 4,3a-triazolino[4,3-a]pyrimidines, [2-(1-(2-naphthyl)-5-substitued (1-pyrazolin-3-yl)-4-phenyl(thiazol-5-yl)phenyldiazineand 1-(2-aza-2-{[4-phenyldiazenyl)-(1,3-thiazol-2-yl)]amino}vinyl)-naphthalene-2-ol were synthesized via reactions of hydrazonoyl halides with 4-(2-naphthyl)-6-substituted 3,4-dihyd ropyrimidine-2-thione, Amino(3-(2-naphthyl)-5-substitutedpyrazolin-2-ylmethane-1-thione, and 2-hydroxynaphthalenecarbaldehyde-thiosemicarbazone.All structures of the newly synthesized compounds were elucidated by elemental analysis, spectral data, and alternative synthesis methods whenever possible. Some of the new compounds were tested towards bacteria. In general, all tested compounds were capable of highly inhibiting the growth of gram positive of bacteria and gram negative

Keywords :

2,3-Dihydro-1,3,4-Thiadiazoles; Arylazothiazoles; Hydrazonoyl Halides; Pyra- Zolines; Triazolino[4,3-A] Pyrimidines

Name : **Prof . Abdou Othman Abdelhamid**

Dep. : **Chemistry**

Title : **Synthesis and Reactivity of 1-Amino-4-methyl-3,4-dihydro-5H-pyrazolo[3',4':4,5]pyrimido[1,6-a]benzoimidazolo-5-one**

Abdou Othman Abdelhamid and Ahmed A. Awad

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Journal : **Heterocyclic Chem**

ISSN : 0022-152X **Impact Factor :** 0.776

Abstract :

Pyrimido[2",1":5',6']pyrazolo[3',4':4,5]-pyrimido[1,6-a]benzoimidazoloe-2,8(1H,7H)-diones, and [1,2,4]- triazino-[3",4":5',6']pyrazolo[3',4':4,5]pyrimido[1,6-a]benzimidazol-8(7H)-ones were synthesized in a good yields via 1-amino-4-methyl-3,4-dihydro-5H-pyrazolo[3',4':4,5]pyrimido[1,6-a]benzoimidazolo-5-one and the appropriate active methylene compounds. Structures of the newly synthesized compounds were elucidated on the basis of elemental analyses, spectral data, and alternative synthesis methods whenever possible.

Name : **Prof . Abdou Othman Abdelhamid**

Dep. : **Chemistry**

Title : **Synthesis of some Pyrazolopyrimidines as Purine Analogues**

Sayed A. Ahmed, Ahmed M. Hussein, Walaa G. M. Hozayen, Ahmed H. H. El-Ghandour and Abdou Othman Abdelhamid

Journal : **Heterocyclic Chem**

ISSN : 0022-152X **Impact Factor :** 0.776

Abstract :

Pyrazolo[1,5-a]pyrimidines were synthesized from the appropriate 3-aminopyrazoles with the appropriate sodium (3-oxocycloalkylidene)methenolate,-diketone,-keto es or 1,2-disubstituted acrylonitrile. Elemental analyses, spectral data, alternative synthesis route and X-ray elucidated structures of the newly synthesized compounds.

International Publications Awards
Cairo University

Name : **Prof . Abdou Othman Abdelhamid**

Dep. : **Chemistry**

Title : **Reaction of Hydrazonoyl Halides 51: A Facile Synthesis of 5-Arylthiazoles and Triazolino[4,3-a]pyrimidines as Antimicrobial Agents**

Abdou Othman Abdelhamid, Abdelwahed R. Sayed and Yasser H. Zaki

Journal : **Phosphorus, Sulfur, and Silicon and the Related Elements**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

[5-Substituted 2-(3-phenyl-5-substituted 2-pyrazolinyl)(1,3-thiazol-4-yl)]phenyl- diazenes, triazolo[3,4-a]pyrimidines, and 2,3-dihydro-1,3,4-thiadiazoles were syn- thesized with good yields from reactions of hydrazonoyl halides with 5-substituted-3-phenyl-4,5-dihydropyrazole-1-carboximidothionic acid, pyrimidine-2-thione, methyl carbodithioate, respectively. All structures of the newly synthesized compounds were elucidated by elemental analysis, spectral data, and alternative synthesis methods. Newly develo ped compounds are capable of inhibiting the growth of bacteria (gram positive and gram negative) greatly.

Keywords :

1,3,4-Thiadiazolines; Aryazothiazoles; Hydrazonoyl halides; Triazolino[4,3-A]pyrimidines

International Publications Awards
Cairo University

Name : **Prof . Abdou Othman Abdelhamid**

Dep. : **Chemistry**

Title : **Reactions of Hydrazonoyl Halides 541 : Synthesis and Reactivity of 3-aza-2-bromo-1-(3-oxobenzo[f]chromen-2-yl-3-(arylamino)prop-2-en-1-one**

Abdou Othman Abdelhamid and Hassen M. Abdelaziz

Journal : **Phosphorus, Sulfur, and Silicon and the Related Elements**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

2-(5-imino-4-aryl-4,5-dihydro-[1,3,4]-thiadiazole-2-(carbonyl)benzo[f]chro-men-2- one, 2-(2-amino-5-arylazothiazol-4-yl)benzo[f]chromen-3-one and ethyl 6-methyl-3- oxo-benzo [f]chromen-2-yl)-1,4-dihydro-[1,2,4]triazolo[4,3-a]pyrimidine-5-carboxy- late were synthesized from hydrazonoyl bromides. Structures of the newly synthesized compounds were established by elemental analysis, spectral data and alternative synthesis route whenever possible.

Keywords :

2,3-Dihydrothiadiazoles; 5-arylazothiazol ;HydrazonoylbroTriazolinomides[4,3-a]pyrimidines

Name : **Prof . Abdou Othman Abdelhamid**

Dep. : **Chemistry**

Title : **Reaction of Hydrazonoyl Halides 551 : Synthesisof 2,3-Dihyd [1,3,4]-ThiadiazolesContaining Steroid Moiety**

Abdou Othman Abdelhamid, V. B. Baghos, S. H. Doss and M. M. A. Halim

Journal : **Phosphorus, Sulfur, and Silicon and the Related Elements**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

2,3-Dihydro-1,3,4-thiadiazolylsteroids were synthesized from the appropriate hy- drazonoyl halides and alkyl carbodithioates containing steroid moiety. The newly- synthesized compounds were elucidated by elemental analysis, spectral data, and alternative synthetic route whenever possible.

Keywords :

2,3-dihydro-1,3,4-thiadiazoles; Alkyl carbodithioate; Hydrazonoyl halides; Steroid

Name : **Prof . Ahmad Samy Shawali**

Dep. : **Chemistry**

Title : **Synthesis and Tautomeric Structure of the Azo-Coupling Products of 2-Methyl-7 -Phenylpyrimido[1,2-B][1,2,4] Triazepine-4,9(3H,5H)-Dione**

Ahmad Samy Shawali, Sherif M. Sherif, Thoraya A. Farghaly, M.R. Shehata and Manal A.A. Darwish

Journal : **Chemical Research**

ISSN : 0308-2342 **Impact Factor :** 0.21

Abstract :

A simple synthetic strategy is described for synthesis of 3-arylazo-2-methyl-7-phenylpyrimido[1, 2-b][1,2,4Jtriazepine-
4,9-diones 4a-j. The acid dissociation constants were determined for the series prepad and were correlated by a Hammett-typeequatio using enhancedsubstituentconstants.The reults of such cor together w ith the spectral data, including 15N isotopic labelling, indicated that the studied compoundsexis predominant in the hydrazone tautomeric form.

Keywords :

Fused Pyrimidines; L2,4-triazepines; Arylazo compounds; Tautomerism; N-15 labelJing

Name : **Prof . Ahmad Samy Shawali**

Dep. : **Chemistry**

Title : **Synthesis and Tautomeric Structure of 2-Arylazo-4H-Imidazo[2,1-b][1,3,4] Thiadiazines**

Ahmad Samy Shawali, Mosselhi A.N. Mosselhi and Thoraya A. Farghal

Journal : **Chemical Research**

ISSN : 0308-2342 **Impact Factor :** 0.21

Abstract :

Two series of the title compoundswere preparedvia reaction of N-aryl 2-oxohydrazonoylhalides with 1-amino-4- phenylimidazoline-2-thione.Their tautomericstructure was elucidated by spectral analysis, and the correlationof their acid dissociation constants with the Hammett equation, to be as the hydrazone form.

Keywords :

Imidazoles; Fused imidazoles; 1.3.4-Thiadiazines; Azo-Hydrazone tautomerism; Hydrazonoyl halides;Thiohydrazonates

International Publications Awards
Cairo University

Name : **Prof . Ahmad Samy Shawali**

Dep. : **Chemistry**

Title : **Synthesis of (4-amino-5-phenyl-1 ,2,4-triazol-3-yl) thiohydrazonates and spectrophotometric study of their cyclization products in ground and excited states**

Ahmad Sami Shawali, Elham S. S. Darwish and Farag M. A. Altalbawy

Journal : **Spectroscopy (Asian)**

ISSN : 0971-9237 **Impact Factor :**

Abstract :

Reaction of 4-amino-5-phenyl-4-H-[1,2,4]triazole-3-thiol 3 with 2-(1-naphthyl)-2-oxoethanehydrazonoyl bromides 2 afforded the respective title thiohydrazonates 4. Treatment of the latter esters with acetic acid yielded the corresponding 7-arylazo-5H-[1,2,4]tria zolo[3,4-b]-[I,3,4]thiadiazines 5. The electronic absorption spectra of compounds 5 were investigated in different solvents and buffer solutions. The acidity constants pK and pK* of 5 in both ground and excited state, respectively were determined and their correlations with Hammett equation were examined. The results of such correlations indicated that compounds 5 exist predominantly in the hydrazone tautomeric form A in both ground and excited states.

Keywords :

Hydrazonoyl halides; 1,2,4-triazole-3-thione; Thiohydrazonateesttrs; Forster cycle; Ham Eett Equation; Tautomerism

Name : **Prof . Ahmad Samy Shawali**

Dep. : **Chemistry**

Title : **A New Convenient Synthesis of Alditol C-Glycosides of 1,2,4-Triazolo [3,4-B] [1,3,4] Thiadiazole**

Ahmad Sami Shawali and Abdelwahed R. Sayed

Journal : **Sulfur Chemistry**

ISSN : **Impact Factor :**

Abstract :

Starting from bis (substituted methylene) carbonothioic dihydrazides, a series of the title compounds have been synthesized via their oxidative cyclization. The mechanism and regioselectivityof the reactions studied are discussed. The structures of the compounds prepared were elucidated on the basis of their elemental analyses, spectral data and alternate synthesis.

Keywords :

Hydrazones; 1,5-Electrocyclization; Nitrilimines; Heterocycles

Name : **Prof . Ahmad Samy Shawali**

Dep. : **Chemistry**

Title : **Synthesis and Antimicrobial Activityof New Functionalized Derivatives of [1,2,4]Triazolo[4,3-a]pyrimidin-5(1H)-one**

Ahmad Samy Shawali, Asma M. Mahran and Afaf A. Nada

Journal : **Heteroatom Chemistry**

ISSN : 1042-7163 **Impact Factor :** 0.838

Abstract :

New functionalized-1,7-diaryl-6-cyano-1,2,4-triazolo[4,3-a]pyrimidin5(1H) - one derivatives (5a-j) were synthesized via reaction of 5-cyano-6-phenyl-2-thiouracil 1 with the respective hydrazonoyl halides 2a-j and their biological activity was evaluated. The mechanism and the regioselectivity of the studied reactions are discussed.

Name : **Prof . Ahmad Samy Shawali**

Dep. : **Chemistry**

Title : **A New Site-SelectiveRoutefor Synthesis of Functionalized Imidaz [2, l-c][1,2,4] Triazoles**

Ahmad Samy Shawali, Magda A. Abdallah, Mosselhi N. Mosselhi and Mahmoud. Elewa

Journal : **Helerocyclic Chemistry**

ISSN : 0022-152X **Impact Factor :** 0.776

Abstract :

Reactions of 4-arylhydrazono-2-methylthio-imidazolin-50H)-one3 with various hydrazonoyl halides 1 proved to be site-selective and yielded the respective imidazo[2,I-c][I,2,4]triazole derivative 8. The structure of the latter wa elucidated by X-ray analysis and the mechanism of the studied reactions was discussed.

Name : **Prof . Ahmad Samy Shawali**

Dep. : **Chemistry**

Title : **The Chemistry of Hydrazonates**

Ahmad Samy Shawali and Sherief M. Sherief

Journal : **Current Organic Chemistry**

ISSN : 1385-2728 **Impact Factor :** 3.232

Abstract :

The chemistry of esters of hydrazonoic acids has gained increase interest in both synthetic organic chemistry and biological fields. Since a large number of developments in the use of such esters, a review of such developments covering the literature up to mid 2005, seems to be of considerable value. The present review presents their structural features, nomenclature, synthetic methods and chemical reactions. The utility of the latter reactions for synthesis of various heterocyclic ring systems including mono-, bi-, tri-, tetra- and penta-heterocycles in presented. In addition, their silicon chelates and biological applications are presented

Name : **Prof . Ahmad Kamel Hegazy**

Dep. : **Botany**

Title : **Vegetation Distribution Along the Altitudinal Gradient in the Northwestern Red Sea Region**

Ahmad Kamel Hegazy, J. Lovett-Doust, O. Hammouda and N. H. Gomaa

Journal : **Community Ecology**

ISSN : 1585-8553 **Impact Factor :** 0.553

Abstract :

The distribution of plant communities and the pattern of species diversity were studied along an altitudinal gradient in the northwestern Red Sea region. A total of 58 stands were studied, using ten quadrats (10 m × 10 m) per stand. The classification of vegetation using the Two Way Indicator Species Analysis (TWINSPAN) identified five groups representing different altitudinal ranges. Detrended Correspondence Analysis (DCA) clearly distinguished these groups by the first two DCA axes. Edaphic factors such as soil texture, CaCO, organic carbon, and electrical conductivity contribute to the distribution of plant communities. Species richness, Shannon index of diversity and evenness show a hump-shaped curve along the altitudinal gradient, whereas beta diversity decreases with elevation. Variation in the diversity and the distributional behaviour of plant species and plant communities in the study area may be attributed to the change of water resources, climatic factors, edaphic variables and anthropogenic pressures along the elevation gradient. The implications of the results are discussed and recommendations are suggested for conservation and sustain- able utilization of vegetation..

Keywords :

Altitude; Desert; Diversity; Red Sea; Vegetation

International Publications Awards
Cairo University

Name : **Prof . Ahmad Kamel Hegazy**

Dep. : **Botany**

Title : **Significance of Microhabitat Heterogeneity in the Spatial Pattern and Size-class Structure of Anastatica Hierochuntica L.**

Ahmad Kamel Hegazy and Hanan F. Kabiel

Journal : **Acta Oecologica**

ISSN : 1146-609X **Impact Factor :** 1.32

Abstract :

Anastatica hierochuntica L. (Brassicaceae) is a desert monocarpic annual species characterized by a topochory/ ombrohydrochory type of seed dispersal. The hygrochastic nature of the dry skeletons (dead individuals) permits controlling seed dispersal by rain events. The amount of dispersed seeds is proportional to the intensity of rainfall. When light showers occur, seeds are released and remain in the site. Seeds dispersed in the vicinity of the mother or source plant (primary type of seed dispersal) resulted in clumped pattern and complicated interre- lationships among size-classes of the population. Following heavy rainfall, most seeds are re- leased and transported into small patches and shallow depressions which collect runoff water. The dead A. hierochuntica skeletons demonstrate site-dependent size-class structure, spatial pattern and spatial interrelationships in different microhabitats. Four microhabitat types have been sampled: runnels, patches and simple and compound depressions in two sites (gravel and sand). Ripley's K-function was used to analyze the spatial pattern in popu- lations of A. hierochuntica skeletons in the study microhabitats. Clumped patterns were ob- served in nearly all of the study microhabitats. Populations of A. hierochuntica in the sand site were more productive than in the gravel site and usually had more individuals in the larger size-classes. In the compound-depression microhabitat, the degree of clumping de- creased from the core zone to the intermediate zone then shifted into overdispersed pattern in the outer zone. At the within size-class level, the clumped pattern dominated in small size classes but shifted into random and overdispersed patterns in the larger size classes. Aggre- gation between small and large size-classes was not well-defined but large individuals were found closer to the smaller individuals than to those of their own class. In relation to the phy- tomass and the size-class structure, the outer zone of the simple depression and the outer and intermediate zones of the compound depression microhabitats were the most produc- tive sites.

Keywords :

Anastatica hierochuntica; Spatial pattern ripley's K-function hygrochasy; Size-Class structure

Name : **Prof . Ahmad Mahmoud Farag**

Dep. : **Chemistry**

Title : **Regioselective Synthesis of Novel 4,4'-and 5,5'-bi-(1,2,4-triazole) Derivatives**

Ahmad Mahmoud Farag, Kamal M. Dawood and Nabila A. Khedr

Journal : **Chemical Research**

ISSN : 0308-2342 **Impact Factor :** 0.21

Abstract :

A regioselective synthesis is reported of a series of polysubstituted 1,2,4-triazoles and 4,4'- and 5,5'-bi-(l,2,4-triazoles) via 1,3-dipolar cycloaddition reactions of nitrilimines with some aza- and diaza-butadiene derivatives.

Keywords :

1,2,4-Triazoles; 4,4'-bi-(l,2,4-triazoles); 5,5'-bi-(l,2,4-triazoles); Nitrilimines; Azabutadiene; Diazabutadiene.

Name : **Prof . Ahmad Mahmoud Farag**

Dep. : **Chemistry**

Title : **Synthesis of some 1,3-Thiazole, 1,3,4-Thiadiazole, Pyrazolo[5,1-c]-1,2,4-triazine, and 1,2,4-Triazo lo[5,1-c]-1,2,4-triazine Derivatives Based on the Thiazolo[3,2-a]benzimidazole Moiety**

Nehal A. Hamdy, Hatem A. Abdel-Aziz, Ahmad Mahmoud Farag and Issa M. I. Fakhr

Journal : **Monatshefte Fur Chemie**

ISSN : 0026-9247 **Impact Factor :** 0.92

Abstract :

3-(3-Methylthiazolo[3,2-a]benzimidazol-2-yl)-3-oxopropionitrile was synthesized by refluxing ethyl 3-methylthiazolo[3,2-a] benzimidazole-2-carboxylate, acetonitrile and sodium hydride. Treatment of 3-(3 methylthiazolo[3,2-a]benzimidazol-2-yl)-3 oxopropionitrile with phenyl isothiocyanate, in the presence of KOH, furnished the corresponding potassium salt which was converted into thioacetanilide derivative upon neutralization. The thioacetanilide derivative reacts with chloroacetylacetone and ethyl chloroacetoacetate to give the 1,3-thiazole derivatives, while the reaction of the thioacetanilide derivative with hydrazonyl chlorides gave 1,3,4-thiadiazole derivatives. On the other hand, 3-(3-methylthiazolo[3,2-a]benzimidazol-2-yl)-3 oxopropionitrile reacted with the diazonium salt of both 3-phenyl-5-amino-(1H) pyrazole and 5-am ino-l,2,4-(1H)-triazole to afford the corresponding hydrazones. The latter hydrazones underwent an intramolecular cyclization upon boiling in pyridine to give pyrazolo[5,1-c]-1,2,4-triazine and 1,2,4-triazolo[5,1-c]-1,2,4-triazine derivatives. Moreover, the behavior of thiazolo[3,2-a] benzimidazol-3(2H)-one towards phenyl isothiocyanate followed by the reaction with chloroketones or hydrazonyl chlorides was investigated. Some of the latter compounds exhibited moderate effects against some bacterial and fungal species.

Keywords :

Heterocycles; Cyclizations; Michael addition; Hydrazonyl chlorides

Name : **Prof . Ahmad Mahmoud Farag**

Dep. : **Chemistry**

Title : **Synthesis and Reactions of 3-Methylthiazolo [3,2-a]benzimidazole-2-carboxylic Acid Hydrazide: Synthesis of some New Pyrazole, 1,3-Thiazoline, 1,2,4-Triazole and 1,2,4-Triazolo[3,4-b]-1,3,4-thiadiazine Derivatives Pendant to Thiazolo[3,2-a]benzimidazole Moiety**

Hatem A. Abdel-Aziz, Nehal A. Hamdy, Ahmad Mahmoud Farag and Issa M. I. Fakhr

Journal : **Chinese Chemical Society**

ISSN : 0009-4536 **Impact Factor :** 0.577

Abstract :

The reaction of 3-methylthiazolo[3,2-a]benzimidazole-2-carboxylic acid ethyl ester (1) with hydrazine hydrate gives the hydrazide 2 which reacts with CS2/KOH to afford the potassiumsalt 3. Treatment of 3 with l-aryl-2-bromoethanones 4a,b afforded the 1,3-thiazoline derivatives 6a,b, respectively, while the reaction of 3 with hydrazine hydrate afforded 1,2,4-triazole-3-thione derivative 9. The reaction of 9 with l-aryl-2-bromoethanones 4a,b and with hydrazonyl chlorides 11a,b gave the 1,2,4 triazolo[3,4-b]-1,3,4- thiadiazine derivatives 10a,b and 12a,b, respectively. Treatment of hydrazide 2 with phenyl isothiocyanate in refluxing benzene gave the thiosemicarbazide derivative 16. The latter reaction gave 1,3,4- oxadiazole derivative 17 when benzene was replaced by DMF. Cyclization of the thiosemicarbazide derivative 16 with NaOH resulted in the formation of the 1,2,4-triazole-3-thione derivative 18.

Keywords :

Thiazolo[3,2-a]benzimidazole; Pyrazoles; 1,3,4-oxadiazoles; 1,3-Thiazolidines; 1,2,4-Triazoles; 1,2,4-triazolo[3,4-b]-1,3,4-thiadiazines; Hydrazonyl chlorides.

Name : **Prof . Ahmad Mahmoud Farag**

Dep. : **Chemistry**

Title : **Regioselective Synthesis of some Novel Pyrazoles, Isoxazoles, Pyrazolo[3,4-d] Pyridazines and Isoxazolo[3,4-d] Pyridazines Pendant to Benzimidazole**

Mohamed R. Shaaban, Tamer S. Saleh, Fayez H. Osman and Ahmad Mahmoud Farag

Journal : **Heterocyclic Chemistry**

ISSN : 0022-152X **Impact Factor :** 0.776

Abstract :

2-Acetyl-1-methyl-1H-benzimidazole reacts with dimethylformamide-dimethyl-acetal (DMF-DMA) to afford the corresponding E-1-(1-methyl-1H-benzimidazol-2-yl)-3N,N-dimet hylaminoprop-2-enone. The latter compound reacts regioselectively with some nitrilimines and nitrileoxides to afford the corresponding pyrazole and isoxazole derivatives, respectively. These reaction products react with hydrazine hydrate to give the novel pyrazolo[3,4-d]pyridazine and isoxazolo[3,4-d]pyridazine derivatives, respectively.

Name : **Prof . Ahmad Mahmoud Farag**

Dep. : **Chemistry**

Title : **Synthesis and Antimicrobial Evaluation of Novel Pyrazolo[1,5-a]pyrimidine, Triazolo[1,5-a]pyrimidine and Pyrimido[1,2-a]benzimidazole Derivatives**

Mohamed R. Shaaban, Tamer S. Saleh and Ahmad Mahmoud Farag

Journal : **Heterocycles**

ISSN : 0385-5414 **Impact Factor :** 1.077

Abstract :

The applicability and synthetic potency of E-1-(1-methylbenzimidazol- 2-yl)-3-N,N-dimethylaminoprop-2-enone towards some nitrogen nucleophiles was investigated as a convenient route for the synthesis of some novel aminopyrimidine, pyrazolo [1,5-a] pyrimidine, triazolo[1,5-a]pyrimidine, pyrimido[1,2-a]benzimidazole, and pyrido [2,3-d] pyrimidine derivatives. Some of the newly synthesized compounds were tested in vitro for their antibacterial and antifungal activities, and showed promising results.

International Publications Awards
Cairo University

Name : **Prof . Ahmed Abdoh El-Sherif**

Dep. : **Chemistry**

Title : **Mixed Ligand Complexes of Cu(II) 2-(2-Pyridyl)-Benzimidazole and Aliphatic or Aromatic Dicarboxylic Acids and. Synthesis, Characterization and Biological Activity.**

Ahmed Abdoh El-Sherif

Journal : **Spectrochimica Acta Part A**

ISSN : 1386-1425 **Impact Factor :** 1.27

Abstract :

The synthesis and structural characterization of mixed ligand complexes derived from 2-(2-pyridyl)-benzimidazole (PBI) (1ry ligand) and aliphatic or aromatic dicarboxylic acids (2ry ligand) are reported. Cu(II) complexes were characterized on the bases of their elemental analyses, IR, UV/VIS and ESR spectral studies and thermal analyses. The elemental analysis indicated the formation of mixed ligand complexes in a mole ratio 1:1:1 (Cu:L1:L2), L1 = PBI and L2 = oxalic acid, phthalic acid or malonic acid. IR spectra showed that PBI acts as a neutral bidentate coordinated to the Cu(II) via the pyridyl and imidazolyl nitrogen atoms. The dicarboxylic acids are bidentate the monodentate carboxylate groups. Thermal decomposition study of complexes was monitored by TG and DTG analysis in N2 atmosphere. The decomposition course and steps were analysed and the activation parameters of the nonisothermal decomposition were calculated from the TG curves and discussed. The isolated metal chelates were screened for their antimicrobial activities and the results are reported, discussed and compared with some known antibiotics.

Keywords :

Pyridyl)-Benzimidazole; Dicarboxylic acids; Complexes IR; ESR; Thermal 2-(2-Pyridyl)-benzimidazole; Dicarboxylic acids; Complexes IR; ESR; Thermal decomposition; Biological activity.

Name : **Prof . Ahmed Ahmed Soliman**

Dep. : **Chemistry**

Title : **Reactions of Molybdenum and Ruthenium Carbonyls with some Pyridylamine Ligands**

Ahmed Ahmed Soliman, Mohamed M. Khattab and Ramadan M. Ramadan

Journal : **Transition Metal Chemistry**

ISSN : 0340-4285 **Impact Factor :** 0.918

Abstract :

The interaction of Mo(CO)6 and Ru3(CO)12 with 2-aminoethylpyridine (aepy), 2-hydrazinopyridine (hzpy) and dipicolylamine (dpa) have been investigated. Molybdenum complexes were found to have either mono- or binuclear derivatives, [MoO2(CO)2(aepy)] (1), [MoO2(CO)2(hzpy)] (2), [Mo2O6(aepy)2] (3), [Mo2O6(hzpy)2] (4), and [Mo2O4(dpa)2] (5), depending on the reactions conditions. Ruthenium complexes are shown to have a molecular formulae of a mononuclear species; [Ru(CO)3(aepy)] (6), [Ru(CO)3(hzpy)] (7) and [Ru(CO)2(dpa)] (8). The proposed structures of the complexes were elucidated using elemental analyses, i.r., u.v.–vis. and n.m.r. spectroscopy. The thermal stabilities of the reported complexes were also investigated using the t.g. technique.

Name : **Prof . Ahmed Ahmed Soliman**

Dep. : **Chemistry**

Title : **Structural Features of ONS-Donor Salicylidene Schiff Base Complexes**

Ahmed Ahmed Soliman and Wolfgang Linert

Journal : **Monatshefte fur Chemie**

ISSN : 0026-9247 **Impact Factor :** 0.92

Abstract :

Summary. This review article summarizes the structural features of complexes of salicylidene Schiff bases containing, in addition to the phenolic-OH and the azomethine (–RC=N–) groups, a thiole group, and=or a sulfur atom participating in coordination. Structural aspects of metal complexes of salicylidene-2-aminothiophenol, salicylidene-3-aminothiophenol, salicylidenethiosemicarbazone, salicylidenedithiocarbazates, salicylidenedithio- carbazates, salicylideneaminopropyleneamino-cyclopentenedithiocarboxylates, salicylidene- imidazoles, and salicylidene-thiosa licylidene-1,3-propanediamine are reported.

Name : **Prof . Ahmed Ahmed Soliman**

Dep. : **Chemistry**

Title : **Synthesis, Structure, Spectroscopic and Magnetic Characterization of A Novel Spin-Crossover Iron(II) Complex with 1-Cyclopropyltetrazole Ligands**

Ahmed A. Solimana, Mohamed M. Khattabb, Michael Reissnerc, Peter Weinbergerd, Franz Wernerd and Wolfgang Linertd

Journal : **Inorganica Chimica Acta**

ISSN : 0020-1693 **Impact Factor :** 1.674

Abstract :

For the first time a 1-cyclopropyl substituted tetrazole (C3tz) has been used as a potential ligand for iron(II) spin-transition complexes. The complexation of 1-cyclopropyltetrazol with iron(II) tetrafluoroborate yielded a fine powdered product of [Fe(C3tz)6](BF4)2 being poorly soluble in most common solvents. Single crystals of complex were grown in situ from a solution of ligand and iron(II) hexafluorophosphate, which yielded a hexagonal prismatic crystalline product of [Fe(C3tz)6](PF6)2. A comparison of XRPD data of the homologues [Fe(C3tz)6](BF4)2 and [Fe(C3tz)6](PF6)2 proves them to be homeotypic. The thermally induced spin-crossover phenomenon of [Fe(C3tz)6](BF4)2 complex shows very abrupt spin transitions, with a spin-crossover temperature T1/2 180 K which is found to be 50 K above the T1/2 of all known iron(II) complexes with n-alkyltetrazoles as ligands. The T1/2 was determined by temperature-dependent 57Fe-Mossbauer, far FT-IR and UV–Vis–NIR spectroscopy as well as temperature dependent magnetic susceptibility measurements (SQUID).

Name : **Prof . Ahmed Ahmed Soliman**

Dep. : **Chemistry**

Title : **Spectral and Thermal Studies on Ruthenium Carbonyl Complexes with 5-Trifluoromethyl-2,4-Dihydropyrazol-3-One Ligands**

Ahmed Ahmed Soliman

Journal : **Spectrochimica Acta**

ISSN : 1386-1425 **Impact Factor :** 1.27

Abstract :

Reactions of the cluster compound [Ru3(CO)12] with 5-trifluoromethyl-2,4 di-hydropyrazol-3-one(HL1),4-(2,4-dichlorophenylhydrazono)-5-trifluoro- methyl-2,4-dihydropyrazol-3-one (H2L2), 4-(3-fluorophenylhydrazono)-5-trifluorometh yl-2,4-dihydropyrazol-3-one (H2L3), 4-(3-trifuoloromethyl-phenylhydrazono)-5-trifluoromethyl-2,4-dihydropyrazol-3-one (H2L4) and 4-(3-nitrophenylhydrazono)-5-trifluoromethyl-2,4-dihydropyrazol-3-one (H2L5) have been carried out in benzene and under reduced pressure. The structures of the isolated complexes were elucidated using elemental analyses, IR, UV–vis, mass and NMR spectroscopy. All the complexes are diamagnetic and have trigonal bipyramidal structures with general formulae [Ru(CO)4(HL1)] and [Ru(CO)3(H2L2–5)]. The thermal decompositions of the complexes were studied in correlation with the mass spectral fragmentation patterns.

Keywords :

Ruthenium; Pyrazolone derivatives; IR spectra; UV–vis; NMR; Mass; Thermal analysis

Name : **Dr . Ahmed FahmyYoussef**

Dep. : **Chemistry**

Title : **Potentiometric Batch and Flow Injection Analysis of Betaine Hydrochloride**

Sayed S. BADAWY, Ahmed Fahmy Ahme Youssef and Ali A. Mutair

Journal : **Annali di Chimica**

ISSN : 0003-4592 **Impact Factor :** 0.516

Abstract :

Novel PVC membrane electrodes for the determination of betaine ion based on the formation of betaine tetraphenylborate (Be-TPB) and betaine- phosphotungstate (Be-PT) ion-exchangers as electroactive materials are described. The sensors show a fast, stable, near Nernstian response for 6.92 × 10-6 to 7.94 × 10-3 M and 1.0 × 10-4 to 1.0 × 10-2 M betaine hydrochloride (Be.Cl) in case of Be-TPB electrode applying batch and flow injection analysis (FIA), respectively, and 2.95 ×10-5 to 2.26 × 10-3 M and 3.16 × 10-5 to 1.0 × 10-2 M in case of Be-PT electrode for batch and FIA electrodes, respectively, at 25 °C over the pH range of 3.5-10 with a cationic slope of 60.2 and 59.1 mV decade-1 and a fast potential response of ≤ 15 s. The lower detection limits are 7.94 × 10-6 and 3.18 × 10-5 M Be.Cl for Be-TPB and Be-PT electrodes, respectively. Selectivity coefficient data for some common inorganic cations, sugars, amino acids and the components other than betaine, of the mixed drug investigated show negligible interference. The electrodes have been applied to the direct potentiometric determination of betaine hydrochloride in water and in a pharmaceutical preparation under batch and FIA conditions. Potentiometric titrations of Be.Cl with NaTPB and PTA as titrants were monitored with the developed betaine electrodes as an end point indicator electrode. The determination of Be.Cl shows an average recovery of 100.8 % with mean relative standard deviation of 0.61 %. The effect of temperature on the electrodes was also studied.

Keywords :

Membrane Electrodes Betaine Hydrochloride Flow Injection Analysis NaTPB

Name : **Prof . Ahmed Galal Helmy**

Dep. : **Chemistry**

Title : **Hybrid Organic/Inorganic Films of Conducting Polymers Modified with Phthalocyanines. II. EIS Studies and Film Characterization**

Ahmed Galal Helmy, Soher A. Darwish and Rasha A. Ahmed

Journal : **Solid State Electrochem**

ISSN : 1432-8488 **Impact Factor :** 1.542

Abstract :

Conducting polymers were modified with Cu-phthalocyanine or Co-phthalocyanine embedded in a sol–gel matrix. The resulting films were characterized using electrochemical impedance spectroscopy, Fourier transform infrared spectroscopy and scanning electron microscopy. Electrochemical impedance spectroscopy data showed that the application of the sol–gel layer to the conductive polymer caused a noticeable increase in the impedance of the film across the frequency ranges studied. The hydrophobic character of the film was greatly influenced by the sol–gel and caused an increase in its capacitance. A modified 'Randles' equivalent cell was used to correlate the electrochemical parameters of the films. Elemental analysis and infrared data confirmed the presence of the phthalocyanine moieties in the film and the empirical formula of the film was estimated. The surface morphology of the sol–gel-modified conducting polymer was distinctly amorphous compared to the poly(3-methyl thiophene).

Keywords :

Conducting polymers; Metal–phthalocyanines; Hybrid organic/inorganic composites; EIS; FTIR; SEM.

Name : **Prof . Ahmed Galal Helmy**

Dep. : **Chemistry**

Title : **Hybrid Organic/Inorganic Film of Conducting Polymers Modifie with Phthalocyanines. I-Film Preparation and Voltammetric Studies**

Ahmed Galal Helmy, Soher A. Darwish and Rasha A. Ahmed

Journal : **Solid State Electrochem**

ISSN : 1432-8488 **Impact Factor :** 1.542

Abstract :

Conducting polymers were deposited on the surface of platinum and glassy carbon electrodes. The monomers used were N-methyl pyrrole and 3-methyl thiophene. The electrochemical synthesis of the polymer was achieved using constant applied potential or cyclic polarization techniques in acetonitrile as a solvent and tetraalkyl ammonium salts as supporting electrolyte. The resulting conducting polymeric film was modified with an inorganic metal complex, namely, Cu–phthalocyanine or Co–phthalocyanine. Two different approaches were adopted for the modification: (1) the first was to directly apply the metal–phthalocyanine layer on the surface of the polymer, and (2) the second was by the inclusion of the metal–phthalocyanine in a sol–gel matrix that was in turn applied to the conducting polymer film. In the first part of this work, we studied the effect of changing the type of polymer matrix and the central metal of the inorganic complex on the electrochemical behavior of the resulting film. We also found that changing the method of metal-phthalocyanine application to the polymer film affected the electrochemical response and kinetics at the electrode surface. The new electrode was tested for the reduction of hydrogen peroxide and showed better conversion efficiency compared to conventional surfaces, which suggests its use in fuel cell applications.

Keywords :

Conducting polymers; Metal–phthalocyanines; Hybrid organic/inorganic composites; Voltammetry; Fuel cells

Name : **Prof . Ashraf Abdel-Daym Abbas**

Dep. : **Chemistry**

Title : **A convenient Synthesis of Thiamacrocyclic Dilactams**

Ashraf Abdel-Daym Abbas and Adel S. Girgs

Journal : **Heteroatom Chemistry**

ISSN : 1042-7163 **Impact Factor :** 0.838

Abstract :

A convenient synthesis of 26-28 membered thiamacrocyclic dilactams 8 was achieved via base-catalyzed condensation reaction of bis 2-cyanoacetamides 4 with dialdehyde derivatives 7. The reaction was assumed to be geometrically stereoselective affording E, E '-configuration as the only isolable isomer. N, N '-[Alkanediylbis(thia-2,1-phenylene)]bis[2-cyanoacetamides] 4 were obtained through reaction of cyanoacetic acid with the corresponding diamine hydrochlorides 3.

Keywords :

Macrocycles; Bis 2-cyanoacetamides; Bisbenzenamines; Bisbenzaldehydes

Name : **Prof . Ashraf Abdel-Daym Abbas**

Dep. : **Chemistry**

Title : **Synthesis of Mixed-donor Azaoxathia Macrocyclic Tetraamides, Acyclic Polyether di/and Tetraamides and Their C Pivot Lariat Derivatives**

Ashraf Abdel-Daym Abbas

Journal : **Heterocyclic. Chem**

ISSN : 0022-152X **Impact Factor :** 0.776

Abstract :

The macrocyclic tetraamides 11a-e and 15-hydroxy macrocyclic tetraamides 23a-c were prepared in good yields by the nucleophilic reaction of the potassium salts of the bis-phenoles 10a-c with the appropriate dihalo compounds 5a-d and 15. Moreover, the acyclic diamides 7, 9, 17-21 and bis-acyclic tetraamide 22 were obtained in high yields by the reaction of the appropriate dichloro compounds with different phenoxides and secondary amines. Acylation of 23a-c with different acid chlorides gave the corresponding esters 24a-c. Compounds 24a-c reacted with different secondary amines to afford the corresponding novel lariat macrocycles 25a-d in high yields.

Keywords :

Tetraamides; Acyclic polyether; C Pivot lariat derivatives

International Publications Awards
Cairo University

Name : **Prof . Azza Abdel Wahab Shokry**

Dep. : **Chemistry**

Title : **Kinetics and Mechanism of the Substitution Behaviour of Pd(II) Piperazine Complexes with Different Biologically Relevant Nucleophiles**

Azza Abd El-Wahab Shoukry, Malgorzata Brindellb and Rudi van Eldik

Journal : **Dalton Transactions**

ISSN : 1477-9226 **Impact Factor :** 3.012

Abstract :

The interaction of the palladium(II) complex [Pd(Pip)(H2O)2]2+, where Pip is piperazine, with a series of biologically relevant nucleophiles including guanosine-5_-monophosphate, L-methionine and thiourea was studied under pseudo-first-order conditions as a function of nucleophile concentration and temperature, using UV-Vis spectrophotometric and stopped-flow techniques. The reactions were found to occur in two subsequent steps. For the sulfur donor containing nucleophiles thiourea and L-methionine, a third reaction step, the displacement of the labilized amine, as a result of the strong trans-effect of S-donor ligands, was observed. The activation parameters for all reactions studied suggest an associative substitution mechanism.

International Publications Awards
Cairo University

Name : **Prof . Azza Abdel Wahab Shokry**

Dep. : **Chemistry**

Title : **Kinetics and Echanism of The Reduction of (ImH) [trans-RuCl4(dmso)(Im)] by corbic Acid in Acidic Aqueous Solution**

Azza Abd El-Wahab Shoukry, Grazyna Stochel and Rudi van Eldik

Journal : **Biol. Inorg. Chem.**

ISSN : 0949-8257 **Impact Factor :** 3.303

Abstract :

A systematic study of the reduction of (ImH) [trans-RuCl4(dmso)(Im)] (NAMI-A; dmso is dimethyl sulfoxide, Im is imidazole), a promising antimetastasing agent entering phase II clinical trial, by L-ascorbic acid is reported. The rapid reduction of trans-[RuIIICl4(dmso)(Im)]– results in formation of trans-[RuIICl4(dmso)(Im)]2– in acidic medium (pH = 5.0) and is followed by successive dissociation of the chloride ligands, which cannot be suppressed even in the presence of a large excess of chloride ions. The reduction of NAMI-A strongly depends on pH and is accelerated on increasing the pH. Over the small pH range 4.9–5.1, the reaction is quite pH-independent and the influence of temperature and pressure on the reaction could be studied. On the basis of the reported activation parameters and other experimental data, it is suggested that the redox process follows an outer-sphere electron transfer mechanism. A small contribution from a parallel reaction ascribed to inner-sphere reduction of aqua derivatives of NAMI-A, was found to be favored by lower concentrations of the NAMI-A complex and higher temperature. In the absence of an excess of chloride ions, the reduction process is catalyzed by the Ru(II) products being formed. The reduction of NAMI-A is also catalyzed by Cu(II) ions and the apparent catalytic rate constant was found to be 1.5 x 106 M–2 s–1 at 25 □C.

International Publications Awards
Cairo University

Name : **Prof . Azza Mohamed Abdel-Fattah**

Dep. : **Chemistry**

Title : **A Novel Synthesis of Pyridine-2(1H)-thione, Pyrazolo[3,4-b]pyridine, Pyrido[2 ,3 :3,4]pyr azolo[1,5-a]pyrimidine, Thieno[2,3-b]pyrdine, and Pyrido [3 ,2 4,5] thieno[3,2-d]pyrimidine DerivativesContaining a Naphthyl Moiety**

Azza Mohamed Abdel Fattah, Mohamed A. A. Elneairy and Mohamed A. M. Gad-Elkareem

Journal : **Phosphorus, Sulfur, and Silicon**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

6-Amino-4-naphthyl-2-thioxo-1,2-dihydropyridine-3,5-dicarbonitriles 3a,b were synthesized from the reaction of naphthaldehydes 1a,b and cyanothioacetamide (2). Compounds 3a,b were taken as starting materials for the synthesis of pyrazolo[3,4-b]pyridine 7a,b, and 8a, Pyrido-[2 ,3 : 3,4]pyrazolo[1,5-a]pyrimidine 9a,b; thieno[2,3-b]pyridine 16a–d, 18a,b, 21a–d, 24a,b, and 25a; and pyrido[3′,2′:4,5]thieno[3,2-d]pyrimidine 17a,b derivatives through their reactions with the corresponding reagents. All structures of the newly synthesized hetero- cyclic compounds were established on the basis of IR, 1 H NMR, 13 C NMR, mass spectra, and elemental analyses.

Keywords :

Pyridine-2(1H)-thiones;pyrido[2 ,3 :3,4]pyrazolo-[1,5-a]pyrimidine;pyrido[3,2:4,5]thieno[3,2-d]pyrimidine; Thieno[2,3-b]pyridine

International Publications Awards
Cairo University

Name : **Prof . Azza Mohamed Abdel-Fattah**

Dep. : **Chemistry**

Title : **Pyrazolo[3,4-B]Pyridine in Heterocyclic Synthesis: Synthesis of New Pyrazolo[3,4-B]Pyridines, Imidazo[1´,2´: 1,5]Pyrazolo-[3,4-B]Pyridinesand Pyrido[2´, 3´:3,4]Pyrazolo[1,5-A]Pyrimidines**

Mohamed A. M. Gad-Elkareem, Azza Mohamed Abdel-Fattahb and Mohamed A. A. Elneairy

Journal : **Can. J. Chem**

ISSN : 0008-4042 **Impact Factor :** 1.153

Abstract :

Pyrazolo[3,4-b]pyridine derivatives 7 and 9 were synthesized via the reaction of 3-amino-1H-pyrazolo[3,4-b]pyridine derivative 2 with ω-bromoacetophenones. Reaction of 7 and 9 with Ac20 afforded the imidazo[1,2:1,5]pyrazolo[3,4-b]pyridine derivative 8 and pyrazolo[3,4-b]pyridine derivative 10 respectively. Reaction of 2 with chloroacetonitrile followed by DMF-DMA gave imidazo[1,2:1,5]pyrazolo[3,4-b]pyridines 4 and 5 respectively. Acetylacetone and 1,1-dicyano-2,2-dimethylthioethene were reacted with 2 afforded the pyrido[2,3:3,4]pyrazolo[1,5-a]pyrimidines 11 and 14 respectively. Also 2 reacted with DMF-DMA yielded the formamidine 15 which intern, reacted with active methylene reagents yielded the corresponding pyrido-[2,3:3,4]pyrazolo[1,5-a]pyrimidines 18 and 23a-d.

Keywords :

1H-Pyrazolo[3,4-B]Pyridines; Imidazo[1,2:1,5]Pyrazolo[3,4-B]Pyridines And Pyrido[2,3:3,4]Pyrazolo[1,5-A]Pyrimidines.

Name : **Prof . Badawy Abu-Ibrahim**

Dep. : **Physics**

Title : **Systematic Analysis of Reaction Cross Sections of Carbon Isotopes**

W. Horiuchi, Y. Suzuki, Badawy Abu-Ibrahim and A. Kohama

Journal : **Physical Review**

ISSN : 0556-2813 **Impact Factor :** 3.327

Abstract :

We systematically analyze the total reaction cross sections of the carbon isotopes with N=6-16 on a 12C target for wide range of incident energy. The internal structure of the carbon isotopes are described by a Slater determinant generated from a phenomenological mean-field potential, which fairly well reproduces the ground state properties for most of the isotopes.
We need separate studies for not only odd nuclei but also 16C and 22C. For the calculations of the cross sections, we take two schemes; one is the Glauber approximation, and the other is the eikonal model using a global optical potential.
We find that both schemes reasonably well reproduce the cross sections of 12C, 13C and 16C on 12C
which are available at low and high incident energies. The enhanced reaction cross section of 15C observed at low energy remains to be understood. We also find a consistent parametrization of the nucleon-nucleon scattering amplitude, differently from previous ones. Finally, we predict the total reaction cross section of 22C on 12C.

Name : **Prof . Ebtsam Ateia**

Dep. : **Physics**

Title : **The Effect of Ti4+Ions and Gamma Radiation on the Structure and Electrical Properties of Mg Ferrite.**

Ebtsam Ateia, M.A.Ahmed and A.K.El-Aziz

Journal : **Mater Sci**

ISSN : 0022-2461 **Impact Factor :** 0.999

Abstract :

Ferrite samples of the general formula Mg1+xTixEryFe2-2x-yO4; 0.1□x□0.9, y=0.025 were prepared using the standared ceramic method. The final sintering temperature was 1200oC with heating rate 4 oC/min during 100hr. X-ray diffraction analysis was carried out to assure the formation of the spinel structure. The effect of Ti4+ ion concentration on the structural and the electrical properties of the investigated samples is studied. It change the iron ion concentration from 2 to 2-2x thereby decreasing the number of ferrous ions on octahedral sites, with a consequent decrease the dielectric constant. The most important result of irradiation on the electrical properties is the change of the ratio on the octahedral site leading to increase the conductivity as well as the dielectric constant. The variation of the thermoelectric power with a temperature is performed, the common feature of all compositions is the fluctuation of Seebeck coefficient between positive and negative over the whole range of temperature. This indicates that the charge carriers are electrons and holes, depending on both the temperature range and the additive in the ferrite samples.

Keywords :

Name : **Prof . Ebtsam Ateia**

Dep. : **Physics**

Title : **Effect of Rare Earth Radius and Concentration on the Structural and Transport properties of Doped Mn–Zn Ferrite**

Ebtesam Ateia, M.A.Ahmed and A.K.El-Aziz

Journal : **Magnetism and Magnetic Materials**

ISSN : 0304-8851 **Impact Factor :** 1.212

Abstract :

Dielectric constant (□'), ac conductivity and Seebeck coefficient have been measured for the ferrite samples of the general formula Mn0.5Zn0.5RyFe2O4; where R=Dy, Gd, Sm, Ce and La, prepared by standard ceramic technique and sintered at 1200oC with a heating rate 4oC/min. X-ray diffractograms show that all samples posses the spinel structure with the appearance of small peaks representing secondary phases . There is a lowering in the porosity starting after Sm-doped samples due to the presence of the secondary phases which limits the grain growth. Due to seebeck measurements the Mn-Zn ferrite doped with the rare earth has been classified as P-type semiconductors. It is possible to increase the electrical resistivity by using a small quantity of Dy3+ ions substitutions owing to the structural heterogeneity generated by the insulating intergranular layers. The isolation of the grains is the most promising approaches for further reduction in the eddy current losses at the operating frequencies.

Keywords :

Ferrite; Rare earth; Sintering catalyst; Porosity; Diffraction patterns.

International Publications Awards
Cairo University

Name : **Prof . Eid Hasan Doha**

Dep. : **Mathematics**

Title : **Efficient Spectral-Galerkin Algorithms for Direct Solution of the Integrated Forms of Second-Order Equations Using Ultraspherical Polynomials**

Eid Hasan Doha and A.H.Bhrawy

Journal : **Anzaim**

ISSN : 1446-1811 **Impact Factor :** 0.282

Abstract :

It is well known that spectral methods (tau, Galerkin, collocation) have a condition number of O . N 4 / where N is the number of retained modes of polynomial approximations. This paper presents some efficient spectral algorithms, which have a condition number of O . N 2 /, based on the ultraspherical-Galerkin methods for the integrated forms of second-order elliptic equations in one and two space variables. The key to the efficiency of these algorithms is to construct appropriate base functions, which lead to systems with specially structured matrices that can be efficiently inverted. The complexities of the algorithms are a small multiple of N d +1 operations for a d -dimensional domain with . N − 1/d unknowns, while the convergence rates of the algorithms are exponentials with smooth solutions.

Keywords :

Spectral-Galerkin method; ultraspherical polynomials; Poisson and Helmholtz equations.

Name : **Dr . El-Sayed Mohamed Abdel-Hamid**

Dep. : **Astronomy & Meteorology**

Title : **Human Climates of Egypt**

S. M. Robaa and H. M. Hasanean

Journal : **Climatology**

ISSN : 0899-8418 **Impact Factor :** 2.332

Abstract :

The clo index values for different wear have been estimated for daytime and nighttime for different months of the year in order to investigate human climates in Egypt. The clo values may also be used as a good guide to gauge the thermal human comfort under different atmospheric conditions and also express the resistance to heat transfer by clothing, and are expressed relative to the units of thermal insulation. A complete set of measurements for air temperature and cloud amount in addition to wind speed for the daytime (1200 GMT) and nighttime (0000 GMT) hours for the period 1991–2002 at 40 meteorological stations in Egypt have been used. The percentage area (%) requiring different weather wear during daytime and nighttime for all the months of the year have been determined. The study revealed that the whole country is characterized by the requirement of very cold weather wear during winter nighttime while 72% of the area of the country requires tropical weather wear during summer daytime. Only 71% of the area of the country requires comfortable weather wear during summer nighttime while there is no area requiring comfortable weather wear during winter nighttime. Latitudinal gradient of clo values was observed during all months of the year. Maximum latitudinal gradients of clo values during the daytime were found for the months of April and May. The clo classification in relation to climate has been done for Egypt.

International Publications Awards
Cairo University

Name : **Prof . El-Sayed Mohamed Abdel-Rahman**

Dep. : **Geophysics**

Title : **Separation of Anomalous Aerial Radiospectrometric Zones Using Least-Squares Method on A Sample Area in Egypt**

El-Sayed Mohamd Abdelrahman, Ahmed A. Ammar Hamdy I. E. Hassanein and Khaled S. Soliman

Journal : **The Arabian Journal for Science and Engineering**

ISSN : 1319-8025 **Impact Factor :** 0.082

Abstract :

This study deals with using the least-squares method (LSM) to separate the absolute aeroradiospectrometric maps (T.C., 40K, eU, and eTh) into highly radioactive zones and the normal radioactive background of the host rocks. The Gabal Um-Rabul area, selected for testing the efficiency of the present method, lies in the northern part of the Eastern Desert of Egypt and is covered mainly by Precambrian basement rocks, which are unconformably overlain by Phanerozoic sedimentary successions.

In the present study, the least-squares (first-order) residual anomaly analysis method was used and contour maps were drawn to delineate the significant aeroradiospectrometric anomalies over the study area. It was found that, the least-squares first-order regional and residual total-count (T.C.) and the three absolute radioelements (K, eU, & eTh) maps of the study area show a high degree of coincidence with the anomalous maps constructed by the conventional statistical methods in terms of the locations, intensities, and trends of anomalous zones. Therefore, it is recommended to apply the least squares method for locating radioelements anomalous zones in any surveyed area.

Keywords :

Least-Square Method (LSM); Aeroradiospectrometry; Gabal Um Rabu; Geological setting; Normal probability plot; Regional residual separation;

Northern Eastern Desert of Egypt.

Name : **Prof . El-Sayed Mohamed Abdel-Rahman**

Dep. : **Geophysics**

Title : **A New Least-Squares Minimization Approach to Depth and Shape Determination from Magnetic Data**

El-Sayed Mohamd Abdelrahman, Eid. R. Abo-Ezz, Khalid S. Essa, T.M. El-Araby and Khaled S. Soliman

Journal : **Geophysical Prospecting**

ISSN : 0016-8025 **Impact Factor :** 1.046

Abstract :

We have developed a least-squares minimization approach to depth determination using numerical second horizontal derivative anomalies obtained from magnetic data with filters of successive window lengths (graticule spacings). The problem of depth determination from second-derivative magnetic anomalies has been transformed into finding a solution to a non-linear equation of the form, f (z) = 0. Formulae have been derived for a sphere, a horizontal cylinder, a dike and a geological contact. Procedures are also formulated to estimate the magnetic angle and the amplitude coefficient.We have also developed a simple method to define simultaneously the shape (shape factor) and the depth of a buried structure from magnetic data. The method is based on computing the variance of depths determined from all second-derivative anomaly profiles using the above method. The variance is considered a criterion for determining the correct shape and depth of the buried structure. When the correct shape factor is used, the variance of depths is less than the variances computed using incorrect shape factors The method is applied to synthetic data with and without random errors, com- plicated regionals, and interference from neighbouring magnetic rocks. Finally, the method is tested on a field example from India. In all the cases examined, the depth and the shape parameters are found to be in good agreement with the actual parameters

International Publications Awards
Cairo University

Name : **Prof . El-Sayed Mohamed Abdel-Rahman**

Dep. : **Geophysics**

Title : **A Least-squares Window Curves Method for Interpretation of Magnetic Anomalies Caused by Dipping Dikes**

El-Sayed Mohamed Abd-El-Rahman, E. R. Abo-Ezz, K. S. Soliman, T. M. El-Araby and K. S. Essa

Journal : **Pure and Appl. Geophys**

ISSN : 0033-4553 **Impact Factor :** 1.171

Abstract :

We have developed a least-squares method to determine simultaneously the depth and the width of a buried thick dipping dike from residualized magnetic data using filters of successive window lengths. The method involves using a relationship between the depth and the half-width of the source and a combination of windowed observations. The relationship represents a family of curves (window curves). For a fixed window length, the depth is determined for each half-width value by solving one nonlinear equation of the form $f(z) = 0$ using the least-squares method. The computed depths are plotted against the width values representing a continuous curve. The solution for the depth and the width of the buried dike is read at the common intersection of the window curves. The method involves using a dike model convolved with the same moving average filter as applied to the observed data. As a result, this method can be applied to residuals as well as to measured magnetic data. Procedures are also formulated to estimate the amplitude coefficient and the index parameter. The method is applied to theoretical data with and without random errors. The validity of the method is tested on airborne magnetic data from Canada and on a vertical component magnetic anomaly from Turkey. In all cases examined, the model parameters obtained are in good agreement with the actual ones and with those given in the published literature.

Keywords :

Magnetic dipping dike; Depth and width solutions; Least- squares method; Window curves method

International Publications Awards
Cairo University

Name : **Prof . El-Sayed Mohamed Abdel-Rahman**

Dep. : **Geophysics**

Title : **Least-squares Minimization Approaches to Interpret Total Magnetic Anomalies Due to Spheres**

El-Sayed Mohamed Abd-El-Rahman, T. M. El-Araby, K. S. Soliman, K. S. Essa and E. R. Abo-Ezz

Journal : **Pure and appl. Geophys**

ISSN : 0033-4553 **Impact Factor :** 1.171

Abstract :

We have developed three different least-squares approaches to determine successively: the depth, magnetic angle, and amplitude coefficient of a buried sphere from a total magnetic anomaly. By defining the anomaly value at the origin and the nearest zero-anomaly distance from the origin on the profile, the problem of depth determination is transformed into the problem of finding a solution of a nonlinear equation of the form f(z)=0. Knowing the depth and applying the least-squares method, the magnetic angle and amplitude coefficient are determined using two simple linear equations. In this way, the depth, magnetic angle, and amplitude coefficient are determined individually from all observed total magnetic data. The method is applied to synthetic examples with and without random errors and tested on a field example from Senegal, West Africa. In all cases, the depth solutions are in good agreement with the actual ones.

Keywords :

Magnetic interpretation; Sphere model; Least-squares method

Name : **Prof . Eman Aly Ragab**

Dep. : **Chemistry**

Title : **Synthesis and Biological Evaluation of New 3-Substituted Indole Derivatives as Potential Anti-Inflammatory and Analgesic Agents**

Mohamed A.A. Radwan, Eman Aly Ragab, Nermien M. Sabrya and Siham M. El-Shenawy

Journal : **Bioorganic & Medicinal Chemistry**

ISSN : 0968-0896 **Impact Factor :** 2.624

Abstract :

Treatment of 3-cyanoacetyl indole 1 with the diazonium salts of 3-phenyl-5-aminopyrazole and 2-aminobenzimidazole afforded the corresponding hydrazones 4 and 5. 3-Cyanoacetyl indole reacted with phenylisothiocyanate to give the corresponding thioacetanilide derivative 7. Treatment of 7 with hydrazonoyl chlorides afforded the corresponding 1,3,4-thiadiazole derivatives 8a–f and 9. Also, the thioacetanilide reacted with α-haloketones to afford thiophene derivatives 10a,b (tenidap analogues), or thiazolidin-4-one derivative 11. The newly synthesized compounds were found to possess potential anti-inflammatory and analgesic activities

Name : **Prof . Fakiha El-Taieb Heakal**

Dep. : **Chemistry**

Title : **Stability of Spontaneous Passive Flms on High Strength Mo-Containing Stainless Steels in Aqueous Solutions**

F. El-Taib Heakal, A.A. Ghoneim and A.M. Fekry

Journal : **Applied Electrochemistry**

ISSN : 0021-891X **Impact Factor :** 1.409

Abstract :

The stability of naturally grown passive films on some Mo-containing stainless steel specimens was examined in aerated and deaerated universal buffer solutions with different pH (2–12) as well as in sulphate and chloride solutions. Open circuit potential (Eoc) and electrochemical impedance spectroscopy (EIS) were used as measuring techniques. In all cases, Eoc shifts towards less negative values with time until the potential reaches its steady-state (Ess) value. The Ess value is found to be more positive with decrease in solution pH or increase in Mo content in the alloy and becomes less positive in deaerated buffer solutions. Also, the thickening rate of the outer layer for the duplex passive film increases with increasing extent of Mo in the steel substrate or pH of the test solution. For a) than in SO2) given alloy, Ess decreases linearly with the anion concentration (C), and is always more positive in Clmedia for C ‡ 0.05 M. Analysis of the EIS data showed that the total resistance (RT) of the passive film has higher values in aerated solutions, and is generally lower in basic solutions. This indicates that lower solution pH favours the formation of oxide films offering better protection. Furthermore, the higher values of RT in Na2SO4 solutions suggest the formation of more stable passive films in sulphate than in chloride solutions. This is discussed on the basis of the relative degree of anion incorporation into the passive films.

Keywords :

Chloride; CPE; EIS; Mo-Containing Steels; Passive films; Ph; Spontaneous Growth; Sulphate

Name : **Prof . Faten Ahmed Nour El-Dien**

Dep. : **Chemistry**

Title : **Ftir, Magnetic, Mass Spectral, XRD and Thermal Studies of Metal Chelates of Tenoxicam.**

M.A. Zayed, Faten A. Nour El-Dien, Gehad G. Mohamed and Nadia E.A. El-Gamel

Journal : **Molecular Structure**

ISSN : 0022-2860 **Impact Factor :** 1.495

Abstract :

Metal chelates of anti-inflammatory drug, tenoxicam (Ten), are synthesized and characterized using elemental analyses, IR, solid reflectance, magnetic, mass spectra, thermal analyses (TGA and DTA) and X-ray powder diffraction techniques. The chelates are found to have the general formulae [M(H2L)2(H2O)x](A)2□yH2O (where H2L = neutral Ten, A = Cl in case of Ni(II) and Co(II) or AcO in case of Cu(II) and Zn(II) ions, x = 0–2 and y = 0–2.5) and [M(H2L)3](A)z□yH2O (A = SO4 in case of Fe(II) ion (z = 1) or Cl in case of Fe(III) (z = 3) and y = 0–4). IR spectra reveal that Ten behaves as a neutral bidentate ligand coordinated to the metal ions through the pyridyl-N and carbonyl-O of the amide moiety. The solid reflectance spectra and magnetic moment measurements reveal that these chelates have tetrahedral, square planar and octahedral geometrical structures. Mass spectra are also used to confirm the proposed formulae and the possible fragments resulted from fragmentation of Ten and its Zn(II) and Cu(II) chelates are suggested. The thermal behaviour of the chelates (TG/DTG, DTA) are discussed in detailed manner and revealed that water molecules of crystallization together with anions are removed in the first and second steps while the Ten molecules are removed in the subsequent steps. Different thermodynamic parameters are evaluated and the relative thermal stabilities of the complexes are discussed. X-ray powder diffraction patterns are used to indicate the polymorphic form of Ten and if the complexes have molecular similarity with respect to type of coordination.

Keywords :

Tenoxicam; Metal chelates; IR; Mass; TGA and DTA; Magnetic; Reflectance spectra and XRD

International Publications Awards
Cairo University

Name : **Prof . Faten Ahmed Nour El-Dien**

Dep. : **Chemistry**

Title : **Utility of 7,7,8,8-tetracyanoquinodimethane charge transfer reagent for the spectrophotometric determination of trazodone, amineptine and amitriptyline hydrochlorides**

Gehad G. Mohamed, Faten A.F. Nour El-Dien, Nehad A. Mohamed

Journal : **Spectrochimica Acta Part A**

ISSN : 1386-1425 **Impact Factor :** 1.27

Abstract :

A simple and rapid spectrophotometric method has been developed for the determination of tricyclic anti-depressant drugs such as trazodone (TZH), amineptine (APH) and amitriptyline (ATPH) hydrochlorides in pure form and in different pharmaceutical preparations. The charge transfer (CT) reaction between TZH, APH and ATPH as electron donors and TCNQ as electron acceptor was utilized for their spectrophotometric determination. The optimum experimental conditions, like time, temperature, stoichiometry, solvents, for the CT complex formation are established. The method permits the determination of TZH, APH and ATPH over a concentration range of 10–400, 10–440 and 10–300 _gml−1, respectively. The sensitivity (S) is found to be 0.09, 0.087 and 0.069 g cm−2 for TZH, APH and ATPH, respectively. The SD values are found to be 0.146–0.293, 0.154–0.285 and 0.091–0.212 and RSD values are 0.142–1.92, 0.297–1.92 and 0.212–0.915 for TZH, APH and ATPH, respectively. The low values of the relative standard deviation indicate the high accuracy and precision of the method. The mean recovery values obtained together with a high correlation coefficient values, amount in the range 98–101.5, 98.7–102.9 and 93–101.9 for TZH, APH and ATPH, respectively. The method is applicable for the assay of the investigated drugs in different dosage forms and the results are in good agreement with those obtained by the official method.

Keywords :

Spectrophotometric; THZ; APH and ATPH Determination; TCNQ; Pharmaceutical Preparations

Name : **Prof . Fathy Mohamed Abd-Elrazek**

Dep. : **Chemistry**

Title : **A Novel Synthesis of some New Benzoyl-substituted Heterocycles from 2- Benzoyl-3-phenylpent-2-ene-l ,S-dinitrile**

Fathy M. Abdelrazek , Said A. Ghozlan and Farid A. Michael

Journal : **Heterocyclic Chem**

ISSN : 0022-152X **Impact Factor :** 0.776

Abstract :

Benzoyl-3-phenylpent-2-cnc-I.5-dlnitrile 1 undergoes bromination with N-bromosuccinimide (NBS) to afford the bromo derivative 2u. This bromo derivative undergoes reactions with sodium hydrogen sulfide, ethyl thioglycol1atc, hydroxylamine hydrochloride, hydrazines, cyanoacetamide, cyanacetohydra¬zide and urea derivatives to afford the thiophene 4, 4H-thiopyran 6, 4H-I,2-oxazine 8, 4H-pyridazines 10a,b, the pyridine 15, pyrrolo[1,2-b]pyridazine 17 and the N-substituted-pyrrole derivatives 19a.c respectively.

International Publications Awards
Cairo University

Name : **Prof . Fathy Mohamed Abd-Elrazek**

Dep. : **Chemistry**

Title : **Synthesis and Molluscicidal Activity of New Chromene and Pyrano[2,3-c]pyrazole Derivatives**

Fathy M. Abdelrazek, Peter Metz, Olga Kataeva, Anne Jäger and Sherif F. El-Mahrouky

Journal : **Arch. Pharm. Chem. Life Sci**

ISSN : 0365-6233 **Impact Factor :** 1.076

Abstract :

The chromene derivative 4 reacts with acetic anhydride, phenylisothiocyanate and ethyl orthoformate to afford the N-acetyl derivative 6, the chromenopyrimidine 8 and the formimidate 9, respectively. 2-(1H-Indol-3-ylmethylene)-malononitrile 10b reacts with 1,3-cyclohexanedione and dimedone 11a, b to afford the 4(3-indolyl)-chromene derivatives 12a, b respectively, and with the pyrazolone derivatives 13a-d to afford the arylidene exchange derivatives 14a-c and the pyranopyrazole derivative 15, respectively. The arylidene derivatives 10a, b react also with indane-1,3-dione 16 to afford the arylidene exchange derivatives 18a, b. The molluscicidal activity of the synthesized compounds towards Biomphalaria alexandrina snails, the intermediate host of Schistosoma mansoni, was investigated and most of them showed weak to moderate activity.

Name : **Prof . Fawzy Ali Attaby**

Dep. : **Chemistry**

Title : **Synthesis, Reactions, and Biological Activity of 4(1 H-I ndol-3-yl)-2-Thioxopyridine Derivatives**

Fawzy A. Attaby, Mostafa M. Ramla and Eman M. Gouda

Journal : **Phosphorus, Sulfur and Silicon**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

2-cyanoethanthioamide reacted with 1H-indole-3-carbaldehyde to give the cor¬responding 2-cyano-3-(1H-indol-3-yl)prop-2-enethioamide in a very good yield, which in turn, reacted with 2,4-pentanedione to give 5 cetyl-1,2-dihydro¬4(1H-indol-3-yl)-6-methyl-2-thiox o-pyridine-3-carbonitrile. The synthetic potential of this product examined through its reaction with several active halogen-containing reagents, to give the corresponding thieno[2,3-b]pyridine derivatives. The data of elemental analyses as well as that of IR (cm-1), 1H NMR (δppm), and mass spectra elucidated structures of all newly synthesized hetero¬cyclic compounds. All newly synthesized heterocyclic compounds were evaluated as antibacterial and control for GST, GSH enzyme level.

Keywords :

2-Cyanoethanthioamide; 1H-Indole-3-Carbaldehyde; Prop-2-Enethioamide; 2-Thioxopyridine-3-Carbonitrile; Thieno [2,3-B] Pyridine

Name : **Prof . Fawzy Ali Attaby**

Dep. : **Chemistry**

Title : **Synthesis, Reactions, and Antiviral Activity of 6 -Amino-2 -thioxo-1 ,2 -dihydro-3,4 -bipyridine-3 ,5 -dicarbonitrile**

Fawzy A. Attaby

Journal : **Phosphorous, Sulfur and Silicon**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

Nicotinaldehyde reacted with 2-cyanoethane-thioamide to give 2-cyano-3-pyridi n-3-ylprop-2-enethio-amide, which reacted with a second mole of 2-cyano-ethanethioamide to give the corresponding 6'-amino-2'-thioxo-1',2'-dihydro-3,4'-bipyridine-3',5'-dicarbonitrile. The synthetic potentiality of this compound investigated via its reaction with several active halogen-containing reagents to afford the cor¬responding thieno[2,3-b]pyridine derivatives whose structures elucidation based on the data of elemental analyses, and IR, 1HNMR, as well as mass spectra. Cytotoxicity, anti–HSV1, anti–HAV, and MBB activities were evaluated for all newly synthesized heterocyclic compounds. Some compounds were much safer for cell culture inoculation than the other ones. On the other hand, some compounds showed promising inhibition for both HSV1 and HAV viruses and other ones exhibit a moderate inhibition for these viruses.

Keywords :

2-Cyano-3-Pyridin-3-Yl-Prop-2-Enethioamide;2-CyanoethanethioamidBipyridine-3 ,5 -Dicarbonitrile; Nicotinaldehyde; Thieno[2,3-B]Pyridinee;

Name : **Prof . Fawzy Ali Attaby**

Dep. : **Chemistry**

Title : **Synthesis, Characterization, and Antiviral Activities of Pyridopyrazolotriazines**

Fawzy A. Attaby, A. H. Elghandour, M. A. Ali and Yasser M. Ibrahem

Journal : **Phosphorus, Sulfur, and Silicon**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

A pyrazolo[3,4-b]pyridine-5-carbonitrile derivative was diazotized to give the corresponding diazonium salt, which was used as a good synthon to synthe- size pyrido[2 ,3 : 3,4]pyrazolo[5,1-c]triazines via its coupling with several active hydrogen-containing reagents, e.g., 2,4-pentandione, ethyl 3-oxo-butanoate, diethyl- malonate, malononitrile, 2-cyanoethanethioamide, and ethyl cyanoacetate. Also, it reacted with phenylisothiocyanate to afford the corresponding pyrazolo[3,4- b]pyridin-3-ylphenylthiourea derivative, which, in turn, was used for further chem- ical transformations. The data of IR, 1 H NMR, mass spectra, and chemical analyses elucidated the structures of all newly synthesized heterocyclic compounds. Cytotox- icity, anti–HSV1 and anti–HAV, and MBB activities were evaluated for all newly synthesized heterocyclic compounds.

Keywords :

2-Cyanoethanethioamide; Phenylisothiocyanate; Pyrazolo[3,4-B]Pyridine-5-Carbonitrile; Pyrazolo-[3,4-B]Pyridin-3-Ylphenylthiourea; Pyrido[2 ,3 :3,4]Pyrazolo[5,1-C]Triazines

Name : **Prof . Gamal Abdel-Nasr**

Dep. : **Physics**

Title : **Optical Spectroscopic Studies of Perylene Dye Doped in Copolymer of ST/MMA as Solar Collector**

G. M. Nasr, A. F. Mansour, R. M. Ahmed and A. H. Bassyouni

Journal : **Polymeric Materials**

ISSN : 0091-4037 **Impact Factor :** 0.34

Abstract :

Spectral characteristic of perylene dye doped in copolymer of ST=MMA was 10 studied. The changes in the optical absorption spectrum and optical parameters including the band tail width and band gap energies for the samples were investigated before and after irradiation by c-ray and also after a continuous exposure to filtered and UV radiation for 10 h. The study was extended to calculate the rate constants of photodegradation and the fluorescence quantum yield of the 15 samples.

Keywords :

Absorption spectra; Fluorescence; Gamma radiation; Perylene; Photostability

Name : **Prof . Gamal Abdel-Nasr**

Dep. : **Physics**

Title : **Electrical Properties of Gamma-Irradiated ST/MMA Copolymers**

G. M. Nasr, A. F. Mansour, R. M. Ahmed, A. H. Bassyouni

Journal : **Polymeric Materials**

ISSN : 0091-4037 **Impact Factor :** 0.34

Abstract :

Copolymer films with various concentrations of Styrene (ST) and Methylmethacrylate (MMA) were prepared by thermal polymerization method. The films were exposed to different doses of gamma radiation up to 10 Mrad. The effects of c-radiation on the electrical properties were investigated for dosimetry applications.

Keywords :

Conduction mechanism; Copolymer; Dosimeter; Gamma radiation; PMMA; PS

International Publications Awards
Cairo University

Name : **Prof . Gehad Genidy Mohamed**

Dep. : **Chemistry**

Title : **Metal Complexes of Schiff Base Derived from Sulphametrole and o-Vanilin Synthesis, Spectral, Thermal Characterization and Biological Activity**

Gehad G. Mohamed, Carmen M. Sharaby

Journal : **Spectrochimica Acta Part A**

ISSN : 1386-1425 **Impact Factor :** 1.27

Abstract :

Metal complexes of Schiff base derived from condensation of o-vanilin (3-methoxysalicylaldehyde) and sulfametrole [N1-(4-methoxy-1,2,5-thiadiazole-3-yl)sulfanilamide] (H2L) are reported and characterized based on elemental analyses, IR, 1H NMR, solid reflectance, magnetic moment, molar conductance, mass spectra, UV–vis and thermal analysis (TGA). From the elemental analyses data, the complexes were proposed to have the general formulae [M2X3(HL)(H2O)5]•yH2O (where M= Mn(II), Co(II), Ni(II), Cu(II), Zn(II) and Cd(II), X= Cl, y = 0–3); [Fe2Cl5(HL)(H2O)3]•2H2O; [(FeSO4)2(H2L)(H2O)4] and [(UO2)2(NO3)3(HL)(H2O)]•2H2O. The molar conductance data reveal that all the metal chelates were non-electrolytes. The IR spectra show that, H2L is coordinated to the metal ions in a tetradentate manner with ON and NO donor sites of the azomethine-N, phenolic-OH, enolic sulphonamide-OH and thiadiazole-N. From the magnetic and solid reflectance spectra, it is found that the geometrical structures of these complexes are octahedral. The thermal behaviour of these chelates shows that the hydrated complexes losses water molecules of hydration in the first step followed immediately by decomposition of the anions and ligand molecules in the subsequent steps. The activation thermodynamic parameters, such as, E*, ΔH*, ΔS* and_ΔG* are calculated from the DrTG curves using Coats–Redfern method. The synthesized ligand, in comparison to their metal complexes also were screened for their antibacterial activity against bacterial species, Escherichia coli, Salmonella typhi, Bacillus subtillus, Staphylococcus aureus and Fungi (Aspergillus terreus and Aspergillus flavus). The activity data show that the metal complexes to be more potent/antimicrobial than the parent Shciff base ligand against one or more microbial species.

Keywords :

Sulphametrole; o-Vanilin; Transition metal complexes; IR; 1H NMR; Conductance; Solid reflectance; Magnetic moment; Thermal analysis; Biological activity

International Publications Awards
Cairo University

Name : **Prof . Gehad Genidy Mohamed**

Dep. : **Chemistry**

Title : **Synthesis,Characterization and Thermal Studies on Metal Complexes of New Azo Compounds Derived From Sulfa Drugs**

Gehad G. Mohamed, Mohamed A.M. Gad-Elkareem

Journal : **Spectrochimica Acta Part A**

ISSN : 1386-1425 **Impact Factor :** 1.27

Abstract :

Four new azo ligands, L1 and HL2–4, of sulfa drugs have been prepared and characterized. [MX2(L1)(H2O)m]•nH2O; [(MX2)2(HL2 or HL3)(H2O)m]•nH2O and [M2X3(L4)(H2O)]•nH2O; M= Co(II), Ni(II) and Cu(II) (X = Cl) and Zn(II) (X = AcO); m= 0–4 and n = 0–3, complexes were prepared. Elemental and thermal analyses (TGA and DTA), IR, solid reflectance spectra, magnetic moment and molar conductance measurements have accomplished characterization of the complexes. The IR data reveal that HL1 and HL2–3 ligands behave as bidentate neutral ligands while HL4 ligand behaves as a bidentate monoionic ligand. They coordinated to the metal ions via the carbonyl O, enolic sulfonamide S(O)OH, pyrazole or thiazole N and azo N groups. The molar conductance data reveal that the chelates are non-electrolytes. From the solid reflectance spectra and magnetic moment data, the complexes were found to have octahedral, tetrahedral and square planar geometrical structures. The thermal behaviour of these chelates shows that the water molecules (hydrated and coordinated) and the anions are removed in a successive two steps followed immediately by decomposition of the ligand in the subsequent steps. The activation thermodynamic parameters, such as, E*, ΔH*, ΔS* and ΔG* are calculated from the TG curves applying Coats–Redfern method.

Keywords :

Sulfa drugs; Metal complexes; IR; Conductance; Solid reflectance; Magnetic moment; Thermal analysis

Name : **Prof . Hala Gamil El-Shobaky**

Dep. : **Chemistry**

Title : **Effect of Li2O and CoO-Doping of CuO/Fe2O3 System on its Surface and Catalytic Properties**

Hala G. El-Shobaky and M.M. Mokhtar

Journal : **Applied Surface Science**

ISSN : 0169-4332 **Impact Factor :** 1.436

Abstract :

Physicochemical, surface and catalytic properties of pure and doped CuO/Fe2O3 system were investigated using X-ray diffraction (XRD), energy dispersive X-ray analysis (EDX), nitrogen adsorption at 196 8C and CO-oxidation by O2 at 80–220 8C using a static method. The dopants were Li2O (2.5 mol%) and CoO (2.5 and 5 mol%). The results revealed that the increase in precalcination temperature from 400 to 600 8C and Li2O-doping of CuO/Fe2O3 system enhanced CuFe2O4 formation. However, heating both pure and doped solids at 600 8C did not lead to complete conversion of reacting oxides into CuFe2O4. The promotion effect of Li2O dopant was attributed to dissolution of some of dopant ions in the lattices of CuO and Fe2O3 with subsequent increase in the mobility of reacting cations. CoO-doping led also to the formation of mixed ferrite CoxCu1 xFe2O4. The doping process of the system investigated decreased to a large extent the crystallite size of unreacted portion of Fe2O3 in mixed solids calcined at 600 8C. This process led to a significant increase in the SBET of the treated solids. Doping CuO/Fe2O3 system with either Li2O or CoO, followed by calcination at 400 and 600 8C decreased its catalytic activity in CO-oxidation by O2. However, the activation energy of the catalyzed reaction was not much affected by doping.

Keywords :

CuFe2O4; Li2O-doping; Copercipitation; CO Oxidation; EDX; XRD

Name : **Prof . Hala Gamil El-Shobaky**

Dep. : **Chemistry**

Title : **Effect of Li2O-Doping of Nanocrystalline CoO/Fe2O3 on Isopropanol Conversion**

Hala G. El-Shobaky, Suzan A.H. Ali and Neven A. Hassan

Journal : **Materials Science and Engineering B**

ISSN : 0921-5107 **Impact Factor :** 1.331

Abstract :

The catalytic conversion of isopropanol was carried out over pure and Li2 O-doped (0.75–4.5 mol%) cobalt ferrite prepared by heating Fe/Co mixed hydroxides at 400 and 600 ◦ C. The techniques employed were XRD, N2 adsorption at −196 ◦ C and conversion of isopropanol at 200–400 ◦ C using a flow method. The results showed that Li2 O-doping and increasing the heating temperature of the system investigated from 400 to 600 ◦ C stimulated CoFe2 O4 formation also. Pure and variously doped solids were moderately crystallized CoFe2 O4 phase having a crystallite size varying between 5 and 15 nm. The SBET of various solids was found to decrease by increasing their calcination temperature and also by doping with
4.5 mol% Li2 O. However, this treatment, resulted in a significant increase in their catalytic activities which much increased by doping. The presence of 1.5 mol% Li2 O brought about an increase in the catalytic activity, measured at 300 ◦ C, of 97% and 63% for the solids being calcined at
400 and 600 ◦ C, respectively. All solids investigated behaved as dehydrogenation catalysts (having selectivities to acetone formation above 95%). The doping process did not alter the mechanism of dehydrogenation of isopropanol, but increased the concentration of active sites involved in the catalyzed reaction.

Keywords :

Dehydrogenations; Dehydration of isopropanol; Li2O-doping; Nanocrystalline CoFe2O4

Name : **Prof . Hamdy Mahmoud Hassaneen**

Dep. : **Chemistry**

Title : **Studies with 6,7-Dimethoxy-3,4-dihydroisoquinolin-1-yl-acetonitrile: Novel Syntheses of 1-Azolyl- and Pyridoisoquinolines**

Huwaida M. E. Hassaneena, Enas M. Awadb and Hamdi M. Hassaneena

Journal : **Z. Naturforsch**

ISSN : 0932-0776 **Impact Factor :** 0.825

Abstract :

The reaction of 3,4-dihydroisoquinolin-1-yl-acetonitrile with DMFDMA afforded the enaminonitrile 5. Compound 5 was reacted with 2-aminobenzimidazole to yield 4 amino-3-(dihydroisoquinolin-1-yl)-benzo[4,5]imidazo[1,2-a]pyrimidine (11) and with acetonitrile derivatives to afford pyrido[2,1-a]isoquinolines (15a – g).

Keywords :

(6,7-Dimethoxy-3,4-Dihydroisoquinolin-1-yl)-Acetonitrile; Enaminonitrile; 2-Aminobenzimidazole malononitrile; DMFDMA

Name : **Prof . Hosny Ibrahim Mohamed**

Dep. : **Chemistry**

Title : **Modified Carbon Paste Sensor for Cetyltrimethylammonium Ion Based on Its Ion-associate with Tetrachloropalladate(II)**

Hosny Ibrahim and Amal Khorshid

Journal : **Analytical Sciences**

ISSN : 0910-6340 **Impact Factor :** 1.589

Abstract :

A comparative study was made between developed chemically modified carbon paste electrodes and PVC membrane electrodes for the cationic surfactant cetyltrimethylammonium bromide (CTAB). The carbon paste electrode modified with cetyltrimethylammonium-tetrachloropalladate(II) (CTA-TClP) provides a more sensitive and stable device than that shown by electrodes with an inner reference solution. The best performance was obtained by an electrode based on the paste containing 3.6 wt% CTA-TCIP, 1.8 wt% ethylhexadecyldimethylammonium bromide, 37.6 wt% graphite and 57 wt% tricresyl phosphate. The sensor exhibited a Nernstian response for CTAB over a wide concentration range of 3.5□ 10–7 to 1.0 □10–3 M with a detection limit of 2.0 □10–7 M between pH 2.7 and 8.2 with a fast esponse time of ≤15 s. The electrode showed excellent selectivity for CTAB over a large number of ions. Interferences caused by common cationic surfactants have been investigated in simulated mixtures containing high concentration levels of interfering surfactants, and the sensor was found to be tolerant against these compounds.

International Publications Awards
Cairo University

Name : **Dr . Huwaida Mohamed Hassaneen**

Dep. : **Chemistry**

Title : **A novel one-pot three-components reaction: synthesis of Indeno [2',1':5,6]pyrido [2,3:4'',5'']pyrimido[2'',1''-c]triazole-5,7- dione. A new ring system**

Huwaida M. E. Hassaneen

Journal : **Arkivoc**

ISSN : 1424-6376 **Impact Factor :** 0.8

Abstract :

6-Amino-2-thioxo-1,2,3,4-tetrahydropyrimidin-4-one 1 reacted with a mixture of formaldehyde and indane-1,3-dione 7 in one-pot synthesis to yield the tetracyclic system 11a. On the other hand, the dihydro derivatives 10b-f were isolated when a mixture of 1 and 7 reacted with aromatic aldehydes. Compounds 11 reacted with hydrazonoyl chlorides 5 to yield the title compounds 12. The proposed structures of the newly synthesized compounds are based on spectral data and are confirmed by alternative method.

Keywords :

Indane-1,3-dione; X-ray; Hydrazonoyl chloride; 6-Amino-2-Thioxo-1,2,3,4-Tetrahydropyrimidin-4-one

Name : **Dr . Huwaida Mohamed Hassaneen**

Dep. : **Chemistry**

Title : **Studies with 2-(Arylhydrazono)aIdehydes: Synthesis and Chemical Reactivity of Mesoxalaldehyde 2-Arylhydrazones and of Ethyl 2-Arylhydrazono-3-oxopropionates**

Saad Makhseed, Huwaida M. E. Hassaneen and Mohamed H. Elnagdi

Journal : **Z. Naturforsch**

ISSN : 0932-0776 **Impact Factor :** 0.825

Abstract :

The coupling reaction of 3-(dimethylamino)acrolein (2a) and ethyl 3-(dimethylamino)acryhite (2b) with arenediazonium chlorides afforded the 2-(arylhydrazono)aldehydes la-e. Com¬pounds la, b reacted with hydroxylamine hydrochloride to yield the oximes 4a, b. The dioxime 5 was obtained from reacU9Q of la with an excess of hydroxylamine hydrochloride. This dioxime afforded the 1,2,3-triazole Carbonitrile.6 when treated with acetic anhydride, while a-hydrazono pro¬pionitrile 8 was obtainei1 when 5 was treated with acetic acid. Compounds la - e could be utilized for the synthesis of a variety of pyrazoles and arylazolopyrimidines via reaction with hydrazines, haloketones and aminoazoles, respectively.

Keywords :

2-Arylhydrazonopropane-l,3-dial; 2-AryI-I,2,3-triazole-4-Carbonitrile; Formazanes

International Publications Awards
Cairo University

Name : Dr . Huwaida Mohamed Hassaneen

Dep. : Chemistry

Title : New Approach to 4- and 5-Aminopyrazole Derivatives

Huwaida M. E. Hassaneen

Journal : Synthetic Communications

ISSN : 0039-7911 **Impact Factor :** 1.001

Abstract :

3-Oxo-3-(pyrrol-2-yl)-propanenitrile 1 coupled with aromatic diazonium salts to yield the corresponding 2-arylhydrazones 2a–c. The latter products reacted with chloroacetonitrile and ethyl chloroacetate to yield 4-aminopyrazole derivatives 5a–f. Reaction of 2 with hydrazine hydrate led to formation of 5-amino-4-arylazopyrazole 6a–c. Compound 1 reacted also with trichloroacetonitrile to yield enamine 7, which in turn reacted with hydrazine hydrate to yield 5-amino-3-(pyrrol-2-yl)-pyrazole-4-carbonitrile 8.

Keywords :

4-Amino and 5-Aminopyrazoles; Dimethyl formamide dimethylacetale; Enamine; 3-oxo-3-(pyrrol-2-yl)-Propanenitrile

Name : **Prof . Ismail Abdel Shafy Abdel Hamid**

Dep. : **Chemistry**

Title : **Alkylazinylcarbonitriles as Building Blocks in Organic Synthesis: Synthesis Of 3-Amino-7 -Arylhyrazonothieno-7 H-[3,4-C]-Pyridine 4,6-Diones and Pyrido-[3,4-C]-Pyridazine-5-Carbonitrile**

Saleh Mohamed AI-Mousawi, Ismail A. Abdelhamid and Moustafa Sherief Moustafa

Journal : **Arkivoc**

ISSN : 1424-6376 **Impact Factor :** 0.8

Abstract :

A series of 5-arylhydrazono-l ,2,5,6-tetrahydro-l ,4-dialkyl-2,6-dioxopyridine-3-carbonitriles 4 has been prepared and reacted with elemental sulfur to yield the thieno[3,4-c]pyridine-4,6-dione 5. Reaction of 5 with dimethyl acetylenedicarboxylate afforded arylazoisoquinolines 7. Condensation of 4 with dimethylformamide dimethylacetal afforded pyrido[3,4-c]pyridazine-5¬carbonitrile 9.

Name : **Prof . Ismail Abdel Shafy Abdel Hamid**

Dep. : **Chemistry**

Title : **Chemistry of Hydrazonoalkanenitriles**

Sayed M. Riyadh, Ismail A. Abdelhamid, Hamada M. Ibrahim, Hamad M. Al-Matar and Mohamed H. Elnagdi

Journal : **Heterocycles**

ISSN : 0385-5414 **Impact Factor :** 1.077

Abstract :

Reactions of arene and heteroaromatics diazonium salts with active methylene compounds having cyano group have been illustrated to afford hydrazonoalkanenitriles with a range of substituents. Structural investigation for hydrazonoalkanenitriles has been made. Furthermore the reactivity of hyrazonoalkanenitriles towards nucleophilic and electrophilic reagents has been displayed.

Name : **Prof . Kamal Mohamed Dawood**

Dep. : **Chemistry**

Title : **Synthesis of Some New Benzofuran-Based Thiophene, 1,3-Oxathiole and 1,3,4-Oxa(Thia)diazole Derivatives**

Kamal M. Dawood, Ahmad M. Farag and Hatem A. Abdel-Aziz

Journal : **Heteroatom Chemistry**

ISSN : 1042-7163 **Impact Factor :** 0.838

Abstract :

Treatment of 3-(3-methylbenzofuran-2- yl)-3-oxopropanenitrile (1) with phenyl isothiocyanate afforded the thioacetanilide derivative 3, which when reacted with α-haloketones, α-halodiketones, and hydrazonoyl chlorides gives thiophene, 1,3- oxathiole, and 1,3,4-thiadiazole derivatives 6a,b,10a,b and 14a–g, respectively. Treatment of 3-methyl-2-benzofurancarboxylic acid hydrazide (15) with ben- zaldehyde followed by bromine afforded the 1,3,4- oxadiazole derivative 18. Treatment of the acid hydrazide15 withphenyl isothiocyanategave the thiosemicarbazide 20. Compound 20 could be converted into 1,3,4-oxadiazole, 1,2,4-triazole-3- thione, and 1,3,4-thiadiazole derivatives 21, 22, and 23, respectively.

Name : **Prof . Kamal Mohamed Dawood**

Dep. : **Chemistry**

Title : **Microwave-accelerated Mizoroki-Heck and Sonogashira cross-coupling reactions in water using a heterogeneous palladium(II)-precatalyst**

Kamal M. Dawood, Wladimir Solodenko and Andreas Kirschning

Journal : **Arkivoc**

ISSN : 1424-6376 **Impact Factor :** 0.8

Abstract :

The catalytic activity of a 2-pyridinealdoxime-based Pd(II)-complex covalently anchored via the oxime moiety to a glass/ polymer composite material was evaluated both under thermal as well as microwave (μw) irradiating conditions in water in Mizoroki-Heck as well as Sonogashira C-C cross-coupling reactions. Synthesis of benzo[b]furan derivatives via Sonogashira cross coupling reaction was achieved when ortho-halo-phenols were employed as aryl halides. The stability and reusability of this Pd-precatalyst was part of the present study.

Keywords :

Catalysis; Immobilization; Microwave; Mizoroki-Heck reaction; Palladium; Sonogashira reaction

Name : **Prof . Kamal Mohamed Dawood**

Dep. : **Chemistry**

Title : **Microwave-assisted Suzuki–Miyaura and Heck–Mizoroki cross-coupling reactions of aryl chlorides and bromides in water using stable benzothiazole-based palladium(II) precatalysts**

Kamal M. Dawood

Journal : **Tetrahedron**

ISSN : 0040-4020 **Impact Factor :** 2.817

Abstract :

The catalytic activity of benzothiazole-based Pd(II)-complexes was evaluated in Suzuki–Miyaura and Heck–Mizoroki C–C cross- coupling reactions of aryl chlorides and bromides with olefins and arylboronic acids both under thermal as well as microwave irradiation conditions in water. The factors affecting the optimization of such reactions as well as the reusability of the Pd-precatalysts are studied.

Keywords :

Pd(II) Precatalysts; Microwave irradiation; Suzuki–miyaura; Heck–mizoroki cross-coupling reactions.

International Publications Awards
Cairo University

Name : **Prof . Khaled Mohamed Ismail**

Dep. : **Chemistry**

Title : **Evaluation of Cysteine as Environmentally Friendly Corrosion Inhibitor for Copper in Neutral and Acidic Chloride Solutions**

Khaled M. Ismail

Journal : **Electrochimica Acta**

ISSN : 0013-4686 **Impact Factor :** 2.955

Abstract :

The efficiency of cysteine as a non-toxic corrosion inhibitor for copper metal in 0.6 M NaCl and 1.0 M HCl has been investigated by electrochemical studies. Potentiodynamic polarization measurements and electrochemical impedance spectroscopy “EIS” were used to study the effect of cysteine on the corrosion inhibition of copper. Inhibition efficiency of about 84% could be achieved in chloride solutions. The presence of Cu2+ ions increases the inhibition efficiency to 90%. Potentiodynamic polarization measurements showed that the presence of cysteine in acidic and neutral chloride solutions affects mainly the cathodic process and decreases the corrosion current to a great extent and shifts the corrosion potential towards more negative values. The experimental impedance data were analyzed according to a proposed equivalent circuit model for the electrode/electrolyte interface. Results obtained from potentiodynamic polarization and impedance measurements are in good agreement. Adsorption of cysteine on the surface of Cu, in neutral and acidic chloride solutions, follows the Langmuir adsorption isotherm. The adsorption free energy of cysteine on Cu (□−25 kJ mol−1) reveals a strong physical adsorption of the inhibitor on the metal surface.

Keywords :

Copper; Cysteine; Adsorption; Inhibitor; Chloride ions

Name : **Prof . Khaled Mohamed Ismail**

Dep. : **Chemistry**

Title : **Electrochemical Preparation and Kinetic Study of Poly(o-tolidine) in Aqueous Medium**

Khaled M. Ismail

Journal : **Electrochimica Acta**

ISSN : 0013-4686 **Impact Factor :** 2.955

Abstract :

Poly(o-tolidine), PoT, film was prepared by electrochemical oxidation of the monomer, oT, in 0.1 M HCl + 0.1 M KClO4 . The presence of KClO4 in the formation medium was found to be essential for the electropolymerization process to proceed. Increasing the upper potential limit up to +1.5 V, instead of +1.0 V, leads to appearance of a new anodic peak at +1.36 V and enhancement of the polymer formation of PoT without changing the film structure. The electrochemical behavior of the formed polymer films was investigated in 1.0 M HClO4 . The kinetic parameters were calculated from the values of the charge consumed during the electropolymerization process. The rate of the polymerization reaction was found to depend on the concentration of the monomer rather than the electrolyte. The polymerization rate is first order with respect to the monomer concentration and zero order with respect to the electrolyte. The electrolyte plays no active role in the kinetics of the electropolymerization process and its role is most likely limited to polymer doping.

Keywords :

Poly (o-tolidine); Electropolymerization; Kinetics; Chronoamperometry; Potential limit; Reaction

Name : **Prof . Magdy Sabaa**

Dep. : **Chemistry**

Title : **Phenyl Urea Derivatives As Organic Stabilizers For Rigid Poly(Vinyl Chloride) Against Photo-Degradation.**

Magdy W. Sabaa and Riham R. Mohamed

Journal : **Appl. Polym. Sci.**

ISSN : 0021-8995 **Impact Factor :** 1.306

Abstract :

Phenyl urea derivatives have been prepared and investigated as photo stabilizers for rigid PVC by measuring the extent of weight loss (%), the amount of gel formation as well as the intrinsic viscosity of the soluble fractions of the degraded polymer. Moreover, the efficiency of these stabilizers was evaluated from the extent of discoloration of the degraded polymer in their presence. The results indicated a reasonable stabilizing effect of these derivatives when compared with the commercially used UV stabilizers: phenyl salicylate (Salol) and methanone, 2-hydroxy-4-(oct yloxy)-phenyl-benzophenone.

A synergistic effect is achieved when the phenyl urea derivatives are mixed with the UV absorbers in the ratio (75 : 25%), respectively. A radical mechanism is proposed to account for the stabilizing action of the products investigated.

Keywords :

Poly(vinyl chloride); UV absorbers; Phenyl Urea Derivatives; Intrinsic Viscosity; Gel Content; Weight Loss; SEM

International Publications Awards
Cairo University

Name : **Prof . Magdy Sabaa**

Dep. : **Chemistry**

Title : **Organic Thermal Stabilizers For Rigid Poly(Vinyl Chloride). Part XIII: Eugenol (4-Allyl-2-Methoxy-Phenol)**

Magdy W. Sabaa and Riham R. Mohamed

Journal : **Polymer Degradation and Stability**

ISSN : 0141-3910 **Impact Factor :** 2.174

Abstract :

Eugenol (4-allyl-2-methoxy-phenol) has been examined as a thermal stabilizer and co-stabilizer for rigid PVC in air, at 180 oC. Its high stabilizing efficiency is detected by its high thermal stability value (Ts) when compared with some of the common reference stabilizers used industrially such as dibasic lead carbonate, calcium-zinc soap and octyl tin mercaptide.

Blending this organic stabilizer with some of the reference stabilizers in different ratios had synergistic effect on both the induction period and the dehydrochlorination rate together with the longer extent of discolouration of PVC stabilized by Eugenol as compared with the blank and the samples stabilized with reference commercial stabilizers.

A probable mechanism for the stabilizing action of Eugenol has been proposed. The stabilizing efficiency is attributed partially to the stabilizer's ability to intervene in the radical chain degradation process of PVC and to the replacement of the labile chlorine atoms on PVC chains by a relatively more stable moiety of the organic stabilizer.

Keywords :

Poly(vinyl chloride); Eugenol; Induction period (Ts); Degradation; Thermal stability; Extent of discolouration

International Publications Awards
Cairo University

Name : **Prof . Maha Anwar Ali**

Dep. : **Physics**

Title : **Spectroscopic study of gamma irradiated bovine hemoglobin**

Ahmed Mohamed Maghraby, Maha Anwar Ali

Journal : **Radiation Physics and Chemistry**

ISSN : 0969-806X **Impact Factor :** 0.868

Abstract :

In the present study, the effects of ionizing radiation of Cs-137 and Co-60 from 4.95 to 743.14 Gy and from 40 Gy to 300 kGy, respectively, on some bovine hemoglobin characteristics were studied. Such an effect was evaluated using electron paramagnetic resonance (EPR) spectroscopy, and infra-red (IR) spectroscopy. Bovine hemoglobin EPR spectra were recorded and analyzed before and after irradiation and changes were explained in detail. IR spectra of unirradiated and irradiated Bovine hemoglobin were recorded and analyzed also. It was found that ionizing radiation may lead to the increase of free radicals production, the decrease in a-helices contents, which reflects the degradation of hemoglobin molecular structure, or at least its incomplete performance. Results also show that the combined application of EPR and FTIR spectroscopy is a powerful tool for determining structural modification of bovine hemoglobin samples exposed to gamma irradiation.

Keywords :

EPR; ESR; Radiation; Bovine; Hemoglobin

International Publications Awards
Cairo University

Name : **Prof . Maher Zaki El-Sabee**

Dep. : **Chemistry**

Title : **Dielectric Relaxation and Spectroscopic Investigation of PolyHydroxyButyrate PHB Blended with Polyvinyl Acetate PVAc and Poly(Vinylacetate-Co-vinyl Alcohol) PACA**

T. H. M. Abou-Aiad, K. N. Abd-El-Nour, I. K. Hakim and M. S. El-Sabee

Journal : **Polymer-Plastics Technology and Engineering**

ISSN : 0360-2559 **Impact Factor :** 0.333

Abstract :

Using frequency response analyzer covering a frequency range from 102–106 Hz in a wide range of temperature, the dielectric behavior of the investigated systems was studied. In order to investigate the relax- ation mechanisms of such systems, the dielectric loss data on the frequency domain were analyzed using Havriliak-Nagami and/or Fro¨ h- lich functions in addition to the conductivity term. These mechanisms are discussed in terms of the orientation of the main chain and its related motions. The relaxation times related to both mechanisms noticed for PHB/PVAc blend with composition 50% are found to be higher than those for other compositions. This could be attributed to the interaction expected through hydrogen bond formation. This result is supported by the data given by FTIR spectroscopy as the carbonyl region at 1750 cm–1 showed a more broad band spectrum when compared with those for the other compositions.

Keywords :

Dielectric Relaxation; Spectroscopy; Polyhydroxy- Butyrate PHB; Polyvinyl Acetate; Pvac And Poly (Vinylacetate-Co-Vinyl Alcohol) PACA

Name : **Prof . Maher Zaki El-Sabee**

Dep. : **Chemistry**

Title : **Investigation of the Relaxation Behavior of Novel Terpolymers of Acrylonitrile, Methyl Methacylate and Indene**

Sayed Z Mohammady, Said S Elkholy and Maher Z Elsabee

Journal : **Polymer International**

ISSN : 0021-8995 **Impact Factor :** 1.306

Abstract :

Terpolymer samples were prepared by free radical polymerization of methyl methacrylate (MMA), indene (In) and acrylonitrile (AN) in bulk. The samples were chosen so that the molar ratio of AN to MMA varied from 1.00:4.39 to 1.00:0.83, while the molar ratio of In was kept almost unchanged. The glass transition temperatures (Tg) of the samples were determined using differential scanning calorimetry. Moreover, isochronal dynamic mechanical measurements of the complex bending modulus as well as the complex dielectric permittivity were carried out over wide temperature ranges, namely from 50 to 190 ◦C, depending on the material investigated. All samples exhibited a single common Tg value, which increased to higher temperature upon increasing the content of AN. In addition, the results were investigated quantitatively in the framework of a molecular model.

Keywords :

Terpolymers; Free Radical Polymerization; Complex Bending

Name : **Prof . Maher Zaki El-Sabee**

Dep. : **Chemistry**

Title : **Grafting of Vinyl Acetate onto Chitosan and Biocidal Activity of the Graft Copolymers**

Said Elkholy, Khaled D. Khalil, Maher Z. Elsabee and Mohamed Eweis

Journal : **Applied Polymer Science**

ISSN : 0959-8103 **Impact Factor :** 1.475

Abstract :

Modification of chitosan by grafting with vinyl acetate (VAc) was carried out using potassium persulfate and sodium bisulfite as redox initiators. The effect of monomer, initiator concentration, time, and temperature was studied. The grafted samples were subjected to alkaline hydrolysis and the polyvinyl acetate (PVAc) branches were consequently partially converted into polyvinyl alcohol (PVAl) graft, which showed enhanced swelling in water. The graft copolymers showed a better dye uptake for both acidic and basic dyes. Chitosan/VAc and chitosan/ VAl copolymers were both subjected to reaction with dimethyl sulfate in alkaline medium to yield quaternized copolymers. The antifungal behavior of chitosan and its graft copolymers was investigated in vitro on the mycelial growth, sporulation, and germination of conidia or sclerotia of the following sugarbeet: Beta vulgaris pathogens isolated in Egypt, Rhizoctonia solani Ku¨hn (AG2-2) Sclerotium rolfsii Sacc. and Fusarium solani (Mart.) Sacc. These polymers were also screened against several fungi and it has been found that grafting with polyvinyl alcohol branches enhances the antifungal activity dramatically.

Keywords :

Chitosan; Graft Copolymer; Vinyl Acetate; Hydrolysis; Dye Uptake; Swelling; Quaternization; Antifungal Activity

Name : **Prof . Mahmoud Mohamed Saleh**

Dep. : **Chemistry**

Title : **Simulation of Oxygen Evolution Reaction at Porous Anode from Flowing Electrolytes**

Mahmoud M. Saleh

Journal : **J Solid State Electrochemistry**

ISSN : 1432-8488 **Impact Factor :** 1.542

Abstract :

Oxygen evolution reaction (OER) at flow-through porous anode was simulated with the aid of a mathematical model. The OER was assumed to be the only reaction takes place at the electrode. The model accounts for effects of the kinetics, ohmic, hydrodynamics, structural parameters and bubble formation on the potential and current distributions within the electrode and on the overall performance of the electrode. The latter was evaluated via interpretation of the polarization curves of the OER at porous anode. The model results were discussed in the light of some controlling dimensionless groups. The conductivities of both the electrolyte and the solid matrix have dramatic effects on the general behavior of the porous anode and lower performance of the electrode was observed when both and/or one of them have limited conductivity values. The electrode potential and hence the power required to attain a specific current (rate) is highly dependent on the degree of bubble formation within the bed matrix. The model predictions were compared with collected experimental data of OER from flowing sulfuric acid solution at Pt-loaded reticulated vitreous carbon. Good agreements were obtained at the employed experimental conditions. The present work helped to understand the anode performance for further application for simultaneous gas evolution e.g., O2 and O3 gases.

Keywords :

Oxygen; Anode; Mathematical Modeling; Bubbles; Porous

International Publications Awards
Cairo University

Name : **Prof . Mahmoud Yehia Ismail**

Dep. : **Physics**

Title : **Azimuthal Angle Dependence of Coulomb and Nuclear Interactions Between Two Deformed Nuclei**

M. Ismail, A. Y. Ellithi, M. M. Botros and A. E. Mellik

Journal : **Physical Review**

ISSN : 0556-2813 **Impact Factor :** 3.327

Abstract :

The azimuthal angle (φ) variation of the Coulomb and nuclear heavy ion (HI) potentials is studied in the framework of the double folding model, which is derived from realistic nuclear density distributions and a nucleon-nucleon (NN) interaction. The present calculation shows that the variation of HI potentials with the azimuthal angle depends strongly on the range of theNN forces. For the long-range Coulomb force, themaximum variation with φ is about 0.9%, and for HI potential derived from zero-range NN interaction the φ-variation can reach up to 90.0%. Our calculations are compared with the recent φ-dependence of the HI potential derived from proximity method. The present realistic φ-dependence calculations of the HI potential is completely different from the results of the proximity calculations.

International Publications Awards
Cairo University

Name : **Prof . Mamdoh Ishak Wanas**

Dep. : **Astronomy & Meteorology**

Title : **The Accelerating Expansion of the Universe and Torsion Energy**

Mamdoh I.Wanas

Journal : **Modern Physics A**

ISSN : 0217-751X **Impact Factor :** 0.914

Abstract :

In the present work, it is shown that the problem of the accelerating expansion of the Universe can be directly solved by applying Einstein geometrization philosophy in a wider geometry. The geometric structure used to fulfil the aim of the work is a version of Absolute Parallelism geometry in which curvature and torsion are simul- taneously non vanishing objects. It is shown that, while the energy corresponding to the curvature of space- time gives rise to an attractive force, the energy corre- sponding to the torsion indicates the presence of a repulsive force. A fine tuning parameter can be adjusted to give the observed phenomena.

Keywords :

Dark energy; Torsion; Anti-Gravity

International Publications Awards
Cairo University

Name : **Prof . Mamdoh Ishak Wanas**

Dep. : **Astronomy & Meteorology**

Title : **On the Relation Between Mass and Charge: A Pure Geometric Approach**

Mamdoh I.Wanas

Journal : **Geometric Methods in Modern physics**

ISSN : 0219-8878 **Impact Factor :** 0.769

Abstract :

A new solution of the field equations of the generalized field theory, constructed by Mikhail and Wanas in 1977, has been obtained. The geometric structure used, in the present application, is an absolute parallelism (AP)-space with spherical symmetry (type FIGI). The solution obtained represents a generalized field outside a charged massive central body. Two schemes have been used to get the physical meaning of the solution: The first is related to the metric of the Riemannian space associated with the AP-structure. The second is connected to a covariant scheme known as Type Analysis.It is shown that the dependence on both schemes for interpreting the results obtained, is more better than the dependence on the metric of the Riemannian space associated with the AP-structure.In General, if we consider the solution obtained as representing a geometric model for an elementary charged particle, then the results of the present work can be summarized in the following points. (i) It is shown that the mass of the particle is made of two contributions: The first is the gravitational contribution, and the second is the contribution due to the existence of charge. (ii) The model allows for the existence of a charged particle whose mass is completely electromagnetic in origin (iii) The model prevents the existence of a charged massless particle. (iv) The electromagnetic contribution, to the mass, is independent of the sign of the electric charge. (v) It is shown that the mass of the electron (or a positron) is purely made of its charge.

Keywords :

Unified field theories; Exact solutions; Electromagnetism; Elementary parti- cles; Absolute parallelism

Name : **Prof . Mamdouh Abdel Rahim**

Dep. : **Chemistry**

Title : **Graphite Electrodes Modified with Platinum-Nickel Nano-Particles for Methanol Oxidation**

M. A. Abdel Rahim, H. B. Hassan and R. M. Abdel Hameed

Journal : **Fuel Cells**

ISSN : 1615-6846 **Impact Factor :** 3.27

Abstract :

Methanol electro-oxidation is investigated at graphite electrodes modified with various platinum and nickel nano-particle deposits using cyclic voltammetry. The modified electrodes are prepared by the simultaneous electrodeposition of metals from their salt solutions using potentiostatic and galvanostatic techniques. They show enhanced catalytic activity towards methanol oxidation in KOH solution. The catalytic activity of platinum nano-particles is found to be significantly affected by the presence of relatively small amounts of nickel deposits. A comparison is made between the electrocatalytic activity of Pt/C and (Pt-Ni)/C electrodes. The results show that the methanol electro-oxidation current increases with an increase in the nickel content. In particular, the highest catalytic activity is achieved for platinum to nickel deposits of 95%:5% (wt.-%), in other cases the catalytic activity decreases. It is found that Ni enhances the catalytic activity of Pt by increasing the number of active sites, as well as through an electron donation process from Ni to Pt. This process takes place once the nickel hydroxide (Ni(OH)2)/nickel oxy-hydroxide (NiOOH) transformation begins. The effect of the methanol concentration on the methanol oxidation reaction is investigated. The order of reaction, with respect to methanol, at the modified (Pt-Ni)/C electrode is found to be 0.5.

Keywords :

Alkaline Media; Electrocatalyst; Methanol Fuel Cells; Nano-Particles; Platinum-Nickel

Name : **Prof . Mohamd Ali Abou-Tabl**

Dep. : **Chemistry**

Title : **Processing and Evaluation of Cu/Carbon Fibre Composites By Vortex and Powder Metallurgy Techniques**

O.A. Elkady, Mohamd A. Abou Tabl, Z. Abdel Hamid and S.F. Moustafa

Journal : **Canadian Metallurgical Quarterly**

ISSN : 0008-4433 **Impact Factor :** 0.265

Abstract :

Carbon fibres have high reactivity and poor wetting characteristics with most molten metals. These drawbacks cause difficulties in fabricating metal matrix composites reinforced with carbon fibres. One solution to overcome these drawbacks is to apply a compatible metal or metal carbide layer on carbon fibres.In this investigation, a very thin coating of either chromium or chromium carbide was applied on carbon fibres of the PAN type. The coated fibres were used to reinforce the Cu matrix using two fabricating techniques, namely vortex and powder metallurgy. The loading of coated carbon fibre in the matrix in both fabricating techniques was 5%. For comparison, uncoated carbon fibres were also used to reinforce the Cu matrix using the same fabricating techniques.The fabricated composites resulting from different techniques and different coatings were evaluated and compared in terms of transverse rupture strength (TRS), electrical conductivities, hardness and density measurements.The results indicated that the composite reinforced with Cr carbide-coated carbon fibres showed the highest TRS, electrical conductivities and densities, while the composites made from uncoated carbon fibres exhibited the lowest properties. A Cu matrix reinforced with Cr coated carbon fibres composites has intermediate properties between the other two composites

International Publications Awards
Cairo University

Name : **Prof . Mohamd Waheed Badawy**

Dep. : **Chemistry**

Title : **Preparation and Characterization of the Porous (TiO2) Oxide Films of Nanostructure for Biological and Medical Applications**

Rabab A. El-Serief, Sahar A. Fadl-allah and Mohamd Waheed A. Badawy

Journal : **American Institute of Physies (AIP)**

ISSN : 0094-243X **Impact Factor :**

Abstract :

Titanium and its alloys are vital important materials because of their intrinsic mechanical properties (high strength, fatigue resistance), chemical stability (corrosion resistance) and high strength- to-density ratio. Crystalline titanium oxide (TiO2) film is of great interest in many applications e.g. photoelectronic, optical devices, gas sensors, photocatalysts and as biomaterials. In hot concentrated sulfuric acid, titanium and its alloys produce oxide films with interference colors depending on the thickness of the formed oxide film. Since biological tissues are known to interact with the outermost atomic layer of an implant, so the surface oxide properties of the implant play an important role in using Ti and Ti alloys as biomaterials. Increasing the surface area of the film is a promisng way to achieve the desired funcations because almost implant applications utilize interfacial reactions. Generally, when titanium and titanium alloys are anodized in aqueous solutions, oxide film is formed. This electrolyticprocess is called (Anodizing of titanium). Depending on the type of electrolytic solutions, pH, time of anodization, temperature and voltage of anodization, barrier-type oxide film or porous- type oxide film may be formed. The thickness of the porous film is the main point of view for using Ti and Ti alloys as biomaterials. This thickness depends on many factors such as anodization time, current density, and electrolyte temperature. In this study, the oxide films formed on titanium in sulfuric acid solutions with and without H2O2 additions have been investigated by electrochemical impedance spectroscopy (EIS). In absence of H2O2, the impedance response indicated a stable thin oxide film on titanium. However, the introduction of H2O2, into the solution resulted in significant changes in the EIS-spectra. The interpretation of the results is based upon a duplex layer model of the oxide film, consisting of a thin barrier-type inner layer and a porous outer layer. The H2O2 addition in the solution has led to a significant decrease in the corrosion resistance of titanium and also to a thickening of the porous outer layer. The results provide an explanation of the unexpected in vivo titanium oxide growth and ion incorporation into titanium implant oxide surfaces.

Keywords :

Impedance spectroscopy; Titanium; Oxide film; H2O2; Biomaterials.

Name : **Prof . Mohamd Waheed Badawy**

Dep. : **Chemistry**

Title : **Porous Silicon Modified Photovoltaic Junctions An Approach to High-Efficiency Solar Cells**

Waheed A. Badawy

Journal : **American Institute of Physies (AIP)**

ISSN : 0094-243X **Impact Factor :**

Abstract :

The solution of the energy problems of our universe is based on the use of the ultimate source of energy, THE SUN, as the main source of useable energy. The trials to obtain solar cells of appropriate efficiency and suitable price represent one of the main tasks of different research groups over the whole world. In this respect silicon represent the main absorber of sun light that could be converted to electricity, photovoltaic cells, or to high energy chemical products, photoelectrochemical cells.

Photovoltaic and photoelectrochemical systems were prepared by the formation of a thin porous film on silicon. The porous silicon layer was formed on the top of a clean oxide free silicon wafer surface by anodic etching in HF/H2O/C2H5OH mixture (2:1:1). The silicon was then covered by an oxide film (tin oxide, ITO or titanium oxide. The oxide films were prepared by the spray/pyrolysis technique which enables the incorporation of foreign atoms like In, Ru or Sb in the oxide film matrix during the spray process. The incorporation of foreign atoms improves the surface characteristics of the oxide film which leads to the improvement of the fill factor and higher solar conversion efficiency.

The prepared solar cells are stable against environmental attack due to the presence of the stable oxide film. It gives relatively high short circuit currents (Isc) compared to our improved silicon single crystal solar cells, due to the presence of the porous silicon layer, which leads to the recorded high conversion efficiency. Although the open-circuit potential (Voc) and fill factor (FF) were not affected by the thickness of the porous silicon film, the short circuit current was found to be sensitive to this thickness. An optimum thicknesss of the porous film and also the oxide layer is required to optimize the solar cell efficiency. The results represent a promising system for the application of porous silicon layers in solar energy converters. The use of porous silicon instead of silicon single crystals in solar cell fabrication and the optimization of the solar conversion efficiency will lead to the reduction of the cost as an important factor and also the increase of the solar cell efficiency making use of the large area of the porous structures

Keywords :

Porous Silicon; Photovoltaics; Photoelectrochemical Cells; Tin Dioxide; Titanium Oxide.

Name : **Prof . Mohamd Waheed Badawy**

Dep. : **Chemistry**

Title : **Conducting poly(N-(1-Naphthyl) ethylene-diamine dihydrochloride) electro polymerization, characterization and electroanalytical applications and electroanalytical applications**

Waheed A. Badawy, Khaled M. Ismaila nd Ziad M. Khalifa

Journal : **Appl Electrochem**

ISSN : 0021-891X **Impact Factor :** 1.409

Abstract :

Uniform conducting polymer films of poly(N-(1-Naphthyl) ethylene-diamine dihydrochloride), PNED, were prepared conveniently and reproducibly by the anodic oxidation of the monomer, N-(1-Naphthyl) ethylene-diamine dihydrochloride, NED, in an acidic aqueous solution using the conventional potentiodynamic technique. The different parameters influencing the preparation conditions like monomer concentration, solvent constitution, scan range, scan rate, scan repetition, rotation speed of the working electrode and the type of the substrate were investigated and the optimum preparation conditions are specified. The stability of the prepared films was tested in both aqueous and non-aqueous media. The characteristics of the polymer films and their electrochemical activity towards catalyzing some technologically promising redox reactions were also examined. The films were found to be very stable in aqueous solutions and in some organic solvents like acetone, acetonitrile, and chloroform and dimethyl sulfoxide. The film stabilitywas found to depend on the solution pH. The polymer films were capable of catalyzing the redox processes of several natural products and amino acids e.g. vitamin C and glycine. The polymer film possesses electrochromic properties and the color of the film changes from purple to violet to dark blue and then to brown according to the preparation and/or polarization conditions. The electrochromic properties are related to polaron formation, which subsequently oxidizes to diimine species followed by the oxidation of the aromatic ring. The mechanism of the polymerization process was investigated and discussed. The process involves deprotonation reactions and a head-to-tail coupling of the oxidized monomer with cation radicals.

Keywords :

Aqueous media; Biosensors; Electrochromic properties; Electropolymerization; N-(1-Naphthyl) ethylene-diamine dihydrochloridev

Name : **Prof . Mohamd Waheed Badawy**

Dep. : **Chemistry**

Title : **Electrochemical Behavior of Aluminum Bronze in Sulfate-Chloride Media**

Waheed A. Badawy , Rabab M. El-Sherif and Hassan Shehata

Journal : **Appl Electrochem (2007)**

ISSN : 0021-891X **Impact Factor :** 1.409

Abstract :

The electrochemical behavior, especially the corrosion and passivation, of a Cu–Al bronze was investigated. Conventional electrochemical techniques including open-circuit potential, anodic polarization, cyclic voltammetry and electrochemical impedance spectroscopy were used. It was found that the addition of chloride ion up to 0.15 M in 0.5 M Na2SO4 solution decreases the corrosion rate due to the formation of CuCl, whereas at higher concentration of the chloride ion, the corrosion rate increases due to the formation of the soluble CuCl2 – . The activation energy was found to be 10 kJ mol–1. This value indicates that the corrosion process is under diffusion control. The impedance measurements showed that the passive film can be represented by a duplex layer, a relatively thick porous outer film on top of a thin compact layer. An equivalent circuit was used to explain and analyze the impedance data. The model includes another R-C combination and Warburg impedance in addition to the simple Randles cell to account for the spontaneously formed passive film and the diffusion phenomena.

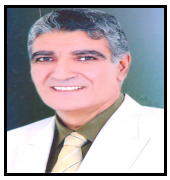
Keywords :

Aluminium Bronze; Corrosion; Chloride; Cyclic Voltammetry; Impedance ; Sulfa

International Publications Awards
Cairo University

Name : **Prof . Mohamed Ali Ahmed**

Dep. : **Physics**



Title : **The Effect of Curing Time and Porosity on the Microstructure Hydrated Products in Some Blended Cement Pastes.**

A.E.Al-Salami, M.S.Al-.Assiri, A.Al-Hajry, M.A.Ahmed and S.Taha

Journal : **Silicate Industrial**

ISSN : 0037-5225 **Impact Factor :** 0.198

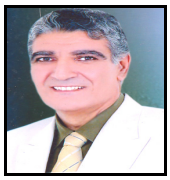
Abstract :

This study investigated the effects of the curing time, water/cement ratio (w/c) and the types of the additive materials on the morphology and microstructure of the hydrated CSH and CH phases in some blended cement pastes. The blended cement paste is composed from ordinary Portland cement (OPC) (M 0), (35% fly ash +65% OPC) (M01), (35% slag +65%OPC) (M02) and (35% fly ash + 35% slag +30%OPC) (M03), by weight. The samples having w/c ratio (0.25, 0.30, up to 0.40), and curing time (3,28) days at room temperature ≈20°C. The hydration products of these samples were examined by X-Ray diffraction, Scanning electron microscopy, accompanied by the EDX analysis. The experimental results showed that the main hydration products formed from the hydration are CSH and CH phases, which are increased with the curing time. The changes in the CSH hydrated phases are controlled by the w/c ratios, which are leading to the changes in the local porosity inside the matrix of the system, and the changes in the CH hydrated phases are depending on the activity of the additive materials to the OPC matrix. The microstructure of the blended cement paste are more clearly depending on the Ca/Si ratio in the M0, M01, M 02 and M03 system. The ratio of Ca/Si on the M 03 system, can be consider as the optimum ratio, because this ratio is leading to the modification and durability of the microstructure of this system, by comparing with the other systems. So that, from this result, we can be consider the admixture of (fly ash +slag) with the OPC matrix as a pozzolanic material.

International Publications Awards
Cairo University

Name : **Prof . Mohamed Ali Ahmed**

Dep. : **Physics**



Title : **Study of the Effect of Admixture on the Dielectric Behavior of Blended Cement Pastes at Different Conditions**

A. E. Al-Salami, A. Al-Hajry, M. A. Ahmed and S.Taha

Journal : **Silicate Industrial**

ISSN : 0037-5225 **Impact Factor :** 0.198

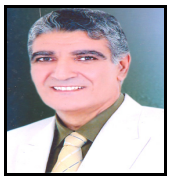
Abstract :

Changes in the dielectric constant (ε) can be used to monitor the hydration process and characterize the development of microstructure in blended cement paste. The behavior of the dielectric constant (ε) for cement mixtures has been studied in the initial stages of setting (during 6 hours) to correlate the evolution of this electrical parameter with the physical and microstructure modifications. In this investigation, the effect of curing temperature (20, 30 and 40°C), w/c ratio (0.20, 0.25 ··· up to 0.40) and additive materials on the hydration characteristics of blended cement was studied. The blended cement used in this investigation consists of ordinary Portland cement (OPC) (M0) and mixed with either 35% fly ash (M 01), or 35% slag (M02) and (35% fly ash + 35% slag) (M03). The dielectric constant of the cement paste will be dependent on, for example the changes in the physical state of water and ionic concentrations within the mixing water (the case with which dipoles and polar molecules can move within the paste) and the degree of association of the system. During the first 24h after mixing with water, C3S in cement clinker will, perhaps have the greatest influence upon the electrical response. Clearly the dielectric constant (ε) increases as the w/c ratio increases. This result is mainly associated with the increase of the total porosity of hydrated pastes which are filled with capillary water containing the concentrations of free ions. Results also indicate that the optimum conditions for enhancement of the hydration process inside the matrix of the mortar occurs at ≈ 30°C and w/c ratio ≈ (0.30-0.35). That may suggests an increase in the pozzolanic effect (pore structure density) of the admixture materials to the M0 matrix (especially in the M03 system) in the early stages under this particular condition.

International Publications Awards
Cairo University

Name : **Prof . Mohamed Ali Ahmed**

Dep. : **Physics**



Title : **Magnetic Characterization and Thermoelectric Power of Ni1 yZny Cu0.3Fe1.7 O4; 0.0pyp0.6**

M. A. Ahmed and M.M. EL-Sayed

Journal : **MAGNETISM AND MAGNETIC MATERIALS**

ISSN : 0304-8853 **Impact Factor :** 1.212

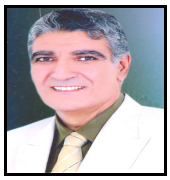
Abstract :

Samples of Ni1-yZnyCu0.3Fe1.7O4; 0.0□□y□0.6 were prepared by the solid state reaction method. X-ray investigations were carried out in order to assure the formation of the samples in single spinel phase. The analysis of X-ray data shows that the unit cell parameter increases with increasing Zn concentration and ascribed to the variation of the predicted cation distribution. Seebeck coefficient measurements were performed to know the type of charge carriers participating in the conduction mechanism. The magnetic susceptibility for the prepared samples was measured using Faraday's method at different temperatures as a function of the magnetic field intensity. The magnetic parameters were calculated from the magnetic susceptibility data, in the temperature range (300–800 K) at three different magnetic field intensities of (1280, 1733 and 2160Oe). The effective magnetic moment (□eff) showed that, the critical Zn content was y = 0.2.

International Publications Awards
Cairo University

Name : **Prof . Mohamed Ali Ahmed**

Dep. : **Physics**



Title : **Enhancement of the Physical Properties of Rare Earth Substituted Mn-Zn Ferrites Prepared by Flash Method**

M. A. Ahmed, N. Okasha and M. M. El-Sayed

Journal : **Ceramics International**

ISSN : 0272-8842 **Impact Factor :** 1.128

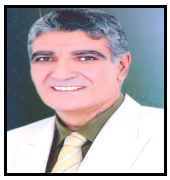
Abstract :

The effect of rare-earth ions on the structural, magnetic and electrical properties of rare-earth-doped manganese–zinc ferrite is reported. The compounds with the formula Mn0.5Zn0.5R0.05Fe1.95O4 where R = Tb, La, Ce and Th, were prepared by the flash combustion technique. The prepared samples reveal that by introducing a relatively small amount of R(NO3)3 or R(Cl3) instead of Fe2O3, an important modification of both structure and physical properties was obtained. Curie temperature, effective magnetic moment, electrical resistivity, density, thermoelectric and lattice constant were directly affected by these substitutions either by their partial diffusion in the spinel lattice or the formation of the crystalline secondary phases (orthoferrite and/or garnet) on the grain boundaries which suppress the abnormal grain growth. Correlation between the ionic radii and the measured physical properties were studied.

International Publications Awards
Cairo University

Name : **Prof . Mohamed Ali Ahmed**

Dep. : **Physics**



Title : **The role of Mg Substitution on the Microstructure and Magnetic Properties of BaCoZn W-Type Hexagonal Ferrites**

M. A. Ahmed, N. Okasha, M. Aouf and R. M. Kershi

Journal : **Magnetism and Magnetic Materials**

ISSN : 0304-8853 **Impact Factor :** 1.212

Abstract :

A series of W-type hexagonal ferrites with the composition BaCoZn1-xMgxFe16O27 (0£x£0.6) was prepared by the conventional ceramic method to study their structural and magnetic properties as a function of temperature and composition. The characterization using X-ray diffraction indicated that a hexagonal W-type single-phase structure and the effect of composition on the unit cell parameters, density and porosity was studied. The variation of the magnetic susceptibility (cM) with temperature for all the investigated samples in the temperature range (300–800 K) shows three regions of behavior that was explained on the basis of the distribution of Zn2+ and Mg2+ ions in the lattice and leads to the anomalous behavior of the effective magnetic moment meff. The Curie temperature indicated that the critical concentration is at x= 0.5. Paramagnetic nature of the samples above the Curie temperature is observed. The Curie-Weiss constant y calculated from the plot of 1/cM vs. T (K) is in agreement with the expected value. The effective magnetic moment meff decreases with increasing the intensity of magnetic field. The possible mechanisms contributing to these properties are discussed in the text.

Keywords :

Hexagonal ferrite; X-ray analyses; Microstructure SEM; Magnetic susceptibility; Curie temperature

International Publications Awards
Cairo University

Name : Dr . Mohamed Abdel-Azim Elneairy

Dep. : Chemistry

Title : **Reactions with 3,6-Diaminothieno[2,3-b]- pyridines: Synthesis and Characterization of Several New Fused Pyridine Heterocycles**

Mohamed A. M. Gad-Elkareem, Mohamed A. A. Elneairy and Adel M. Taha

Journal : **Heteroatom Chemistry**

ISSN : 1042-7163 **Impact Factor :** 0.838

Abstract :

6-Aminopyridine-2(1H)thiones 1 re- acting with α-halo-compounds 2a–c afforded the alkylthiopyridine derivatives 3a–c which in turn cyclized to the corresponding thieno[2,3-b]pyridine derivatives 4a–c. Several thieno[2,3-b]pyridine deri- vatives 7, 16, 19, pyrido[3 ,2 :4,5]thieno[3,2-d]pyri- midine derivatives 6a,b, 11a–c, 21 and pyrido-[3 ,2 :4,5]thieno[3,2-c]pyridazine derivatives 13, 17 derivatives were prepared starting from compounds 4a-c.

International Publications Awards
Cairo University

Name : **Dr . Mohamed Abdel-Azim Elneairy**

Dep. : **Chemistry**

Title : **Reactions with Dimethylformamide- Dimethylacetal: Synthesis and Reactions of Several New Pyridine and Pyrazolo[3,4-b]pyridine Derivatives**

Mohamed A. A. Elneairy, Mohamed A. M. Gad-Elkareem and Adel M. Taha

Journal : **Heteroatom Chemistry**

ISSN : 1042-7163 **Impact Factor :** 0.838

Abstract :

6-Aminopyridine-2(1H)-thiones 1a,breactedwithdimethylformamide-dimethylacetal (DMF-DMA) to give the corresponding 6-{[(N,N- dimethylamino)methylene]amino}pyridinederiva- tives 2a,b. The latter compounds reacted with hydrazine hydrate to afford the 3,6-diamino-1H- p yrazolo[3,4-b]pyridine derivative 4 and 3-amino-5- hydrazino-1H-pyrazolo[4 ,3 : 5,6]pyrido[2,3-d]pyrimi- dine derivative 7, respectively. Compound 4 con- densed with DMF-DMA to yield the 3,6-bis{[(N,N- dimethylamino) methylene] amino }- 1 H - pyrazolo-[3,4-b]pyridine derivative 10, which reacted with malononitrile to give the corresponding pyridopyra- zolopyrimidine derivative 15.

Name : **Prof . Mohamed Atef Helal**

Dep. : **Mathematics**

Title : **The Tanh Method and Adomian Decomposition Method for Solving The Foam Drainage Equation**

M.A. Helal and M.S. Mehanna

Journal : **Applied Mathematics and Computation**

ISSN : 0096-3003 **Impact Factor :** 0.816

Abstract :

Foaming occurs in many distillation and absorption processes. The drainage of liquid foams involves the interplay of gravity, surface tension, and viscous forces. In this paper, we use a semi analytic method, the Adomian decomposition method, and an analytic method, the tanh method to handle the foam drainage equation. The powerful tanh method gives the solution in a closed form. However, Adomian decomposition method computes the solution in a rapidly convergent infinite series. The comparison between the two approaches is conducted to illustrate the performance of each method.

Keywords :

Foam Drainage Equation; Decomposition Method; The Tanh Method

Name : **Prof . Mohamed Atef Helal**

Dep. : **Mathematics**

Title : **A Comparative Study Between two Different Methods for Solving the General Korteweg–De Vries Equation (Gkdv)**

M.A. Helal and M.S. Mehanna

Journal : **Chaos, Solitons and Fractals**

ISSN : 0960-0779 **Impact Factor :** 2.042

Abstract :

The family of the KdV equations, the most famous equations embodying both nonlinearity and dispersion, has attracted enormous attention over the years and has served as the model equation for the development of soliton theory. In this paper we present a comparative study between two different methods for solving the general KdV equation, namely the numerical Crank Nicolson method, and the semi-analytic Adomian decomposition method. The stability of the numerical Crank Nicolson scheme is discussed. A comparison between the two methods is carried out to illustrate the pertinent features of the two algorithms

International Publications Awards
Cairo University

Name : **Prof . Mohamed Mohamed Omar**

Dep. : **Chemistry**

Title : **Preparation and Spectroscopic Characterization of Novel Cyclodiphosph(V)azane of N1-2-Pyrimidinylsulfanilamide Complexes Magnetic, Thermal and Biological Activity Studies.**

Carmen M. Sharaby, Gehad G. Mohamedb,and ` M.M. Omar

Journal : **Spectrochimica Acta Part A**

ISSN : 1386-1425 **Impact Factor :** 1.27

Abstract :

Hexachlorocyclophosph(V)azane of sulfadiazine, (sulfupyrimidine) [N1-2-pyrimidinylsulfanilamide] (H2L1), was prepared and reacted with sulfur and glycine to give (H2L2) and (H2L3) ligands, respectively. The prepared ligands; H2L1, H2L2 and H2L3, react in 1:2 [ligands]:[metalions] molar ratio with transition metals to give coloured omplexes in a relatively good yields. The complexes were characterized using different physicochemical techniques, namely elemental analyses, IR, UV–vis, mass, 1H NMR, molar conductance, magnetic, solid reflectance and thermal analysis. The spectral data reveal that all the ligands behave as neutral bidentate ligands and coordinated to the metal ions via pyrimidine-N and enolic sulfonamide OH. The molar conductance data reveal that the complexes are non-electrolytes while UV–vis, solid reflectance and magnetic moment data have been shown that the complexes have octahedral geometry. The thermal behaviour of the complexes is studied and the thermodynamic activation parameters are calculated. The ligands and their complexes show high to moderate bactericidal activity.

Keywords :

Sulfadiazine; Phosphorus Pentachloride; Sulfur; Glycine; Transition Metals; Thermal Analysis; Biological Activity

Name : **Prof . Mohamed Roushdy**

Dep. : **Physics**

Title : **Effect of the Polar Substituents on the Optical Parameters of Binary Mixtures of 4-Substituted- phenyl-4-hexyloxybenzoates**

M. Roushdy

Journal : **Molecular Crystals and Liquid Crystals**

ISSN : 1542-1406 **Impact Factor :** 0.478

Abstract :

The refractive indices as a function of temperature were measured for the individ- ual components of 4-substituted-phenyl-4-hexyloxybenzoates as well as their binary mixtures. In these components one terminal substitution is C6H13O and the other terminal is either the methoxy (CH3O), methyl (CH3), cyano (CN), or nitro
(NO2) group. Refractive index data were used to estimate the molecular order parameter (S) and the length-to-breadth ratio (k) for all samples investigated. The entropy change (Dsc) at the nematic–isotropic transition temperatures (Tc) was also calculated from differential scanning calorimetry data (DSC). The results were thoroughly analyzed and compared.

Keywords :

Binary Mixtures; Index of Refraction; Liquid crystals; Optical Properties

Name : **Prof . Mohamed Roushdy**

Dep. : **Physics**

Title : **Low-Frequency Dilational Elasticity of the Nematic 4'-Pentyl-4-biphenylcarbonitrile (5CB)/Water Interface**

Radwa Ibrahim El-Sadek, M. Roushdy and Jules J. Magda

Journal : **Langmuir**

ISSN : 0743-7463 **Impact Factor :** 3.902

Abstract :

Axisymmetric oscillating pendant drop shape analysis has been used to study the interfacial rheology of the liquid crystal 4′-pentyl-4-biphenylcarbonitrile (5CB) in water with homeotropic anchoring. Nearly spherical 5CB droplets were subjected to low frequency (1-5 mHz) volume oscillations, and the increase in tension with surface dilation was used to calculate the complex modulus. The droplet interface response is completely elastic, with no relaxations occurring on the experimental time scale. This surprising result is attributed to droplet storage of elastic energy in the form of distorted orientational distributions within the bulk (Frank elasticity) and on the surface (anchoring elasticity).

International Publications Awards
Cairo University

Name : **Prof . Mohamed Shoukry**

Dep. : **Chemistry**

Title : **Potentiometric Studies of Binary and Ternary Complexes Involving Cadmium(Ii) and Nitrilo-Tris (Methyl Phosphonic Acid) With Amino Acids, Peptides or Dna Constituents**

Azza A. Shoukry and Mohamed M. Shoukry

Journal : **Annali Di Chimica**

ISSN : 0003-4592 **Impact Factor :** 0.516

Abstract :

The complexing properties of nitrilo-tris(methylphosphonic acid) (NTP) with cadmium(II) were investigated pH-metrically at 25 C and at ionic strength of 0.1 mol dm-3 (NaNO3). Stoichiometry and stability constants for the complexes formed are reported. Cadmium (II) forms Cd(NTP)4- and the corresponding hydroxy complexes. The ternary complexes are formed in a stepwise mechanism whereby NTP bind to cadmium(II), followed by coordination of amino acids, peptides or DNA. The concentration distribution of the various complex species has been evaluated.

International Publications Awards
Cairo University

Name : **Prof . Mohamed Shoukry**

Dep. : **Chemistry**

Title : **Ternary Copper (II) Complexes Involving 2-(Aminomethyl)-Benzimidazole and Some Bio-Relevant Ligands. Synthesis, Equilibrium Studies and Kinetics of Hydrolysis for Glycine Methyl Ester Under Complex Formation**

Ahmed A.El-Sherif and Mohamed M. Shoukry

Journal : **Inorganica Chimica Acta**

ISSN : 0020-1693 **Impact Factor :** 1.674

Abstract :

Formation equilibria of copper(II) complexes of 2-(aminomethyl)-benzimidazole (AMBI) and the ternary complexes Cu(AMBI)L (L = amino acid, peptide, dicarboxylic acid or DNA constituents) have been investigated. Ternary complexes of amino acids or peptides are formed by a simultaneous mechanism. Amino acids form the complex Cu(AMBI)L, whereas peptides form two complex species Cu(AMBI)L and Cu(AMBI)(LH-1). The ternary complexes of copper(II) with AMBI and dicarboxylic acids or DNA units are formed by a stepwise mechanism, whereby binding of copper(II) to AMBI is followed by ligation of the dicarboxylic acids or DNA components. The values of ΔLogK indicate that the ternary complexes containing aromatic amino acids are significantly more stable than the complexes containing alkyl- and hydroxyalkyl-substituted amino acids, This may be taken as an evidence for a stacking interaction between the aromatic moiety of AMBI and the aromatic side chains of the bio-active ligands. The solid complexes Cu(AMBI)L where L = CBDCA and malonic acid were separated and identified by elemental analysis and infrared spectroscopy and magnetic moment. The hydrolysis of glycine methyl ester (MeGly) is catalysed by the Cu(AMBI)2+ complex. The kinetic data is fitted assuming that the hydrolysis reaction proceeds in two steps. The first step, involving coordination of the amino acid ester by the amino and carbonyl groups, is followed by rate-determining attack by OH- ion. The second step involves the equilibrium formation of the hydroxo-complex Cu(AMBI)(MeGly)(OH) followed by intramolecular OH- attack.

Name : **Prof . Mohamed Shoukry**

Dep. : **Chemistry**

Title : **Coordination Properties of Tridentate (N,O,O) HeterocyClic Alcohol (PDC) with Cu(II) Mixed ligand complex formation reactions of Cu(II) with PDC and some bio-Relevant ligands**

Ahmed A. El-Sherif and Mohamed M. Shoukry

Journal : **Spectrochimica Acta Part A**

ISSN : 1386-1425 **Impact Factor :** 1.270

Abstract :

The formation equilibria of copper(II) complexes and the ternary complexes Cu(PDC)L (PDC = 2,6-bis-(hydroxymethyl)-pyridine, HL = amino acid, amides or DNA constituents) have been investigated. Ternary complexes are formed by a simultaneous mechanism. The results showed the formation of Cu(PDC)L, Cu(PDC, H−1)(L) and Cu(PDC, H−2)(L) complexes. The concentration distribution of the complexes in solution is evaluated as a function of pH. The effect of dioxane as a solvent on the protonation constant of PDC and the formation constants of Cu(II) complexes are discussed. The thermodynamic parameters ΔH◦ and ΔS◦ calculated from the temperature dependence of the equilibrium constanare investigated.

Keywords :

2,6-Bis-(hydroxymethyl)-pyridine (PDC); Amino acids; Amides; DNA constitutents; Potentiometry; Thermodynamics

International Publications Awards
Cairo University

Name : **Prof . Mohamed Shoukry**

Dep. : **Chemistry**

Title : **Synthesis and Thermodynamic Investigation of 4-Amino-6-Hydroxy-2-Mercapto Pyrimidine (AHMP) Complexes with Some Selected Divalent Metal(II) Ions**

Ahmed A. El-Sherif, M. M. Shoukry, Jasem A. Al-Kandary, Faisal M. A. Mandani and Adel S. Al-Jimaz

Journal : **Solution Chem**

ISSN : 0095-9782 **Impact Factor :** 1.026

Abstract :

The synthesis and characterization of zinc (II), cadmium (II), lead (II), mercury(II)and phenylmercury (II) complexes of 4-amino-6-hydroxy-2-mercapto pyrimidine (AHMP) are reported. The stoichiometry of the complexes was found to be 1:2 except for phenylmercury(II) complex where the ratio is 1:1. Characterization of complexes have been carried out by by means of elemental analyses, IR and 1H NMR measurements. In these complexes the ligand is bonded to the metal through its sulphur atom. The potentiometric results showed the formation of 1:1 and 1:2 complexes and the corresponding stability constants were determined for both Zn(II) and Cd(II) ions. The high insolubility of mercury(II), phenylmercury(II) and lead(II) complexes prevented the determination of their stability constants. The concentration distribution of the complexes in solution was evaluated. The effect of temperatue on the dissociation constant of AHMP, and the formation constant of both Zn-AHMP and Cd-AHMP complexes were studied and the thermodynamic parameters were calculated..

Keywords :

Keywords Synthesis; Thermodynamic Investigation; 4-amino-6-hydroxy-2-mercapto; Pyrimidine; Complexes; Divalent Metal Ions

Name : **Prof . Mohamed Zaki Ewiess**

Dep. : **Physics**

Title : **Molecular Alignment of the 4-Octyl-49-Cyanobiphenyl Liquid Crystal Filled With Sio2**

M.A. Zaki Ewiss, F. Moawia and B. Stoll

Journal : **Liquid Crystals**

ISSN : 0267-8292 **Impact Factor :** 1.417

Abstract :

The molecular dynamics and molecular alignment of the dispersed 4-octyl-49-cyanobiphenyl (8CB) liquid crystal with 5wt% of SiO2 nanosphere particles have been studied using dielectric spectroscopy. The measurements were performed in the frequency range between 102–107 Hz in the SmA, N and I phases. The results show only one Debye relaxation process at high frequency (105–107 Hz). In the bulk material, activation energies of 40, 58 and 63 kJ mol21 were determined for the SmA, N and the I phases, respectively. In the dispersed sample, the activation energies were found to be 52, 76 and 81 kJ mol21, respectively. These results are compared with the available data in the literature. The reversible electromechanical response of the dispersed sample under the influence of an applied a.c. electric field was investigated in the SmA, N, and I phases.

International Publications Awards
Cairo University

Name : **Prof . Mohga Fareed Mostafa**

Dep. : **Physics**

Title : **Preparation,Characterization and Crystal Structure of the Room Temperature Phase of [(CH3)(C6 H5)3P]2[ZnBr4]: A Member of the A2BX4 Family**

Mohga F. Mostafa, Ahmed A. Youssef, Thanaa S. El- Dean, Aisha M. Mostafa and Ibrahim S. Farag

Journal : **Z. Naturforsch**

ISSN : 0932-0784 **Impact Factor :** 0.904

Abstract :

The compound bis(methyltriphenylphosphonium) tetrabromozincate(II), [C19 H18 P]2[ZnBr4], Mr = 939.640, has a monoclinic unit cell, space group P21 . The lattice parameters are a = 9.7693(3) ˚A, b = 12.5508(4) ˚A, c = 16.5372(6) ˚A, □ = 90.00◦ , □ = 105.2670(11)◦ , □ = 90.00◦ , V = 1956.11(11) ˚A3 , Z = 2, Dx = 1.595 mg m−3 at T = 298 K. The structure consists of one dis- torted [ZnBr4]2− tetrahedron and two [(CH3)(C6 H5)3 P]+ cations. Differential scanning calorimetry indicates a continuous second-order transition at (276 ± 2) K that may be classified as a commen- surate to incommensurate transformation. A first-order transition to a higher symmetry is associated with a four-fold rotation of the [ZnBr4]2− ion and a change of entropy ΔS = 22.92 J/K • mol at T =(362 ± 3) K.

Dilatometric measurements showed a decrease of the lattice parameters in the temperature range 230 – 260 K, confirmed the transition at (276 ± 2) K, and indicated the presence of a third transition at 282 K. – PACS numbers: 61.10.i, 64.70.Kb, 61.44.Fw.

Keywords :

Crystal Structure; Phase Transition; Commensurate-Incommensurate

International Publications Awards
Cairo University

Name : **Prof . Mohga Fareed Mostafa**

Dep. : **Physics**

Title : **Synthesis, Characterization and Impedance Spectroscopy of The New Material [(CH3)(C6H5)3P]2cobr4: A Member of the A2BX4 Family**

M. F. Mostaf, A. A. Yousse, Th. Sh. El Dean , A. M. Mostafa and I. S. Ahmed Fara

Journal : **Crystal Research and Technology**

ISSN : 0232-1300 **Impact Factor :** 0.863

Abstract :

The crystal structure of bis-(methyltriphenylphosphonium) tetrabromocobaltate (II), [(C19H18P)2CoBr4] is determined: Mr = 933.203, monoclinic, P21, a = 9. 6977 (3) Å, b = 12.5547 (4)Å, c = 16.4503 (6)Å, β = 105.603 (2)°, V = 1929.04 (11)Å3, Z = 2, Dx = 1.607 Mg m-3, T = 298 K. Differential thermal analysis at high temperatures shows three endothermic peaks characterizing four phases, with onset temperatures at T1= 313±2 K, T2 = 320±4 K and T3= 360±1 K. The structural instability detected via the temperature dependence of permittivity at T1 is ascribed to order-disorder transition associated with cation dipole reorientation. Permittivity and ac conductivity studies as a function of temperature (295 K- 375 K) and frequency (0.11 kHz < f <100 kHz) are presented. The results indicate the importance of the cation size and shape on the phase transitions in the system. Bulk conductivity behavior is thermally activated. The associated activation energies are in the range 2.9 to 1.0 eV depending on the temperature regime. Two contributions to the ac conductivity, one dominating at low temperatures and high frequencies which are characterized by superlinear frequency exponent and the second dominates at high temperatures characterized by a sublinear frequency exponent. The behavior is interpreted in terms of the jump relaxation model.

Keywords :

Dielectric Permittivity; AC Conductivity; X-Ray Structure Analysis

International Publications Awards
Cairo University

Name : **Prof . Mohga Fareed Mostafa**

Dep. : **Physics**

Title : **Transport Properties in Non-Oxide Perovskite Ferroelectric Relaxors**

M. F. Mostafa, A. A. A. Youssef And S. S. Khiyami

Journal : **Philosophical Magazine**

ISSN : 1478-6435 **Impact Factor :** 1.354

Abstract :

Electric transport in a Cu-doped Cd salt [(CH2)3(NH3)2Cd1 xCuxCl4, x ¼ 0.0, 0.07, 0.395 and 0.69] was investigated in the frequency range 60 Hz–100 kHz and the temperature range 290–450 K. The conductivity increases with increasing copper doping. Samples with x ¼ 0.0 and 0.07 undergo phase transitions at 374 K and 369 K, respectively. Ferroelectric relaxor-like behaviour appears for x ¼ 0.395 and 0.69. The conduction mechanism of the samples with x ¼ 0.0 and 0.07 depends on the temperature region. Below the transition temperatures chlorine vacancy andprotonhoppingprevails,whereasabovethetransition temperatures mainly proton conduction dominates. Transport in the new non-oxide ferroelectric relaxors, where x = 0.395 and 0.69, can be explained by the jump relaxation model where proton and ionic hopping contribute to the conductivity throughout the whole temperature range.

Name : **Dr . Mohsen Mahmoud Mady**

Dep. : **Biophysics**

Title : **Biophysical Studies on Protein-Lipid Interaction**

Mohsen M. Mady

Journal : **Bioscience & Bioengineering**

ISSN : 1389-1723 **Impact Factor :** 1.136

Abstract :

The potential use of liposomes as a delivery system is still limited by the poor understanding of their interaction mechanisms with biological media. Interaction between liposome and protein is important for the structure and function of natural cell. In the present work, interaction between collagen and dipalmitoyl phosphatidylcholine (DPPC) liposomes was studied using solubilization process using non-ionic detergent octylglucoside (OG) as well as monolayer technique. The solubilization of liposomal membrane was found to exhibit three stages transition from vesicular form to mixed micellar form. Moreover, amount of detergent needed to completely solubilize liposomal membrane was also increased after incubation of liposomes with collagen, indicating increasing membrane resistance to the detergent and hence change in the natural membrane permeation properties. The addition of collagen in the subphase of different monolayer films induced a considerable shift towards larger area/molecule in the compression-isotherm curves. This is either referred to the insertion of collagen into the monolayer by its hydrophobic residues or to an adsorption process causing a protein layer to be located parallel to the lipid monolayer. It was concluded that collagen significantly altered the physical state of liposome membrane, which may be attributed to collagen interaction with liposomes surface and/or by its incorporation within the bilayer membrane.

International Publications Awards
Cairo University

Name : **Prof . Monier Mohamed Abdel-Ghani**

Dep. : **Botany**

Title : **Environment and vegetation of Randonia africana: an endangered desert plant in Egypt**

Monier M. Abd El-Ghani and Abdou H. Marei

Journal : **Ecology**

ISSN : 0141-6707 **Impact Factor :** 0.685

Abstract :

Randonia africana Coss.(Resedaceae) is a perennial endangered vascular plant species in Egypt. It inhabits the sandy plains along Mersa Matruh–Siwa Oasis road cros- sing the Western Desert of Egypt, where it represents the easternmost limit of distribution in North Africa. The vegetation associates within each of the five known pop- ulation sites of R. africana were studied, and their edaphic correlates were analysed. Classification and ordination techniques were employed to the importance values of the29 recorded species in 25 stands. Application of TWIN- SPAN classified the floristic data into five vegetation groups, and separated along detrended correspondence analysis axes 1 and 2. Group E was the most diversified among the other vegetation groups, while monotypic stands of R. africana (group B) was the least. Detrended canonical correspondence analysis (DCCA) indicated that the distribution of R. africana and its associates was mainly controlled by soil salinity, percentages of surface sediments of different size classes, calcareous deposits, and organic matter.

Keywords :

Arid Ecosystems; Diversity; Multivariate Analy- Sis; Vegetation

International Publications Awards
Cairo University

Name : **Prof . Nabil Labib Yousef**

Dep. : **Mathematics**

Title : **Linear Connections and Curvature Tensors In The Geometry of Parallelizable Manifolds**

Nabil L.Youssef and Amr M. Sid-Ahmed

Journal : **Reports on Mathematical Physics**

ISSN : 0034-4877 **Impact Factor :** 0.495

Abstract :

In this paper we discuss linear connections and curvature tensors in the context of the geometry of parallelizable manifolds (or absolute parallelism geometry). Different curvature tensors are expressed in a compact form in terms of the torsion tensor of the canonical connection. Using the Bianchi identities, some other identities are derived from the expressions obtained. These identities, in turn, are used to reveal some of the properties satisfied by an intriguing fourth order tensor which we refer to as Wanas tensor. A further condition on the canonical connection is imposed, assuming it is semi-symmetric. The formulae thus obtained, together with other formulae (Ricci tensors and scalar curvatures of the different connections admitted by the space) are calculated under this additional assumption. Considering a specific form of the semi-symmetric connection causes all non-vanishing curvature tensors to coincide, up to a constant, with the Wanas tensor. Physical aspects of some of the geometric objects considered are pointed out.

Keywords :

Parallelizable Manifold; Absolute parallelism Geometry; Dual Connection; Semi-symmetric Connection; Wanas Tensor; Field Equations

International Publications Awards
Cairo University

Name : **Prof . Nada Farouk Atta**

Dep. : **Chemistry**

Title : **Electrodeposited Metals At Conducting Polymer Electrodes I-Effect Of Particle Size And Film Thickness On Electrochemical Response**

Nada F. Atta, A. Galal and F. Khalifa

Journal : **Applied Surface Science**

ISSN : 0169-4332 **Impact Factor :** 1.436

Abstract :

Conducting polymers are electrochemically polymerized at platinum electrode substrates. The thickness, porosity and surface morphology of the resulting films are controlled by the charge passing during electropolymerization step and the synthesis conditions. The polymer films are modified by electrochemically depositing platinum particles. The technique of deposition depends on applying a programmed potential pulse at the polymer film from a solution containing platinum complex that resulted in the formation of platinum particles of controlled size and distribution. The effect of changing the size of platinum particles and polymer film thickness on the voltammetric behavior of the resulting hybrid material showed noticeable changes in the electro-catalytic current in acid medium. On the other hand, the electrochemical impedance spectroscopy experiments showed that diffusion and charge-transfer rate increased in the order: unmodified polymer films, thin polymer films containing small size/amount of platinum particles and relatively thick polymer films containing larger size/amount of platinum particles. The morphology of polymer films, size and distribution of platinum particles in the film were studied by scanning electron microscopy. The presence of platinum and its distribution over the film surface was confirmed from the X-ray dispersive analysis and surface mapping. The hybrid materials are good candidates for the application in devices for exchange of hydrogen ions.

Keywords :

Conducting Polymers; Nano-Particles In Polymers; Electrochemistry; Electrocatalytic Activity; EIS; SEM

International Publications Awards
Cairo University

Name : **Prof . Nada Farouk Atta**

Dep. : **Chemistry**

Title : **Effect of Surfactants on the Voltammetric Response and Determination of an Antihypertensive Drug**

Nada F. Atta, Soher A. Darwish, Sayed E. Khalil, A. Galal

Journal : **Talanta**

ISSN : 0039-9140 **Impact Factor :** 2.81

Abstract :

The effect of adding surface-active agents to electrolytes containing terazosin, an antihypertensive drug, on the voltammetric response of glassy carbon electrode was studied. The current signal due to the oxidation process was a function of the amount of terazosin, pH of the medium, type of surfactant, and accumulation time at the electrode surface. Two surfactants were used, an anionic type, sodium dodecyl sulfate (SDS) and a cationic type, cetyl trimethyl ammonium bromide (CTAB). Addition of SDS to the terazosin-containing electrolyte was found to enhance the oxidation current signal while CTAB showed an opposite effect. Beside the interfacial interaction of the surfactant with the electrode surface in reference to the bias applied potential and the charge of surfactant, terazosin-surfactant interaction in the electrolytic solution was found to be critical to the magnitude of current signal. Addition of SDS to terazosin-containing buffer solution resulted in a decrease in the drug absorption spectrum both in the ultra-violet and visible (UV–vis) regions. Moreover, NMR measurements showed considerable chemical shifts for the aromatic protons of the quinazolinyl moiety of the terazosin in presence of SDS. The affected aromatic protons are positioned next to the interacting protonated amino-group of the terazosin with the charged sulfonate-group of SDS. On the other hand, addition of CTAB did not cause noticeable changes both to the UV–vis and NMR spectra of the drug. The use of SDS in the electrochemical determination of terazosin using linear sweep voltammetry and differential pulse voltammetry at solid glassy carbon electrode enhanced the detection limit from 6.00×10-7 mol L-1 in absence of surfactant to 4.58×10-9 mol L-1 when present. The validity of using this method in the determination of drug active ingredient in urine samples and tablet formulations was also demonstrated.

Keywords :

Surfactants; Modified Electrodes; Voltammetry; UV–vis; NMR; Drug Interaction; Terazosin

International Publications Awards
Cairo University

Name : **Prof . Nadia Ahmed Mohamed**

Dep. : **Chemistry**

Title : **Structure - Property Relationships for Novel Wholly Aromatic Polyamide – Hydrazides Containing Various Proportions of Para - Phenylene and Meta - Phenylene UnitsV: Evaluation of the Electrical Surface Conductivity of Several Metallized Plastic Films**

Nadia Ahmed Mohamed

Journal : **Polymer Testing**

ISSN : 0142-9418 **Impact Factor :** 1.312

Abstract :

Electrical conductivities of several metallized polyamide-hydrazide films have been investigated. These metallized plastic films were prepared by reduction of the corresponding polyamide-hydrazide-transition metal complex films using sodium boron hydride (NaBH4). The metals incorporated into the polymeric chains include silver, copper, and cobalt. The effect of NaBH4 concentration, temperature and time of exposure on the conductivity of the polyamide-hydrazide-metal complex films has been studied. The optimum effect was attained using 4-6 wt % of NaBH4 aqueous solution for about 2-3 min of exposure at 60-80 0C. The electrical resistivities are in the range of 10-6 – 103 Ω cm-2, and are influenced by the type of metal incorporated into the polymeric chains. They decrease in the following order: Co > Cu > Ag. For a particular metal, the surface resistivity of the films decreases with increasing metal content. The metallic layer generated on the surfaces of the films upon reduction was believed to be responsible for their electrical conductivity. Moreover, the surface resistivity is also affected by polymer structural variations and is decreased by increasing para-oriented phenylene rings content of the polymer. The metallized films showed good environmental stability.

Keywords :

Polyamide-Hydrazide-Metal Complexes; Metallized Films; Electrical Surface Resistivity; Electrical Conductors; Environmental Stability.

International Publications Awards
Cairo University

Name : **Prof . Nadia Ahmed Mohamed**

Dep. : **Chemistry**

Title : **N-(Substituted phenyl) itaconimides-phenyl salicylate blends as organic stabilizers for plasticized poly(vinyl chloride) against photo-degradation**

Nadia Ahmed Mohamed, Mona Mohamed Fahmi

Journal : **Polymer Degradation and Stability**

ISSN : 0141-3910 **Impact Factor :** 2.174

Abstract :

The effect of blending some N-(substituted phenyl)itaconimide derivatives, N-(RPh)II, (R: -H, or -OMe) with phenyl salicylate UV absorber on the stabilizing efficiency in photo-degradation of PVC plasticized with dioctyl phthalate (DOP) has been investigated. Blending was effected in the range of 0-100 wt % of the itaconimide relative to reference stabilizer. The stabilizing efficiency was evaluated by measuring the length of the induction period (Ts), the period during which no detectable amounts of hydrogen chloride gas could be observed, and also from the rate of dehydrochlorination as measured by continuous potentiometric determination on one hand, and the extent of discoloration of the degraded polymer on the other. The efficiencies are also evaluated by determining the amount of gel formation as well as the intrinsic viscosity of the insoluble and the soluble fractions of the degraded polymer. The results show a true synergistic effect from the blending of itaconimide derivative with phenyl salicylate UV absorber. Blending of the stabilizers improves the Ts values, decreases the rate of dehydrochlorination, and lowers the extent of discoloration and the gel content of the polymer. The synergism attains its maximum when both the itaconimide and the reference stabilizers are taken in equimolar ratios. The observed synergism may be attributed to the combination of mechanisms by which the itaconimide and the reference stabilizer work.

Keywords :

Plasticized poly (vinyl chloride); Blended photo-stabilizers; Potentiometric determination; Discoloration; Gel content; Intrinsic viscosity; Synergistic effect.

Name : **Prof . Nadia Ahmed Mohamed**

Dep. : **Chemistry**

Title : **N-(Substituted phenyl) itaconimides as organic stabilizers for plasticized poly(vinylchloride) against photo-degradation**

Mona Mohamed Fahmi and Nadia Ahmed Mohamed

Journal : **Polymer Degradation and Stability**

ISSN : 0141-3910 **Impact Factor :** 2.174

Abstract :

Several N-(substituted phenyl)itaconimide derivatives, N-(RPh)II (R: -NO2, -COOH, -H, -OH, -OMe, -Me, -Cl, or -Br), have been investigated as organic photo-stabilizers for poly(vinyl chloride) (PVC) plasticized with dioctyl phthalate (DOP). Their stabilizing efficiencies are evaluated by measuring the length of the induction period (Ts), the period during which no detectable amounts of hydrogen chloride gas could be observed, and also from the rate of dehydrochlorination as measured by continuous potentiometric determination, and the extent of discoloration of the degraded polymer. The efficiencies are also evaluated by determining the amount of gel formation as well as the intrinsic viscosity of the insoluble and the soluble fractions of the degraded polymer, respectively. The results have proved the greater stabilizing efficiency of the N-(RPh)II derivatives relative to that of the phenyl salicylate UV absorber which is a commonly used industrial stabilizer. A radical mechanism is proposed to account for the stabilizing action of the investigated products.

Keywords :

Plasticized poly(vinyl chloride); Organic photo-stabilizers; Photo-dehydrochlorination; Discoloration; Cross-linking; Stabilization mechanism.

International Publications Awards
Cairo University

Name : **Prof . Nadia Emam Ali El-Gamel**

Dep. : **Chemistry**

Title : **Uranyl binary and ternary chelates of tenoxicam Synthesis, spectroscopic and thermal characterization of ternary chelates of tenoxicam and alanine with transition metals**

Nadia E. A. El-Gamel

Journal : **Spectrochimica Acta Part A**

ISSN : 1386-1425 **Impact Factor :** 1.27

Abstract :

Ternary Fe(III), Co(II), Ni(II), Cu(II), Zn(II) and UO2 (II) chelates with tenoxicam (Ten) drug (H2 L1) and dl-alanine (Ala) (HL2) and also the binary UO2 (II) chelate with Ten were studied. The structures of the chelates were elucidated using elemental, molar conductance, magnetic moment, IR, diffused reflectance and thermal analyses. UO2 (II) binary chelate was isolated in 1:2 ratio with the formula [UO2 (H2 L)2](NO3)2 . The ternary chelates were isolated in 1:1:1 (M:H2 L1 :L2) ratios and have the general formulae [M(H2 L1)(L2)(Cl)n (H2 O)m]•yH2 O (M = Fe(III) (n =2, m =0, y = 2), Co(II) (n =1, m =1, y = 2) and Ni(II) (n =1, m =1, y = 3)); [M(H2 L1)(L2)](X)z •yH2 O (M = Cu(II) (X = AcO, z =1, y = 0), Zn(II) (X = AcO, z =1, y = 3) and UO2 (II) (X = NO3 , z =1, y = 2)). IR spectra reveal that Ten behaves as a neutral bidentate ligand coordinated to the metal ions via the pyridine-N and carbonyl-O groups, while Ala behaves as a uninegatively bidentate ligand coordinated to the metal ions via the deprotonated carboxylate-O and amino-N. The magnetic and reflectance spectral data confirm that all the chelates have octahedral geometry except Cu(II) and Zn(II) chelates have tetrahedral structures. Thermal decomposition of the chelates was discussed in relation to structure and different thermodynamic parameters of the decomposition stages were evaluated.

Keywords :

Tenoxicam and alanine ternary chelates; Transition metal chelates; IR; Conductance; Magnetic and diffuse reflectance; Thermogravimetric analysis

Name : **Prof . Naser Hassan Sweilam**

Dep. : **Mathematics**

Title : **Variational iteration method for coupled nonlinear SchrÖdinger equations**

N. H. Sweilam and R. F. Al-Bar

Journal : **Computers and Mathematics with Applications**

ISSN : 0898-1221 **Impact Factor :** 0.611

Abstract :

In this paper, we apply the variational iteration method proposed by Ji-Huan He to simulate numerically a system of two coupled nonlinear one-dimensional SchrÖdinger equations subjected initially to a prescribed periodic wave solution. Test examples are given to demonstrate the accuracy and capability of the method with different wave–wave interaction coefficients. The accuracy of the method is verified by ensuring that the energy conservation remains almost constant. The numerical results obtained with a minimum amount of computation show that the variational iteration method is much easier, more convenient and efficient for solving nonlinear partial differential equations.

Name : **Prof . Naser Hassan Sweilam**

Dep. : **Mathematics**

Title : **Fourth order integro-differential equations using variational iteration method**

N. H. Sweilam

Journal : **Computers and Mathematics with Applications**

ISSN : 0898-1221 **Impact Factor :** 0.611

Abstract :

In this paper, the variational iteration method proposed by Ji-Huan He is applied to solve both linear and nonlinear boundary value problems for fourth order integro-differential equations. The numerical results obtained with minimum amount of computation are compared with the exact solutions to show the efficiency of the method. The results show that the variational iteration method is of high accuracy, more convenient and efficient for solving integro-differential equations.

International Publications Awards
Cairo University

Name : **Prof . Naser Hassan Sweilam**

Dep. : **Mathematics**

Title : **Harmonic wave generation in non linear thermoelasticity by variational iteration method and Adomian's method**

N. H. Sweilam

Journal : **Computational and Applied Mathematics**

ISSN : 0377-0427 **Impact Factor :** 0.759

Abstract :

This paper applies the variational iteration method and Adomian's decomposition method to solve numerically the harmonic wave generation in a nonlinear, one-dimensional elastic half-space model subjected initially to a prescribed harmonic displacement. The results show that the variational iteration method is much easier, more convenient, and more stable and efficient than Adomian decomposition method

International Publications Awards
Cairo University

Name : **Prof . Naser Hassan Sweilam**

Dep. : **Mathematics**

Title : **Variational Iteration Method for Solving Cubic Nonlinear Schroedinger Equation**

N. H. Sweilam

Journal : **Computational and Applied Mathematics**

ISSN : 0377-0427 **Impact Factor :** 0.759

Abstract :

The variational iteration method is applied to solve the cubic nonlinear Schroe.dinger (CNLS) equation in one and two space variables. In both cases, we will reduce the CNLS equation to a coupled system of nonlinear equations. Numerical experiments are made to verify the efficiency of the method. Comparison with the theoretical solution shows that the variational iteration method is of high accuracy

Name : **Prof . Naser Hassan Sweilam**

Dep. : **Mathematics**

Title : **Numerical Studies for a Multi-order Fractional Differential Equation**

N. H. Sweilam, M. M. Khader and R. F. Al-Bar

Journal : **Physics Letters A**

ISSN : 0375-9601 **Impact Factor :** 1.468

Abstract :

In this Letter, we implement the variational iteration method and the homotopy perturbation method, for solving the system of fraction differential equations (FDE) generated by a multi-order fraction differential equation. The fractional derivatives are described in the Caputo sense. In these schemes, the solution takes the form of a convergent series with easily computable components. Numerical results show that the two approaches are easy to implement and accurate when applied to partial differential equations of fractional order. An algorithm to convert a multi-order FDE has been suggested which is valid in the most general cases.

Keywords :

Variational Iteration Method; Homotopy Perturbation Method; Lagrange Multiplier; Fractional Differential Equation; Caputo Fractional Derivative

International Publications Awards
Cairo University

Name : **Prof . Naser Hassan Sweilam**

Dep. : **Mathematics**

Title : **Variational Iteration Method for One Dimensional Nonlinear Thermoelasticity**

N. H. Sweilam and M. M. Khader

Journal : **Chaos Solitons and Fractals**

ISSN : 0960-0779 **Impact Factor :** 2.042

Abstract :

This paper applies the variational iteration method to solve the Cauchy problem arising in one dimensional nonlinear thermoelasticity. The advantage of this method is to overcome the difficulty of calculation of Adomian's polynomials in the Adomian's decomposition method. The numerical results of this method are compared with the exact solution of an artificial model to show the efficiency of the method. The approximate solutions show that the variational iteration method is a powerful mathematical tool for solving nonlinear problems

Name : **Prof . Nora Mohamed Rateb**

Dep. : **Chemistry**

Title : **Convenient Synthesis and Antimicrobial Evaluation of Multicyclic Thienopyridines**

Nora M. Rateb

Journal : **Phosphorus Sulfur And Silicon**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

Thieno[2,3-b]pyridines 7,8 and 10 could be obtained via the S-alkylation of 3-cyano-4,6-di-2-furyl-2(1H)pyridinethione (3) with a variety of alkylating agents. These compounds were conveniently converted into novel pyrido[3`,2`:4,5]thieno[3,2-d]pyrimidines 12-15 and 17-20 and thieno[2,3-b;4,5-b`]dipyridine 11 derivatives. Structures of the products have been determined by elemental analyses and spectral data studies. All the tested compounds were found to exhibit moderate antimicrobial activity

Keywords :

Multicyclic pyridines; Thienopyridine; Pyridothienopyrimidine; Thienodipyridine

International Publications Awards
Cairo University

Name : **Prof . Nour Tawfeek Abdel-Ghani**

Dep. : **Chemistry**

Title : **Flow-Injection Potentiometric Determination of Clobutinol Hydrochloride in Pure State and Pharmaceutical Preparations1**

N. T. Abdel-Ghani, R. M. El Nashar and S. M. Hamed

Journal : **Analytical Chemistry**

ISSN : 1061-9348 **Impact Factor :** 0.444

Abstract :

Clobutinol (Cb) ion-selective plastic-membrane electrodes based on ion associates of clobutino- lium phosphotungstate (Cb-PTA), clobutinolium phosphomolybdate (Cb-PMA), or a mixture of both Cb-PTA and PMA were prepared. The electrodes were fully characterized in terms of membrane composition, life span, pH, and temperature. The electrodes were applied to the potentiometric determination of clobutinol in pure form and pharmaceutical preparations under batch and flow-injection conditions. Also, conductimetric titra- tions were applied to the assay of clobutinol in its pure form and pharmaceutical preparations. The selectivity of the electrodes towards a large number of inorganic cations, amino acids, and sugars was tested. The solubility product of ion-associates and the formation constant of the precipitation reactions leading to the ion-associate formation were determined conductimetrically.

International Publications Awards
Cairo University

Name : **Prof . Nour Tawfeek Abdel-Ghani**

Dep. : **Chemistry**

Title : **Flow Injection Analysis with Tubular Membrane Ion- Selective Electrode and Coated Wires for Buspirone Hydrochloride**

Nour Abdel-Ghani, Yousry Issa, Adel Shoukry ,and Howayda Ahmed

Journal : **Annali Di Chimica**

ISSN : 0003-4592 **Impact Factor :** 0.516

Abstract :

New Plastic membrane ion-selective electrode for buspirone hydrochloride based on buspironium tetraphenylborate was prepared. The electrode exhibited mean slope of calibration graph of 58.4 mV per decade of BusCl concentration at 25°C. The electrode can be used within the concentration range 6.3 x10-5-10-2 M BusCl at a pH range of 2.5-7.0. The standard electrode potentials were determined at different temperatures and used to calculate the isothermal temperature coefficient of the electrode, amounting to 0.00056 V°C-1. The electrode showed a very good selectivity for BusCl with respect to a number of inorganic cations, sugars and amino acids. The electrode was applied to the potentiometric determination of the buspirone ion and its pharmaceutical preparation under batch and flow injection conditions. Also, buspirone was determined by conductimetric titrations. Graphite rod, copper and silver coated wire electrodes were prepared and characterized as sensors for the drug under investigation.

International Publications Awards
Cairo University

Name : **Prof . Nour Tawfeek Abdel-Ghani**

Dep. : **Chemistry**

Title : **Spectroscopic, Crystal Structure and Thermal Studies of Co(II), Ni(II), Cu(II), Zn(II), Cd(II) and Hg(II) With 5-Amino-4-Arylazo-3-Methyl-1-Phenylpyrazole (aryl^C6H5,o-C6H4COOH,o C6H4OH)**

M. F. Abo El-Ghar, N. T. Abdel-Ghani and O. M. El-Borady

Journal : **Coordination Chemistry**

ISSN : 0095-8972 **Impact Factor :** 0.978

Abstract :

5-Amino-4-arylazo-3-methyl-1-phenylpyrazole (aryl ¼ C6H5,o-C6H4COOH,o-C6H4OH) and its complexes with Co(II), Ni(II), Cu(II), Zn(II), Cd(II) and Hg(II) ions were synthesized. The complexes are in the ratio 1 : 1 and 1 : 2 (metal : ligand). Ligands and complexes were subjected to elemental analysis, IR, Raman, UV-Vis and 1H-NMR spectroscopy. The mass spectra of the ligands were discussed. Thermal analysis and magnetic measurements were carried out for the prepared complexes. The X-ray single crystal structure of [Ni(L1)2] was performed. The investigated pyrazole compounds coordinate as bidentate ligands through amino and azo nitrogens or tridentate through NNO. The molar conductance of the chelates is measured and reflected the non-electrolytic nature of the prepared complexes.

Keywords :

Arylazo-pyrazoles; Azo-complexes; Spectroscopy; X-ray; Thermal; Magnetic Moment

International Publications Awards
Cairo University

Name : **Prof . Nour Tawfeek Abdel-Ghani**

Dep. : **Chemistry**

Title : **Validated Polarographic Methods for the Determination of Certain Antibacterial Drugs**

N. T. Abdel ghani, M. A. El ries and M. A. El shall

Journal : **Analytical Sciences**

ISSN : 0910-6340 **Impact Factor :** 1.589

Abstract :

Two simple, precise, inexpensive and sensitive voltammetric methods for the determination of lomefloxacin (LFX), sparfloxacin hydrochloride (SFX), gatifloxacin (GFX), and moxifloxacin (MFX) were developed. The present methods were first used to explore the adsorption behavior of the four investigated antibacterial agents at a hanging mercury dropping electrode (HMDE), by a direct method and secondly by a modification via their complexation with PdCl2. For the direct method drugs were accumulated on (HMDE), and a well-defined reduction peak was obtained in Britton–Robinson buffer of pH 7 for LFX, and SFX, and pH 6 for GFX and MFX. The adsorptive stripping response was evaluated as a function of some variables such as the scan rate, pH, and accumulation time and potential. For the modified method the adsorptive behavior of Pd(II)-4-quinolone complexes at the HMDE developed a strippining voltammetry peak at a more negative potential than that of the free Pd(II) ions (–1.05 V). The limits of detection (LOD) were 2 □ 10–8 M, while the limits of quantification (LOQ) were 6 □ 10–8 M for the investigated drugs. The methods were applied to the determination of LFX, SFX, GFX, and MFX in biological samples and pharmaceutical preparations, and also compared with the official reference methods. Complete validation of the proposed methods was also done.

International Publications Awards
Cairo University

Name : **Prof . Rafat Millad Mohareb**

Dep. : **Chemistry**

Title : **Synthesis, Structure Elucidation, and Biological Evaluation of Some Fused and/or Pendant Thiophene, Pyrazole, Imidazole, Thiazole, Triazole, Triazine, and Coumarin Systems Based on Cyanoacetic 2-[(Benzoylamino)thioxomethyl] Hydrazide**

Hoda Z. Shams, Rafat M. Mohareb, Maher H. Helal and Amira E. Mahmoud

Journal : **Phosphorus, Sulfur, and Silicon and the Related Elements**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

Aiming to produce cyclized systems with potential bioactivity, a variety of fused and/or pendant thiophene, pyrazole, imidazole, thiazole, triazole, triazine, and coumarin systems were synthesized based on a cyanoacetic 2-[(benzoylamino)thi- oxomethyl] hydrazide precursor. The structure of the synthesized compounds was established based on elemental analysis and spectral data. The antibacterial and antifungal activities of the compounds are discussed and evaluated.

Keywords :

Antimicrobial; Imidazoles; Pyrazoles; Thiazoles; Thiophenes; Triazoles

Name : **Prof . Rafat Millad Mohareb**

Dep. : **Chemistry**

Title : **Synthesis of Thiophenes, Azoles and Azines with Potential Biological Activity by Employing the Versatile Heterocyclic Precursor N-Benzoycyanoacetylhydrazine**

Rafat M. Mohareb, Jonathan Z. Ho and Fatma O. Alfarouk

Journal : **The Chinese Chemical Society**

ISSN : 0009-4536 **Impact Factor :** 0.577

Abstract :

This research work is concerned with the use of N-benzoyl cyanoacetylhydrazine (3) in synthesizing several new heterocyclic compounds with potential biological activity, via its reaction with various chem- ical reagents. The synthesized derivatives have actually exhibited, upon screening, antibacterial and antifungal activities.

Keywords :

N-Benzoylhydrazide; Thiophene; Thiazole; Coumarin

International Publications Awards
Cairo University

Name : **Prof . Rafat Millad Mohareb**

Dep. : **Chemistry**

Title : **Uses of 1-Cyanoacetyl-4-phenyl-3-Thiosemicarbazide in Heterocyclic Synthesis: Synthesis of Thiazole, Coumarin, and Pyridine Derivatives with Antimicrobial and Antifungal Activities**

Rafat M. Mohareb, Jonathan Z. Ho and Abeer A. Mohamed

Journal : **Phosphorus, Sulfur, and Silicon and the Related Elements**

ISSN : 1042-6507 **Impact Factor :** 0.52

Abstract :

The reaction of cyanoacetyl hydrazine with phenylisothiocyanate gave the thiosemi- carbazide 3. The latter underwent a series of heterocyclization reactions when it reacts with either aromatic aldehydes or α-haloketones, follwed by further reaction of the products with cyanomethylene reagents or hydrazines to give either thiazole, coumarin, or pyridine derivatives. The newly synthesized product showed antimi- crobial and antifungal activities.

Keywords :

Coumarins; Pyrazoles; Pyridines; Thiazoles

International Publications Awards
Cairo University

Name : **Prof . Rafat Millad Mohareb**

Dep. : **Chemistry**

Title : **The Reaction of Cyanoacetylhydrazine with (1)-Bromoacetophenone: Novel Synthesis of 1,3,4-Oxadiazine, Pyridazine and Coumarin Derivatives**

Rafat M. Mohareb, Rehab A. Ibrahim and Jonathan Z. Ho

Journal : **The Chinese Chemical Society**

ISSN : 0009-4536 **Impact Factor :** 0.577

Abstract :

The reaction of cyanoacetylhydrazine with □-bromoacetophenone gave the condensation product □-Bromoacetophenone-□-cyanoacetylhydrazone (3). The latter product underwent ready cyclization to give the 1,3,4-oxadiazine derivative 4. The reactivities of either 3 or 4 towards some chemical reagents like cyanomethylene reagents, diazonium salts, aromatic aldehydes, phenylisothio-cyanate and elemental sulfur were studied to afford 17 newly products for which the toxicity towards Fusarium oxysporum f. sp. Lycopersici and Helminthosporium oryzea was measured. Moreover their effect towards mycelial dry mass, sporulation and nucleic acid synthesis of Fusarium oxysporum f. sp. Lycopersici was measured.

Keywords :

Cyanoacetylhydrazine; 1,3,4-Oxadiazine; Pyridazine; Toxicity

Name : **Prof . Rafie Hasan Abu-Eittah**

Dep. : **Chemistry**

Title : **Rotation Barrier of the Azide Group in Azidopyridines:Molecular Orbital Treatment**

Rafie H. Abu-Eittah and Mahmoud K. Khedr

Journal : **Molecular Structure: Theochem**

ISSN : 0166-1280 **Impact Factor :** 1.016

Abstract :

The height of the rotational barriers around C(pyridine)-N(azide) single bond in azidopyridines has been determined via ab initio molecular orbital calculations. The optimized geometry obtained from RHF/6-31G** results was used as an input for a single-point MP2/6-31G** calculation, the results of which are reported in this work. The potential energy function of rotation was subjected to Fourier analysis and terminated nicely at V3 as is shown from the results of least square treatment. The s-cis conformer of 2-azidopyridine is slightly more stable than the s-trans conformer and both are more stable than others obtained during rotation. A transition state is identified and confirmed, during rotation, via the location of a stationary point through a saddle-point calculation. A Hessian-type run is carried out to calculate the frequency of vibration, only one imaginary, negative, frequency was obtained. The height of the rotational barrier of the azide group in 2-azidopyridine is the largest, about 7 kcal/mol, whereas it amounts 3.32 and 4.04 kcal/mol for 3-azido and 4- azidopyridine, respectively.

Keywords :

Rotation barrier; Pyridine azides

Name : **Prof . Rashika Ahmed Fathi El-Ridi**

Dep. : **Zoology**

Title : **Fasciola Gigantica Excretory-Secretory Products for Immunodiagnosis and Prevention of Sheep Fasciolosis**

R. El Ridi, M. Salah, A. Wagih, H. William, H. Tallima, M. H. El Shafie, T. Abdel Khalek, A. El Amir, F. F. Abo Ammou and H. Motawi

Journal : **Veterinary Parasitology**

ISSN : 0304-4017 **Impact Factor :** 1.9

Abstract :

Excretory-secretory products (ESP) products of ex vivo Fasciola gigantica adult worms were used for immunodiagnosis of experimental and natural sheep infection with F. gigantica by enzyme-linked immunosorbent assay (ELISA) and western blotting. Specific IgG antibody binding to native or denatured ESP was detected as early as 2 weeks after experimental sheep infection with 100 or 200 metacercariae. No specific IgG antibody binding was displayed by sera obtained from 192 sheep confirmed to be Fasciola- and other parasite-free by microscopic examination of bile and feces. Additionally, sera from 200 Fasciola-free sheep, yet infected with other parasites, were all negative. The data, thus, indicated that ESP-based ELISA reached nearly 100% sensitivity and specificity in immunodiagnosis of sheep fasciolosis. As expected, the ESP molecules were immunogenic in sheep eliciting interleukin-12p40 mRNA response and considerable amounts of antibodies, which were able to bind to the surface of newly excysted juvenile worms as judged by membrane indirect immunofluorescence, and mediate their attrition via antibody-dependent cell-mediated cytotoxicity. The ESP-induced cellular and humoral immune responses were associated with a modest, yet significant ($P < 0.05$) reduction in worm count but with a highly significant ($P < 0.0001$) decrease in size of recovered worms, thus suggesting that ESP immunization might be a safe and cost-effective strategy for reducing transmission of the infection.

Keywords :

Fasciola gigantica; Excretory-Secretory products; Immunodiagnosis; Immunogenicity; Protective potential

International Publications Awards
Cairo University

Name : **Prof . Rashika Ahmed Fathi El-Ridi**

Dep. : **Zoology**

Title : **Evaluation of Cholesterol Content and Impact on Antigen Exposure in the Outer Lipid Bilayer of Adult Schistosomes**

H. Tallima, M. Hamada and R. El- Ridi

Journal : **Parasitology**

ISSN : 0031-1820 **Impact Factor :** 1.786

Abstract :

Developing and adult Schistosoma mansoni and S. haematobium intact worms do not bind specific antibodies, likely because of structural and biochemical modifications of the outer lipid bilayer. We have estimated the amount of cholesterol in the apical membrane of adult schistosomes via extraction with the membrane-impermeable, cholesterol-binding drug, methyl-□-cyclodextrin (MBCD), followed by filipin staining of the worms, and evaluation of the amount of cholesterol released in the medium by a commercially available, enzymatic colorimetric assay. Positive correlations between amount of released cholesterol, MBCD concentration, and worm number and age provided evidence for the sensitivity and validity of the newly developed method. Treatment with 40 mM MBCD for 2 h at 37 oC led to total loss of cholesterol from the worm outer membrane, as assessed by filipin staining, and the released cholesterol values were used to estimate the amount of cholesterol per worm and per an approximate surface area unit. Additionally, total depletion of outer membrane cholesterol was associated with exposure of surface membrane antigens to specific antibody binding in 50% and 70% of S. haematobium and S. mansoni worms, respectively. These findings together suggest that cholesterol is an essential, but not the sole, factor in sequestration of surface membrane antigens in schistosomes.

Keywords :

Schistosoma mansoni; Schistosoma haematobium; Cholesterol content; Methyl-□-cyclodextrin; Surface membrane antigens.

International Publications Awards
Cairo University

Name : **Prof . Rashika Ahmed Fathi El-Ridi**

Dep. : **Zoology**

Title : Praziquantel Binds Schistosoma Mansoni Adult Worm Actin

Hatem Tallima and Rashika El Ridi

Journal : **Antimicrobial Agents**

ISSN : 0924-8579 **Impact Factor :** 2.221

Abstract :

Praziquantel (PZQ) is widely used for treatment of schistosomiasis. It induces worm muscle contractions and tegumental disruption, followed by exposure of parasite surface membrane antigens to the host immunological defense mechanisms. It may be assumed that PZQ, like cholesterol, is too hydrophobic to traverse the schistosome outer lipid bilayers by passive diffusion, and likely needs binding to a surface membrane protein carrier for distribution throughout the worm. However, PZQ binding site on the schistosome surface and precise mechanism of action are not known as yet. The Claisen's condensation reaction was used to bind PZQ on cellulose acetate membranes. Triton-insoluble surface membrane antigens of Schistosoma mansoni adult worms were allowed to bind to the PZQ column. The binding molecules were examined for identity by amino acid micro sequencing and immunogenicity in outbred and inbred mice. PZQ column was found to selectively bind molecules of 45 kDa from the Triton-insoluble surface membrane antigens of S. mansoni adult worms. Amino acid microsequencing revealed that the 45-kDa species consist predominantly of schistosome actin. This finding was supported by the poor immunogenicity of the 45 kDa molecules in outbred and inbred mice. PZQ was also shown to bind bovine actin, but not bovine serum albumin. However, pre-incubation with bovine actin did not impair PZQ effect on adult worms in vitro. The study represents an attempt to understand how PZQ distributes across schistosome outer lipid bilayers.

Keywords :

Praziquantel; Schistosoma mansoni; Praziquantel binding site; Actin; Poorly immunogenic molecules

International Publications Awards
Cairo University

Name : **Prof . Said Ahmed Ghozlan**

Dep. : **Chemistry**

Title : **An Easy Synthesis of 5-Functionally Substituted Ethyl 4-Amino-1-Aryl- Pyrazolo-3-Carboxylates: Interesting Precursors to Sildenafil Analogues)**

Said A.S. Ghozlan, Khadija O Badahdah and Ismail A Abdelhamid

Journal : **Organic Chemistry**

ISSN : 1860-5397 **Impact Factor :** 0.353

Abstract :

3-Oxo-2-arylhydrazononitriles 1a-c react readily with chloroacetonitrile, ethyl chloroacetate, and with phenacyl chloride to give 4-aminopyrazoles 4a-e. The pyrazolo[4,3-d]pyrimidine derivatives 7 and 10 are synthesized via reaction of the aminopyrazole 4b with phenylisothiocyanate and DMFDMA/NH4OAc respectively.

Name : **Prof . Said Ahmed Ghozlan**

Dep. : **Chemistry**

Title : **Studies with Enamines and Azaenamines: A Novel Efficient Route to 6-Amino-1,4-Dihydropyridazines and Their Condensed Derivatives.**

Said A. S. Ghozlan, Ismail A. Abdelhamid, Hamdy M. Hassaneen and Mohamed H. Elnagdi

Journal : **Hetrocycl Chem**

ISSN : 0022-152X **Impact Factor :** 0.776

Abstract :

Pyruvaldehyde-1-arylhydrazones react with with α,β-unsaturated nitriles, to yield 6-amino-1,4-dihydropyridazines that are converted into pyridazinones 5 via refluxing in acetic acid / hydrochloric acid mixture and into ethylidenemalononitrile derivatives 6 on reflux with malononitrile in ethanolic / piperidine solution.

Name : **Prof . Said Ahmed Ghozlan**

Dep. : **Chemistry**

Title : **Studies Using (E)-6-Oxo-1-Aryl-4-(2-N-Piperidinyl)Vinyl-1,6-Dihydropyridazine-5-Carbonitrile**

Ismail Abdelshafy Abdelhamid, Said Ahmed Soliman Ghozlan, Heinz Kolshorn, Herbert Meier and Mohamed Hilmy Elnagdi

Journal : **Heterocycles**

ISSN : 0385-5414 **Impact Factor :** 1.077

Abstract :

Condensing 1-aryl-4-methyl-1,6-dihydropyridazine-5-carbonitrile with triethyl orthoformate and piperidine afforded the transenamine 2. This could be converted into pyrido[3,4-d]pyridazine 3 upon treatment with primary aromatic amines. Reacting 2 with hydrazonoyl chlorides 5 afforded 7 rather than 6. Compound 2 gives also pyrido[3,4-d]pyridazine 10 upon treatment with acetic acid and ammonium acetate. Compound 2 afforded N-aminopyrido[3,4-d]pyridazine 11 upon treatment with hydrazine hydrate. Compound 11 reacted with triethyl orthoformate to give [1,2,4] triazolo[2',3':1,2]pyrido[4,3-d]pyridazin-10-one 12 and can be acetylated to 13. Compound 2 could be coupled with pchlorobenzenediazonium chloride to give the pyridazino[4,5-d]pyridazine 17.

Name : **Prof . Sami Hanafy Allam**

Dep. : **Physics**

Title : **Polarization Inscription in Ferroelectric (111) PZT and (100) SBT Films**

Christian Erich Zybill , Mahmoud Abdel-Hafiez , Sami Allam and Tharwat El Sherbini

Journal : **Progress in Solid State Chemistry .**

ISSN : 0079-6786 **Impact Factor :** 2.5

Abstract :

Ferroelectric thin films form an equilibrium domain structure compatible with their respective crystal- lographic symmetry. In tetragonal (111) PZT, 90 domains prevail; in (pseudo-tetragonal) (100) SBT both90and 180 domains are present. The size of 90domains has been measured for e.g., PZT as slabs of w15 nm width. Domain size is a result of stress minimization in the film during the paraelectric (PE) / ferroelectric (FE) transition. A precise and regular domain pattern for (111) PZT and (100) SBT films has been investigated in detail by TMSFM. Single domains can be addressed mechanically with the tip of an AFM. Such single domain switching corresponds to a data storage density of w200 Gbit/inch2. Applica- tions of ferroelectric and high-3 paraelectric materials for e.g., non-volatile data storage replacing DRAM devices or as sensors in infrared cameras are increasingly becoming popular.

Keywords :

Polarization inscription; (111) PZT; (100) SBT; Single domain switching; Ferroelectric thin films

International Publications Awards
Cairo University

Name : **Prof . Samir Soliman Hamza**

Dep. : **Physics**

Title : Dielectric Properties of SBR Vulcanizates Loaded with HAF Carbon Black and BaTiO3 Ceramics

M. Abu-Abdeen, S. S. Hamza, A. A. Elwy and S. M. Abd EI-Wahab

Journal : **Applied Polymer Science**

ISSN : 0021-8995 **Impact Factor :** 1.306

Abstract :

The influence of HAF carbon black and BaTiO3 ceramic powder contents in SBR vulcanizates on the dielectric constant (8') at different frequencies and at fixed temperature of 303 K is studied well in this article. The tem¬perature dependence of the ac conductivity (crac) was also studied. 8' appreciably decreases as frequency increased for both filled and unfilled SBR vulcanizates. At each frequency, 8' gradually decreased with BaTiO3 loading, but its change at any fixed frequency with BaTiO3 filler loading is not uni¬form. For HAF group 8' (at loading;:: 40 phr), drops rapidly with frequency. Meanwhile, it increased appreciably beyond a certain HAF filler loading (_ 20 phr). Experimental values

of the dielectric constant of both BaTiO3 and HAF contents were compared with those calculated by using Tsangaris, Clausius and Bruggman models. Tsangaris model with sim¬ple modifications was applied and a fairly good agreement was obtained. The HAF particles or aggregates was found to take the shape of oblate ellipsoids with the minor axes paral¬lel to the applied frequency as detected from the decreasing behavior of the depolarizing factor (Y) with HAF contents.

Keywords :

SBR; HAF; BaTiO3; Dielectric; AC conductivity

International Publications Awards
Cairo University

Name : **Prof . Sayed Zaki Mohammady**

Dep. : **Chemistry**

Title : **Molecular Dynamics of the Glass Relaxation Process of the Soft Phase in Block Copolymers: Effect of Molecular Architecture**

Sayed Z. Mohammady

Journal : **Rheol Acta**

ISSN : 0035-4511 **Impact Factor :** 1.653

Abstract :

To determine the impact of molecular architec- ture on the molecular dynamics of the glass relaxation processes of soft blocks in different types of block copolymers, model block copolymers with a variation in both molecular architecture and chemical composition were studied. Four block copolymer models, namely, two styrene–butadiene–styrene (S-B-S) block copolymers and two styrene–styrene butadiene–styrene (S-SB-S) were chosen. In each pair of block copolymers, one is linear triblock and the other is star asymmetric. For the sake of comparison, two polybutadiene (PB) homopolymer sam- ples, having similar chain lengths of the PB blocks present in the S-B-S block copolymers, have been investigated. Dynamic mechanical measurements have been carried out for the real and imaginary parts of the complex shear modulus (G0 , G00) in the temperature and frequency ranges from −110 to 30 °C and from 10−2 to 15.9 Hz, respectively. Complete master curves have been constructed for all samples investigated. Moreover, broadband dielectric spec- troscopy has been carried out to cover wide temperature and frequency windows, −120 to 0 °C and 10−1 to 107 Hz, respectively. The results showed that the molecular dynamics of the glass relaxation process of the PB or statistical PSB soft Paper presented 3rd Annual European Rheology Conference (AERC phases in the block copolymers is dramatically changed when compared to the PB homopolymer. In addition, the molecular architecture is found to be an important factor in determining the molecular mobility of the soft blocks. The results are discussed in terms of the applied confinement of the counter PS hard phase, block lengths, domain thicknesses and the type of end-to-end junctions between the different polymeric blocks

Keywords :

Dynamic mechanical and dielectric relaxations; Linear and star asymmetric block copolymers; Glass relaxation process; Confinement

International Publications Awards
Cairo University

Name : **Prof . Shahinnaz A. Mohamed Al-Wakeel**

Dep. : **Botany**

Title : **Allelopathic Effects of Acacia Nilotica Leaf Residue on Pisum Sativum L.**

S.A.M. Al-Wakeel. Ma Gabr, A.A. Hamid and W. M. Abu-El- Soud

Journal : **Allelopathy**

ISSN : 0973-5046 **Impact Factor :** 0.686

Abstract :

A greenhouse pot experiment was conducted to assess the allelopathic effects of Acacia lIilotica leaves on the growth and metabolic activities of 45-day-old pea (Pisum sativum L.) plants. Qualitative and quantitative HPLC analysis of water extract of Acacia lIilotica leaves revealed that protocatechuic and caffeic acids were the principal phenolic compounds accompanied by major amounts of ferulic, cinnamic acids and apigenin; whereas, pyrogallic, p-coumaric, syringic acids and coumarin were found in trace amounts. The lower doses of Acacia leaf residue (0.25 and 0.5 %, w/w) stimulated the growth of pea shoot and root, but the higher doses (0.75, 1.0, 1.5 and 2 %, w/w) were inhibitory to seedling growth and the effect was concentration dependent. The total phenolic content of pea shoots (particularly phenolic glycosides), increased at lower doses of Acacia residue and decreased with higher ones While, the phenolic aglycones increased with higher doses than lower ones. Chlorophyll a, band carotenoids accumulated in pea shoot at lower doses of Acacia leaf residues, accompanied by accumulation of total sugar, mainly the insoluble fraction. On the other hand, the inhibition in the contents of photosynthetic pigments at higher doses of Acacia residues was paralleled by significant reduction in all sugar fractions. The contents of total nitrogen and phosphorus (their insoluble forms), increased with lower Acacia residues (0.25 and 0.5 %); whereas all nitrogen and phosphorus fractions declined by increasing Acacia doses up to I %. The total nucleic acids, including DNA and RNA increased with lower Acacia residue doses and gradually declined with the increase in Acacia level up to 1%.

Keywords :

Acacia Lilotica; Agroforestry; Allelopathy; Growth; Natural phenolics; Nitrogen; Nucleic acids; Photosynthetic pigments; Phosphorus; Pisum sativum L.

Name : **Prof . Tamer Tawheed El-Idreesy**

Dep. : **Chemistry**

Title : **Bicyclic Peroxides and Perorthoesters with 1,2,4-Trioxane Structures**

Axel G. Griesbeck, Dirk Blunk, Tamer T. El-Idreesy and Angela Raabe

Journal : **Angewandte Chemie**

ISSN : 1433-7851 **Impact Factor :** 10.232

Abstract :

Resistance effects to the antimalarial agent artemisinin and its derivatives spur on the search for new compounds with related cyclic peroxide structures. In this paper a flexible route to new bicyclic peroxides and perorthoesters was provided via a sequence of ene reaction with singlet oxygen and subsequent Lewis acid catalyzed peroxyacetalization reaction of unsaturated 1,2-hydroperoxy alcohols.

Keywords :

Allylic hydroperoxides; Density functional calculations; Perorthoesters ;Photooxygenation; Trioxanes

Name : **Prof . Tarek Sayed Ahmed**

Dep. : **Mathematics**

Title : **A Neat Embedding Theorem for Expansions of Cylindric Algebras**

Tarek Sayed Ahmed and Basim Samir

Journal : **Logic IGPL**

ISSN : 1367-0751 **Impact Factor :** 0.229

Abstract :

We generalize two classical results on cylindric algebra to certain expansions of cylindric algebras where the extra operations are defined via first order formulas. The first result is the Neat Embedding Theorem of Henkin, and the second is Monk's classical non-finitizability result of the class of representable algebras. As a corollary we obtain known classical results of Johnson and Biro published in the Journal of Symbolic Logic.

Name : **Prof . Tarek Sayed Ahmed**

Dep. : **Mathematics**

Title : **On Neat Reducts and Amalgamation**

Tarek Sayed Ahmed

Journal : **Logic IGPL**

ISSN : 1367-0751 **Impact Factor :** 0.229

Abstract :

We present a property of neat reducts commuting with forming subalgebras as a definability condition.

Keywords :

Algebraic Logic; Amalgarnation; Neat reducts.

Name : **Prof . Tarek Sayed Ahmed**

Dep. : **Mathematics**

Title : **Amalgamation, Interpolation and Epimorphisms in Algebraic Logic**

Judit Mad arasz and Tarek Sayed-Ahmed

Journal : **Algebra Universalis**

ISSN : 0002-5240 **Impact Factor :** 0.23

Abstract :

In his landmark paper on amalgamation, published in Algebra Universalis in 1971, Don Pigozzi posed some open questions in connection with amalgamation of subclasses of cylindric algebras. Some of these questions were originally raised by Comer, Daigneault, Johnson, McKenzie and others. In this paper, we give answers to all these as well as a number of other related questions. Most of the solutions were found by the authors of this paper. However, a few were contributed by others who will of course be given due credit at the appropriate points.

International Publications Awards
Cairo University

Name : **Prof . Tarek Sayed Ahmed**

Dep. : **Mathematics**

Title : **An Interpolation Theorem for First Order Logic With Infinitary Predicates**

Tarek Sayed Ahmed

Journal : **Logic IGPL**

ISSN : 1367-0751 **Impact Factor :** 0.229

Abstract :

An Interpolation Theorem is proved for first order logic with infinitary predicates. Our proof is algebraic via cylindric algebras.

Keywords :

Algebraic Logic; Craig interpolation; Cylindric algebras

International Publications Awards
Cairo University

Name : **Prof . Tarek Sayed Ahmed**

Dep. : **Mathematics**

Title : **An Omitting Types Theorem for First Order Logic With Infinitary Relation Symbols**

Tarek Sayed Ahmed and Basim Samir

Journal : **Mathematical Logic Quarterly**

ISSN : 0942-5616 **Impact Factor :** 0.629

Abstract :

In this paper, an extension of first order logic is introduced. In such logics atomic formulas may have infinite length. An Omitting Types Theorem is proved.

Keywords :

Algebraic logic; Cylindric algebras; Omitting types

International Publications Awards
Cairo University

Name : **Prof . Tayseer Abdel-Khalek Abdallah**

Dep. : **Chemistry**

Title : **Studies with Enamines: Synthesis and Reactivity of 4-Nitrophenyl-l-piperidinostyrene Synthesis of Pyridazine, Oxadiazole, 1,2,3- Triazole and 4-Aminopyrazole Derivatives**

Tayseer A. Abdallah, Abdellatif M. Salaheldin and Naglaa F. Radwan

Journal : **Z. Naturforsch**

ISSN : 0932-0776 **Impact Factor :** 0.825

Abstract :

4-Nitrophenyl-l-piperidinostyrene (4) reacts with an aromatic diazonium salt to afford the arylhydrazonal 6. The latter condenses with active methylene compounds to yield pyridazine derivatives,
and with hydroxylamine hydrochloride to produce oxadiazole and 1,2,3-triazole derivatives. Com¬pound 12 was reacted with chloroacetonitrile to afford 4-aminopyrazoles 15.

Keywords :

2-Arylhydrazoqonitriles; Pyridazinimine; Oxadiazole; 1,2,3- Triazole; 4- Aminopyrazoles

International Publications Awards
Cairo University

Name : **Prof . Tayseer Abdel-Khalek Abdallah**

Dep. : **Chemistry**

Title : **Studies with Enamines and Azaenamines: Synthesis and Reactivity Of 3-Dimethylamino-2-[(3-Indolyl) Carbonyljpropenonitrile**

Tayseer A. Abdallah

Journal : **Heterocyclic Chemistry**

ISSN : 0022-152X **Impact Factor :** 0.776

Abstract :

2-0xo-3-(indol-3-yl)propanonitrile 2condensed with dimethylformamide dimethylacetal to yield the enaminonitrile 3. The latter reacted with 4-chloroaniline to yield the 4-chlorophe nylaminoacrylonitrile 5. Reaction of 3 with hydrazine hydrate led to formation of pyrazole-4-carbonitrile 6. Compound 3 reacted with ethyl acetoacetate in refluxing acetic acid and in presence of ammonium acetate to yield the indolylpyridine 10. Enamine 3 reacted with 5(1H)-aminotriazole 13 and 3(5)-aminopyrazole 17 to yield the pyrimidine derivatives 15 and 19, respectively.

Keywords :

Name : **Prof . Tharwat Mahmoud El-Sherbini**

Dep. : **Physics**

Title : **Measurement of the Stark Broadening of Atomic Emission Lines in Non–Optically Thin Plasmas by Laser-Induced Breakdown Spectroscopy**

A. M. El Sherbini Th. El Sherbini

Journal : **Spectroscopy Letters**

ISSN : 0038-7010 **Impact Factor :** 0.772

Abstract :

We propose a new method for determining the Stark broadening of atomic emission lines using laser-induced breakdown spectroscopy. The method allows the determination of the Stark broadening in non–optically thin plasmas, through the introduction of a correction for self-absorption. Couples of lines of the same species are considered. If one of the Stark broadenings is known, the determination of the other does not require the measurement of the electron density of the plasma. Examples are given for the application of the proposed method to the measurement .

Keywords :

Aluminum alloys; Double pulse; LIBS; Self-absorption; Stark broadening

International Publications Awards
Cairo University

Name : **Prof . Wahid Fathy El-Hawary**

Dep. : **Chemistry**

Title : **Spectrophotometric Determination of Diazepam in Pure form, Tablets and Ampoules**

W. F. El-Hawary, Y. M. Issa and A. Talat

Journal : **International J of Biomedical Science**

ISSN : **Impact Factor :**

Abstract :

the interaction of diazepam with picric acid (I), 3, 5-dinitrobenzoic acid (II) and 2, 4-dinitrobenzoic acid (III) was found to be useful for its spectrophotometric determination. the quantitation was carried out at 475, 500, and 500 nm for the reaction with (I), (II) and (III), respectively. the effect of several variables on the coloring process was studied. the proposed methods have been applied successfully for the determina- tion of diazepam in pure samples and in its pharmaceutical preparations with good accuracy and precision. the results were compared to those obtained by the pharmacopoeial methods. the linear ranges for obedi- ence of beer's law are up to 85.6, 180.2, and 128.6 µg/ml, ringbom ranges are 10.0-79.0, 15.2-177.8, 17.0-83.0 µg/ml, and rsD 0.048, 0.028, and 0.026% for reaction of diazepam with I, II, and III, respectively.

Keywords :

Diazepam; 2,4-Dinitrobenzoic Acid; 3,5-Dinitrobenzoic Acid; Ppicric Acid; Spectrophotometric Determination

International Publications Awards
Cairo University

Name : **Prof . Yossry Mostafa Issa**

Dep. : **Chemistry**

Title : **Studies On Some Salicylaldehyde Schiff Base Derivatives And Their Complexes With Cr(III), Mn(II), Fe(III), Ni(II) And Cu(II)**

S.A. Abdel-Latifa, H.B. Hassib and Y.M. Issa

Journal : **Spectrochimica Acta Part A**

ISSN : 1386-1425 **Impact Factor :** 1.27

Abstract :

The formation constants of some transition metal ions Cr(III), Mn(II), Fe(III), Ni(II) and Cu(II) binary complexes containing Schiff bases resulting from condensation of salicylaldehyde with aniline (I), 2-aminopyridine (II), 4-aminopyridine (III) and 2 aminopyrimidine (IV) were determined pH-metrically in ethanolic medium (80%, v/v). The formation constants were determined for all binary complexes. The important infrared (IR) spectral bands corresponding to the active groups in the four ligands and the solid complexes under investigation were studied. The solid complexes have been synthesized and studied by thermogravimetric analysis. The thermal dehydration and decomposition of these complexes were studied kinetically using the integral method applying the Coats–Redfern equation. It was found that the thermal decomposition of the complexes follow second order kinetics. The thermodynamic parameters of the decomposition are also reported. The electronic absorption spectra of the investigated ligands were carried out to determine the pKa values spectrophotometrically.

Keywords :

Salicylaldehyde Schiff Bases; Transition Metal Complexes; Absorption Spectra; Thermal Analysis; Potentiometry; Infrared

International Publications Awards
Cairo University

Name : **Prof . Yossry Mostafa Issa**

Dep. : **Chemistry**

Title : **Improving The Detection Limits Of Antispasmodic Drugs Electrodes By Using Modified Membrane Sensors With Inner Solid Contact**

Hosny Ibrahim, Y.M. Issa and Hazem M. Abu-Shawish

Journal : **Pharmaceutical and Biomedical Analysis**

ISSN : 0731-7085 **Impact Factor :** 2.032

Abstract :

Three coated wire electrodes (CWEs) for the antispasmodic drugs; dicyclomine (Dc), mebeverine (Mv) and drotaverine (Dv) hydrochlorides were developed. Each electrode based on ion-associate of a heteropoly anion with the drug cation incorporated in membrane sensor modified with graphite and deposited on silver internal solid contact. The influence of addition of graphite to the membranes and the type of the internal solid contact on the potentiometric responses of the electrodes was investigated. The characteristics of the new electrodes were compared to the characteristics of previously reported traditional liquid inner contact electrodes of the same drugs. The lower detection limits of the proposed electrodes were somewhat better than those observed with the corresponding liquid contact ISEs and reached (1.2–2.0)×10−7 M. The potentiometric selectivity of the CWEs revealed a significant improvement and much faster response times compared to the liquid contact ISEs. The practical utility of each electrode has been demonstrated by using it successfully in potentiometric determination of its respective drug in pharmaceutical preparations both in batch and flow injection conditions. Each electrode was also used as an indicator electrode in the potentiometric titration of the drug against standard silicotungstic acid and in potentiometric determination of the drug concentration in urine samples.

Keywords :

Coated wire Electrodes; Dicyclomine; Mebeverine; Drotaverine; Lowering of Detection Limits

Faculty of Agriculture

Name : Dr . Ahmed Abbas

Dep. : Animal Production

Title : **Melatonin Represses Oxidative Stress-Induced Activation of the MAP Kinase and m TOR Signaling Pathways in H4IIE Hepatoma Cells Through Inhibition of Ras**

Scot R. Kimball, Ahmed Abbas and Leonard S. Jefferson

Journal : Pineal Research

ISSN : 0742-3098 **Impact Factor :** 4.228

Abstract :

Reactive oxygen species (ROS) have been implicated in the pathogenesis of a variety of diseases, and antioxidant treatment is currently being investigated as a potential therapy to attenuate the detrimental effects of ROS-mediated oxidative stress. Melatonin is a potent naturally produced antioxidant, which acts through various mechanisms to ameliorate the toxic effects of ROS. However, little is known about the mechanisms of signaling pathways through which melatonin acts to reverse the effects of ROS. In the present study, the effect of melatonin treatment on the hydrogen peroxide (H2O2)-induced activation of the mitogen-activated protein kinase (MAPK) and mammalian target of rapamycin (mTOR) signaling pathways was assessed in H4IIE hepatoma cells. It was found that melatonin strongly attenuated H2O2-induced activation of the ERK1/2 and p38 MAP kinases, as well as several of their downstream targets. Melatonin also attenuated the H2O2-induced phosphorylation of Akt and the Akt substrate mTOR, as well as a downstream target of mTOR action, 4E-BP1. Upregulation of ERK1/2, p38, and Akt signaling by H2O2 was accompanied by activation of Ras, an effect that was blocked by melatonin. Overall, the results suggest that melatonin acts to prevent many of the H2O2-induced alterations in the MAPK and mTOR signaling pathways through inhibition of Ras, at least in H4IIE hepatoma cells.

Keywords :

Akt; ERK1/2; MTOR; P38 MAP kinase; Reactive oxygen species

International Publications Awards
Cairo University

Name : **Prof . Ashraf Barkawi**

Dep. : **Animal Production**

Title : **Seasonal Variation in the Activity of the Leydig Cells in Egyptian Nubian Goat (Zaraibi) Bucks**

Eitedal H. Elsayed, A.H. Barkawi, M.M. Shafi, G. Ashour,and E. Shehata

Journal : **Small Ruminant Research**

ISSN : 0921-4488 **Impact Factor :** 0.637

Abstract :

Ten Egyptian Nubian goat bucks were used to evaluate the effect of season on testicular hormonal activity and ultrastructure. Parameters were recorded for 7 consecutive weeks in the middle of the four seasons, with blood samples being collected weekly. At the end of each of these seasons, testicular biopsies were obtained surgically for histological and cytological studies. Season had a significant effect on plasma testosterone concentration, being at its lowest level ($P < 0.01$) during winter and spring (1.2 and 2.6 ng/ml, respectively), while at its highest during summer (10 ng/ml). The effect of season on plasma LH concentration was higher ($P < 0.01$) in autumn (2.9 mIU/ml) and less in spring and summer (0.4 mIU/ml). Season of the year influenced the percentage of sectional tissue area occupied by the seminiferous tubules and interstitial tissue. Seminiferous tubules occupied the majority of the testicular tissue during winter (76.6%), with the least being occupied during spring (49.8%). The thickness of the seminiferous tubules was maximal during autumn, followed by summer (53 and 36 um, respectively). In summer the Leydig cells contained abundant smooth endoplasmic reticulum (sER), while some areas of the cytoplasm were occupied exclusively by tubular sER, arranged in parallel—indicating the highest activity of these cells. A characteristic multivesicular structure with numerous large lipid droplets and vacuoles was recorded in the Leydig cells during spring and winter, denoting low or even arrested activity of the cells. It could be concluded that season influences the activity of the Leydig cells of Egyptian Nubian bucks, and this is reflected by their ultrastructure and secretive activity.

Keywords :

Egyptian nubian goat; Season; Testosterone; LH; Leydig cell

International Publications Awards
Cairo University

Name : **Prof . Ehab Reda El-Haroun**

Dep. : **Animal Production**

Title : **Effect of Totally or Partially Replacing Fish Meal by Alternative Protein Sources on Growth Of African Catfish Clarias Gariepinus (Burchell, 1822) Reared in Concrete Tanks**

A M Goda, E R El-Haroun, and M A Kabir Chowdhury

Journal : **Aquaculture Research**

ISSN : 1355-557X **Impact Factor :** 1.051

Abstract :

A 12-week feeding trial was carried out in concrete tanks to examine complete andpartialreplacement (75%) of fish meal (FM) with poultry by-product meal (PBM), meat and bone meal (MBM) and soybean meal (SBM) in practical feeds for African cat fish Claries gariepinus. Triplicate groups of fish (initial body weight ranged from 90.33 to 93.93 g fish 1) were fed seven is nitrogenous and is caloric diets of 20% digestible protein and 300 kcal 100 g - 1 of digestible energy. The control contained 25% herring meal, whereas in the other six diets, PBM, MBM and SBM replaced 75% or 100% of the FM. Final body weight (FBW) and specific growth rate (SGR) of the fish fed diets containing PBM (75% and 100%), SBM (75% and 100%) and MBM (75%) were all higher, but not significantly deferent than those for fish fed the control diet. Replacing 100% of the FM by MBM significantly lowered FBW and SGR. Concerning whole body composition, there were no significant differences in ash and gross energy content of whole-body among fish; fish fed diets containing PBM-100% re- corded significantly lower protein content compared with the control diet, while fish fed diet SBM-100% recorded significantly lower moisture content com- pared with the control diet. Also fish fed dietSBM-100% and PBM-75% recorded higher lipid and gross energy contents compared with the control diet. Theudy revealed that satisfactory growth and feed utilization responses could be achieved through the re- placement of FM by PBM, SBM and MBM in the diet of African cat fish.study revealed that satisfactory growth and feed utilization responses could be achieved through the re- placement of FM by PBM, SBM and MBM in the diet of African cat fish.

Keywords :

Fish meal; Poultry by-product meal; Meat and bone meal; Soybean meal; Growth; Feed utilization; African catfish

International Publications Awards
Cairo University

Name : **Prof . Ehab Reda El-Haroun**

Dep. : **Animal Production**

Title : **Growth Performance and Feed Utilization of Nile Tilapia Oreochromis Niloticus (Linnaeus, 1758) and Tilapia Galilae Sarotherodon Galilaeus (Linnaeus, 1758) Fingerlings Fed Plant Protein-Based Diets**

Asraf Mohamed A-S Goda, M E Wafa, E R El-Haroun and M A Kabir Chowdhury

Journal : **Aquaculture Research**

ISSN : 1355-557X **Impact Factor :** 1.051

Abstract :

This study was designed to determine the e‹ect of complete substitution of ¢sh meal (FM) by three plant protein sources including extruded soybean meal (SBM), extruded full-fat soybean (FFSB) and corn gluten meal (CGM) on growth and feed utilization of Nile tilapia Oreochromis niloticus and tilapia galilae Sarothrodon galilaeus. Four isonitrogenous of crude protein (ca.28.0%) and isocaloric (ca.19MJ kg_1) experimental diets were formulated. The control diet (diet 1) was prepared with FM as the main protein sources. Diets 2-4, each FM control diet, were completely substituted with SBM (diet 2), FFSB (diet 3) and CGM (diet 4). L-lysine and DL-methionine were added to plant protein diets to cover the nutritional requirements of tilapia. Each treatmentwas allocated to three net pens and fed for 17 weeks. Nile tilapia fed the control diet showed significantly higher ($P \leq 0.05$) values for final body weight (FBW), feed intake (FI), weight gain (WG) and specific growth rate (SGR), whereas fish fed the diet with CGM achieved the lowest values. Tilapia galilae fed SBM diet recorded the highest ($P \leq 0.05$) values for growth performance. Better feed conversion ratio (FCR) for both Oreochromis niloticus and Sarothrodon galilaeus was observed when fish were fed SBM diet, whereas the worse FCR was recorded for FFSB diet. Feed utilization parameters including protein productive value (PPV), fat retention (FR) and energy retention (ER) showed significant differences ($P \leq 0.05$) for both the species feed different dietary protein sources. The present results suggest that, for Nile tilapia, both SBM and FFSB supplemented with DL methionine and L-lysine can completely replace dietary FM. Meanwhile, S. galilaeus fed SBM diet exhibited comparable growth and feed utilization with those fish fed a fish-meal-based diet.

Keywords :

Corn gluten meal; fish meal; full-fat soybean; Soybean meal; Nile tilapia; Tilapia galilae

Name : **Prof . Ehab Reda El-Haroun**

Dep. : **Animal Production**

Title : **Comparison of the Bioavailability of Lysine in Blood Meals of Various Origins to That of L-Lysine HCL for Rainbow**

Ehab R. El-Haroun and Dominique P. Bureau

Journal : **Aquaculture**

ISSN : 0044-8486 **Impact Factor :** 2.081

Abstract :

The bioavailability of lysine in blood meals from various origins was examined in rainbow trout. Bioavailability of lysine of the blood meals was assessed in comparison to that of L-lysine HCL using a slope ratio assay experimental design. A corn gluten meal- based diet, deficient in lysine (1.5% diet), was used as the basal diet. Two levels of spray-dried poultry blood meal (SDBM), flash-dried bovine blood meal (FDBM), disc-dried poultry blood meal (DDBM), and lysine-HCL substituted corn gluten meal in the basal diet to produce experimental diets containing 1.8 or 2.2% lysine. These diets were pair-fed to rainbow trout (initial body weight = 25 g/fish) reared at 15 °C for 12 weeks. Weight gain, feed efficiency ratio (FER, gain: feed), retained nitrogen (RN), and recovered energy (RE) increased significantly ($P< 0.05$) with increasing lysine levels. Diets containing SDBM and FDBM recorded significantly greater weight gain, FER, RN and RE compared to DDBM ($P < 0.05$). At the 1.8% lysine level, the diet containing FDBM recorded significantly greater weight gain, and RN than the diet supplemented with L-lysine HCl. The weight gain, FER and RN of the fish fed diets containing SDBM was not significantly different from that of the fish fed the diets with L- lysine HCl, at both lysine levels. At the 2.2% lysine level, feeding diets containing FDBM and DDBM resulted in significantly lower weight gain than diet supplemented with L-lysine HCl, suggesting that other nutrients may have become more limiting than lysine at high levels (20%) of blood meal. Results suggest that the bioavailability of lysine in SDBM or FDBM is slightly greater than that of L-lysine HCL. Bioavailability of lysine in the DDBM used in this study appeared to be significantly lower than that of spray-dried or flash-dried blood meals.

Keywords :

Bioavailability; Blood meal; L-lysine HCL; Trout

International Publications Awards
Cairo University

Name : Dr . Essam Agamy

Dep. : Economic Entomology and Pesticides

Title : Egg Parasitoids of the Genus Trichogramma (Hymenoptera, Trichogrammatidae) in Olive Groves of the Mediterranean Region

Annette Herz, Sherif A. Hassan, Esmat Hegazi, Wedad E. Khafagi, Feeby N. Nasr, Ali I. Youssef, Essam Agamy, Imen Blibech, Ines Ksentini, Mohieddine Ksantini, Taieb Jardak, Albino Bento, Jose´ A. Pereira, Laura Torres, Costas Souliotis, Theodorus Moschos and Panos Milonas

Journal : Biological Control

ISSN : 1049-9644 **Impact Factor :** 1.52

Abstract :

A survey of egg parasitoids of the genus Trichogramma (Hymenoptera, Trichogrammatidae) was carried out in olive groves in Por- tugal, Greece, Egypt, and Tunisia during the years 2002–2004. Parasitoids were obtained either by exposing sentinel eggs (Sitotroga cerealella Olivier or Ephestia kuehniella Zeller) on olive trees or by collecting eggs of lepidopterous olive pests. Parasitized egg samples were reared separately in the laboratory for emergence of parasitoids. These were further reared in separate lines and processed by mor- phological and molecular biology techniques for species characterization. The recorded fauna of Trichogramma parasitoids in olive groves was species poor and consisted of species mainly known from the Mediterranean region. Trichogramma bourarachae Pintureau and Babault was found in Tunisia and Egypt, T. cordubensis Vargas and Cabello, and T. euproctidis Girault in Egypt, Trichogramma cacoeciae Marchal in Portugal, Greece, Egypt, Tunisia and Trichogramma nerudai Pintureau and Gerding in Portugal. Apart from that, Trichogramma oleae Voegele´ and Pointel was collected in Tunisia. This species is probably not indigenous, but has established after sev- eral releases of a French strain were made in recent years. For selected strains, the sequence of the internal transcribed spacer 2 (ITS-2) region of rDNA was determined and deposited in the GenBank database. Differences in important biological attributes were found among collected strains of T. bourarachae, suggesting the existence of biotypes. The results contribute to the limited knowledge on dis- tribution and biodiversity of the genus Trichogramma in the Mediterranean region. They can be helpful for the preservation and use of indigenous Trichogramma species in biological control of lepidopterous pests in olive and other local crops.

Keywords :

Trichogramma bourarachae; Trichogramma cordubensis; Trichogramma euproctidis; Trichogramma cacoeciae; Trichogramma nerudai; ITS-2 region; Olive cultivation; Biodiversity; Biocontrol agent; Prays oleae; Palpita unionalis; Mediterranean region.

Name : Dr . Essam Agamy

Dep. : Economic Entomology and Pesticides

Title : **Field Efficiency of Indigenous Egg Parasitoids (Hymenoptera, Trichogrammatidae) to Control the Olive Moth (Prays Oleae, Lepidoptera, Yponomeutidae) and the Jasmine Moth (Palpita Unionalis, Lepidoptera, Pyralidae) in an Olive Plantation in Egypt**

Esmat Hegazi, Annette Herz, Sherif A. Hassan, Wedad E. Khafagi, Essam Agamy, Ahmed Zaitun, Gehan Abd El-Aziz, Sania Showeil, Somaia El-Sai and Noha Khamis

Journal : Biological Control

ISSN : 1049-9644 **Impact Factor :** 1.52

Abstract :

The olive moth, Prays oleae (Bern.), and the jasmine moth, Palpita unionalis (Hu¨bner), are serious pests in modern olive plantations in Egypt, causing significant yield loss by fruit fall as well as by damage on leaves, flowers and fruits. The egg parasitoid species Tricho- gramma bourarachae Pintureau and Babault, T. cordubensis Vargas and Cabello, T. euproctidis Girault, all collected in olive groves in Egypt, as well as the commercially available T. evanescens Westwood, originating from sugarcane fields in Egypt, were released in several applications in an intensively managed olive plantation for biological control of these pests. Impact of releases was monitored by record- ing egg parasitism, pest larval densities, fruit damage and fruit yield. Indigenous Trichogramma species accomplished higher egg para- sitism (up to 91%) than the commercial strain. Larval densities of target pests were significantly reduced up to 83% on Trichogramma release trees in comparison to control trees. Fruit damage ranged below 10% infested fruits and fruit yield was significantly increased on trees where indigenous wasps had been applied. The results suggested that releases of the indigenous T. bourarachae, T. cordubensis and T. euproctidis could improve control of lepidopterous pests on olive. The species T. bourarachae was most efficient in dispersal and foraging. Not native to this particular olive plantation before, it could sustainably be established after the releases in 2004. The outcome of this field experiment is encouraging for an efficient use of local Trichogramma spp. and represents a starting point for future optimi- zation of the method.

Keywords :

Biological control; Inundative release; Egg parasitism; Olive cultivation; Dispersal behavior; Trichogramma; Prays oleae; Palpita unionalis.

International Publications Awards
Cairo University

Name : **Prof . Hany Abdel Aziz El-Shemy**

Dep. : **Biochemistry**

Title : **Transgenic Azuki Bean Approaches**

Mutasim M. Khalafalla and Hany A. El-Shemy

Journal : **Transgenic Plant**

ISSN : 1749-0413 **Impact Factor :**

Abstract :

The first transgenic plants were reported in 1983. Since then, many recombinant proteins have been expressed in several important agronomic species of plants including tobacco, corn, tomato, potato, banana, alfalfa and canola. The choice of plant system was initially driven by convenience and ability to develop high frequency, routine and reproducible regeneration and genetic transformation systems. For this reason, azuki bean [Vigna angularis (Willd.) Ohwi & Ohashi] recently emerged as important transgenic grain legume crop. Azuki bean genetic transformation has taken rapid strides since the first transgenic azuki bean plant was produced 10 years ago. During the last 5 years, tremendous progress has been made to develop a high frequency, routine, and reproducible genetic transformation protocol for azuki bean through Agrobacterium-mediated transformation technology. This technology has been applied to produce azuki bean plants that withstand several a biotic stresses, as well as to gain tolerance against various pests and diseases. In addition, quality improving and increased nutritional value traits have also been introduced into azuki bean. Most of these gains were not possible through conventional breeding technologies. Moreover, using genetic transformation technology, azuki bean could be emerged as an important leguminous model plant providing the framework within which the molecular mechanisms that underlie the grain legume-specific character can be clarified.This review is an attempt to summarize the progress in transgenic azuki bean technology, with particular emphasis on agronomic and nutritional traits.

Keywords :

Genetic transformation; grain legumes; regeneration; pluses; Vigna angularis; Abbreviations; α AI; α-amylase inhibitor gene; BA, 6-Benzylaminopurine; CaMV35S, Cauliflower Mosaic Virus promoter; dap, dihy- drodipicolinate synthase; gfp, green fluorescent protein; gus, β-glucuronidase; hpt, hygromycin phosphotransferase; MS medium, Mura- shige and Skoog medium; nptII, neomycin phosphotransferase II; Trp, tryptophan

International Publications Awards
Cairo University

Name : **Prof . Hany Abdel Aziz El-Shemy**

Dep. : **Biochemistry**

Title : **Improvement of Protein Quality in Transgenic Soybean Plants**

H.A. El-Shemy, M.M. Khalafalla, K. Fujita and M. Ishimoto

Journal : **Biologia Plantarum**

ISSN : 0006-3134 **Impact Factor :** 1.198

Abstract :

Glycinin is one of the abundant storage proteins in soybean seeds. A modified Gy1 (A1aB1b) proglycinin gene with a synthetic DNA encoding four continuous methionines (V3-1) was connected between the hpt gene and the modified green fluorescent protein sGFP(S65T) gene, and a resultant plasmid was introduced into soybean by particle bombardment in order to improve nutritional value of its seeds. After the selection with hygromycin, the efficiency of gene introduction was evaluated. More than 60 % of the regenerated plants tolerant to hygromycin yielded the hpt and V3-1 fragment by polymerase chain reaction (PCR) analysis, and the expression of sGFP was detected in about 50 % of putative transgenic soybeans. Southern hybridization confirmed the presence of transgenes in T0 plants and the transgenic soybeans hybridized with the hpt and V3-1 genes were analyzed showed different banding patterns. Most of the transgenic plants were growing, flowering normally and produced seeds. Analysis of seed obtained from transgenic
soybean plants expressing hpt and V3-1 genes showed higher accumulation of glycinin compared with non-transgenic plants. In addition, protein expression in transgenic soybean plants was observed by using 2D-electrophoresis.

Keywords :

Genetic improvement; Glycine max; Glycinin; Particle bombardment; PCR; Seed storage proteins

International Publications Awards
Cairo University

Name : **Prof . Mahmoud Abdel Halim Mohamed**

Dep. : **Biochemistry**

Title : **Solid-Phase Extraction Combined with High-Performance Liquid Chromatography- Atmospheric Pressure Chemical Ionization-Mass Spectrometry Analysis of Pesticides in Water: Method Performance and Application in a Reconnaissance Survey of Residues in Drinking Water in Greater Cairo, Egypt**

Thomas L. Potter, Mahmoud A. Mohamed and Hannah Ali

Journal : **Agricultural and Food Chemistry**

ISSN : 0021-8561 **Impact Factor :** 2.322

Abstract :

Monitoring of water resources for pesticide residues is often needed to ensure that pesticide use does not adversely impact the quality of public water supplies or the environment. In many rural areas and throughout much of the developing world, monitoring is often constrained by lack of testing facilities; thus, collection of samples and shipment to centralized laboratories for analysis is required. The portability, ease of use, and potential to enhance analyte stability make solid-phase extraction (SPE) an attractive technique for handling water samples prior to their shipment. We describe performance of an SPE method targeting a structurally diverse mixture of 25 current-use pesticides and two common degradates in samples of raw and filtered drinking water collected in Greater Cairo, Egypt. SPE was completed in a field laboratory in Egypt, and cartridges were shipped to the United States for elution and high-performance liquid chromatography-atmospheric pressure chemical ionization-mass spectrometry analysis. Quantitative and reproducible recovery of 23 of 27 compounds (average = 96%; percent relative standard deviation = 21 %) from matrix spikes (1 ,µg L -1 per component) prepared in the field and from deionized water fortified similarly in the analytical laboratory was obtained. Concurrent analysis of unspiked samples identified four parent compounds and one degradate in drinking water samples. No significant differences were observed between raw and filtered samples. Residue levels in all cases were below drinking water and "harm to aquatic-life" thresholds, indicating that human and ecological risks of pesticide contamination were relatively small; however, the study was limited in scale and scope. Further monitoring is needed to define spatial and temporal variation in residue concentrations. The study has demonstrated the feasibility of performing studies of this type using SPE to extract and preserve samples in the field. The approach should be broadly applicable in many settings.

Keywords :

Solid; Phase; Extraction; Pesticide; Monitoring; Quality; Control

Name : **Prof . Mohamed Helmy Belal**

Dep. : **Economic Entomology and Pesticides**

Title : **Polychlorinated Biphenyl, Polychlorinated Dibenzo-P-Dioxin and Polychlorinated Dibenzofuran Residues in Sediments and fish of the River Nile in the Cairo Region**

Ahmed A. El-Kady, Mosaad A. Abdel-Wahhab, Bernhard Henkelmann, Mohamed H. Belal, M. Khairy S. Morsi, Samy M. Galaland Karl-Werner Schramm

Journal : **Chemosphere**

ISSN : 0045-6535 **Impact Factor :** 2.44

Abstract :

The levels of organohalogenated contaminants, i.e. PCBs, PCDDs and PCDFs were determined in sediment and fish samples collected from different locations in the River Nile, Egypt. Thirty-six sediment and eighteen fish samples were carried out during a period of 12 months from February 2003 to February 2004. Determination of PCBs and dioxins was carried out using a high resolution GC mass spec- trometer. The results indicated that the PCB and PCDD/F mean concentrations in sediment samples ranged from 1461 to 2244 and from240 to 775 pg g 1 dry wt basis, respectively. The mean concentration of PCBs and PCDD/Fs in fish samples were found to be in the range from 695 to 853 pg g 1 fresh wt for PCB congeners and from 27.7 to 121 pg g 1 lipid for total PCDD/Fs. Moreover, the concentrations of both PCBs and PCDD/Fs were found to be different at different locations along the River Nile. It could be concluded that the contami- nation of the River Nile is within the permissible limits set by the FDA and the Egyptian Standards for fish and shellfish.

Keywords :

PCBs; PCDD; Fs; Sediment; Fish

International Publications Awards
Cairo University

Name : **Prof . Muhammad Mostafa Shams**

Dep. : **Agricultural Zoology & Nematology**

Title : **Role of the Surface Coat of Romanomermis Culicivorax in Immune Evasion**

Muhammad M. Shamseldean, Edwardg. Platzer and Randy Gaugler

Journal : **Nematology**

ISSN : 1388-5545 **Impact Factor :** 0.722

Abstract :

Interactions of the mermithid nematode Romanomermis culicivorax with the immune system of mosquito larvae were examined by scanning electron microscopy. The host immune system rapidly recognised invading parasites, as granulocytes and discharged granules were observed attached to parasitic nematodes within 5 min. Melanin deposition was infrequently observed. As a counter measure, the parasites secreted and shed an extracellular surface coat which aided immune evasion. During the first 4 days of infection, when parasite growth was limited, the coat served as a disposable, renewable barrier between parasite and host that was intermittently shed to cleanse the nematode of adhering host immune products. In the later infection phase the parasite grew rapidly and was beyond the effect of the depleted host immune response. The broad host range of R. culcivorax within culicines may be partly a function of the nonspecific defence it mounts against the host immune system. In summary, shedding of the surface coat is an adaptive counter response by R. culicivorax to the mosquito immune reaction to infection and provides a classic example of host-parasite coevolution.

Keywords :

Anopheles quadrimaculatus; Culex pipiens; Culicidae; Haemocytes; Mermithidae; Mosquito; Nematoda; Scanning electron microscopy

Name : **Prof . Radwan Sedky Farag**

Dep. : **Biochemistry**

Title : **Use Crude Olive Leaf Juice as a Natural Antioxidant for the Stability of Sunflower Oil During Heating**

Radwan S. Farag, Ebtesam A. Mahmoud and Amany M. Basuny

Journal : **Food Science and Technology**

ISSN : 0950-5423 **Impact Factor :** 0.832

Abstract :

Olive leaves (Kro1lakii culthar) were obtained from the annual pruning of olive trees and pressed to obtain a crude juice. Aliquots from the concentrated crude olive leaf juice, representing 400, 800, 1600 and 2400 ppm as polyphenols, were added to sunOower oil, Samples of sunflower oil mixed with olive leaf juice were heated intermittently at 180 ± 5°C for 5 h day-I and thc heating process was repeated for five eons<.:cutive days. A control experiment was performed where butylated hydroxyl toluene (BHT) at 200 ppm was added to sunflower oi1 prior to intermittent heating in order to compare the antioxidant efficiency between the natural po1yphenolics of olive leaf juice and synthetic antioxidant BHT. Some physical and chemical constants for the unheated and heated sunflower oil were determined. The data indicale Ihallhe addition of olive leaf juice to sunflower oil heated at 180 °C induced remarkable antioxidant activity and at 800 ppm level was superior to that of BHT in increasing sunflower oil stability.

Keywords :

Antioxidants; Deep fat frying; Polyphenols; Sunflower oil

International Publications Awards
Cairo University

Name : **Prof . Radwan Sedky Farag**

Dep. : **Biochemistry**

Title : **Influence of Fried and Fried-Treated Oils with Different Filter Aids on rat Health**

Radwan S Farag and Ayman M EI-Anany

Journal : **The Science of Food and Agriculture**

ISSN : 0022-5142 **Impact Factor :** 1.026

Abstract :

Soybean, sunflower, palm and cottonseed oils were ftied continuously at 180 ± 5°C for 12 h. Fried oil quality was regenerated by adding individually Magnesol XL, diatomaceous earth and kaolin at 2% level, then stirring mechanically at 105 °C for 15min and filtering. A set of nutritional experiments was conducted in which rats were adtninistered standard diets containing non-fried, fried and fried-treated oils witb various filter aids. The safety limits of the fried-treated oils were recognized by measuring the activities of alanine aminotransferase (ALT), aspartate aminotransferase (AST) 31td alkaline phosphatase (AP), and levels of total lipids, total cholesterol, HDL cholesterol and LDL cholesterol of rat sera. Also, histopathological evaluation of rat liver tissues was microscopically done to detect any datnage that might occur due to feeding ratS on non-fried, fried and fried-treated oils. Adtninistration of fried oils to rats induced significant rises in activities of AL T, AST and AP, and increases in the levels of totallipids and total cholesterol. The results demonstrate that there were non-significant changes in sera levels of LDL and HDL cholesterol in rats fed diets containing various types of soybean, sunflower and cottonseed oils. Administration of fried-treated oils to rat diets indicates that the activities of AL T, AST and AP and levels of sera constituents were sitnilar to those of rats given non-fried oils. Pahn oil exceptionally behaved differently from the other oils. Palm oil raised sera total cholesterol and LDL cholesterol and lowered HDL cholestcrollevcl. Histopathological examination of rat liver tissues indicated that changes paralleled the biochemical data.

Keywords :

Fried oils; Filter aids; Rats; Liver and kidney function tests; Microscopic examination

Faculty of Veterinary Medicine

International Publications Awards
Cairo University

Name : **Prof . Abdel Aty Mostafa Abdel Aty**

Dep. : **Pharmacology**

Title : **An Evaluation of the Effect of Repeated Doses of Oral Activated Charcoal on the Depletion of Enrofloxacin Residual Levels in Chicken Breast Muscles**

Abd El-Aty M. Abd El-Aty

Journal : **Berliner Und Munchener Tierarztliche Wochenschrift**

ISSN : 0005-9366 **Impact Factor :** 0.611

Abstract :

The purpose of this study was to determine whether concurrent oral administration of activated charcoal has an affect on the depletion of the residual concentrations of enrofloxacin (ENRO) in chicken breast muscles. Sixty-four broiler chickens were divided into four groups (n = 16 per group), one given a daily oral dose of enrofloxacin with feed at a dose of 10 mg/kg for 5 consecutive days (control group) and the others given the same dose of enrofloxacin simultaneously with activated charcoal at a dose rate of 0.5, 1, and 2 % of daily feed for 5 days (treatment groups). At the end of treatment, 2 hens were sacrificed at each of the sampling time points (6,12, 18,48, 72,96,120 and 144 h after completion of dosing), breast muscles were collected and analyzed. Supercritical fluid extraction and high-performance liquid chromatography methods were used to determine the enrofloxacin residue levels in chicken breast muscles.The limit of quantification (LOQ) 16.5 microg/kg, was lower than the maximum residue levels (MRL) fixed by the Commission of the European Union. For all the time periods, charcoal treatment did not affect enrofloxacin tissue concentrations except at 12 and 48 h post treatment.To our knowledge, no studies on the depletion of enrofloxacin in the presence and absence of activated charcoal in chicken muscles have been performed. Although our current understanding is incomplete, multiple dose activated charcoals may play a role in the therapy of overdose.To prove this, further investigation is warranted.

Keywords :

Activated Charcoal; Enrofloxacin; Depletion; Muscles; Supercritical Fluid Extraction; Liquid Chromatography

Name : **Prof . Abdel Aty Mostafa Abdel Aty**

Dep. : **Pharmacology**

Title : **Post-Harvest HPLC Determination of Chlorfluazuron Residues in Pears Treated with Different Programs**

Abd El-Aty M. Abd El-Aty

Journal : **Biomedical Chromatography**

ISSN : 0269-3879 **Impact Factor :** 1.611

Abstract :

The present study was conducted to monitor the level of chlorfluazuron residues in pear samples in order to assess the risk posed by the presence of such residues to the consumer. Chlorfluazuron was sprayed onto pear trees at the recommended dose rate at two different times at 30 and 21 days prior to harvesting in one treatment, at 21 and 14 days prior to harvesting in another treatment, and three times at 30, 21 and 14 days prior to harvesting in a third treatment. Chlorfluazuron residues were extracted with acetonitrile and partitioned into ethyl acetate. The residue determination was performed on an Apollo C18 column using HPLC with a UV detection of 254 nm following the clean-up of the extract by open column chromatography with Florisil. The versatility of this method was evidenced by its good linearity (>0.995) in the concentration range between 0.2 and 10 µg/mL. The majority of the mean recoveries at two different fortification levels, 0.05 and 0.25 ppm, ranged from 84.9 ± 3.2 to 94.3 ± 10.6, and the repeatability (as the relative standard deviation) from three repetitive determinations of recovery was between 3.8 and 11%. The calculated limit of detection (LOD) was 0.008 ppm and the limit of quantitation was 0.03 ppm. Trace amounts of chlorfluazuron were detectable when it was applied onto the pear trees at two or three times prior to harvesting; however, the levels of chlorfluazuron were not quantified. The excellent sensitivity and selectivity of this method allowed for quantitation and identification at low levels with a run time of less than 12 min. Chlorfluazuron can be used safely to protect pears when sprayed two or three times at 14 days prior to harvesting

Keywords :

Insecticide; Residues; Pears; Liquid Chromatography

International Publications Awards
Cairo University

Name : **Prof . Abdel Aty Mostafa Abdel Aty**

Dep. : **Pharmacology**

Title : **Pesticide Multiresidue Analysis in Panax Ginseng (C. A. Meyer) by Solid-Phase Extraction and Gas Chromatography with Electron Capture and Nitrogen-Phosphorus Detection**

Abd El-Aty M. Abd El-Aty

Journal : **Biomedical Chromatography**

ISSN : 0269-3879 **Impact Factor :** 1.611

Abstract :

An analytical multi-residue method using gas chromatography coupled with electron capture and a nitrogen– phosphorus detector was investigated for the simultaneous determination of 18 commonly used insecticides and fungicides in Korean ginseng (Panax ginseng C. A. Meyer). Samples were previously extracted with an acetonitrile and cleaned up by solid-phase extraction (SPE). The calibration curves were linear, with determination coefficients higher than 0.989. Recoveries at concentrations between 0.01 and 14.9 ppm ranged from 72.3 to 117.2%, with precision, which was expressed as relative standard deviation (RSD), at values lower than 5%. The proposed method was applied to the determination of pesticide levels from 12 ginseng samples, taken from four different agricultural areas of Jeonnam province, where several insecticides and fungicides were applied. Except in one sample, tolclofos-m was the only pesticide contained at a level lower than the maximum residue limits (MRL) authorized by the Korea Food and Drug Administration (KFDA) in real ginseng samples grown for 4, 5 and 6 years.

Keywords :

Pesticides; Multi-Residue; Simultaneous; Korean Ginseng; Solid-Phase Extraction; Gas Chromatography

International Publications Awards
Cairo University

Name : **Prof . Abdel Aty Mostafa Abdel Aty**

Dep. : **Pharmacology**

Title : **A Multiresidue Method for the Analysis of Pesticide Residues in Polished Rice (Oryza Sativa L.) Using Accelerated Solvent Extraction and Gas Chromatography and Confirmation by Mass Spectrometry**

Abd El-Aty M. Abd El-Aty

Journal : **Biomedical Chromatography**

ISSN : 0269-3879 **Impact Factor :** 1.611

Abstract :

An analytical procedure using accelerated solvent extraction and gas chromatography with an electron capture detector has been optimized to simultaneously determine the residue of two insecticides (diazinon and EPN) and one fungicide (isoprothiolane) in polished rice and was confirmed by GC–mass spectrometry. Several parameters, including temperature, pressure, solvent ratio, cell size and cell cycle, were thoroughly investigated to find the optimal extraction conditions. The average recoveries of the three pesticides were between 82.7 and 126.4% at spiking levels of 0.1 and 0.5 ppm. The relative standard deviations were less than 7% for all of the recovery tests. The optimum accelerated solvent extraction operating conditions were 100°C, 1500 atm, acetone–n-hexane (20:80 v/v) as the extraction solvent, two cycles, and a cell size of 33 ml. The total extraction time was approximately 20 min. The optimized procedure has also been applied to the determination of diazinon, isoprothiolane and EPN in real rice samples. In conclusion, accelerated solvent extraction was used for the first time for the analysis of diazinon, isoprothiolane and EPN in polished rice and offers the possibility of a fast and simple process for obtaining a quantitative extraction of the studied pesticides.

Keywords :

Pesticide; Accelerated Solvent Extraction; Gas Chromatography; Rice

International Publications Awards
Cairo University

Name : **Prof . Abdel Aty Mostafa Abdel Aty**

Dep. : **Pharmacology**

Title : **Lack of Inhibitory Effects of Several Fluoroquinolones on Cytochrome P-450 3A Activities at Clinical Dosage in Dogs**

Abd El-Aty M. Abd El-Aty

Journal : **Vet. Pharmacol. Therap**

ISSN : 0140-7783 **Impact Factor :** 1.406

Abstract :

Inhibitory effects of several fluoroquinolones (FQs) on liver CYP3A activities were examined by in vitro and in vivo tests in dogs. Midazolam (MDZ) hydroxylation rate was used to determine the CYP3A activities in liver microsomes. Enrofloxacin (EFX), ofloxacin (OFX) orbifloxacin (OBFX) and ciprofloxacin (CFX) were tested. None of the FQs changed Vmax, Km or intrinsic clearance (Vmax/Km) of MDZ. For in vivo test, we examined the effects of oral administration of EFX and OFX on the pharmacokinetics of quinidine (QN), a CYP3A substrate. EFX or OFX (10 mg/kg) was administered once a day for 3 days. QN (2 mg/kg) was intravenously injected at 2 h after the final dose of FQs administration. The same dose of QN was intravenously injected 3 weeks before the start of FQs administration for control. Neither EFX nor OFX changed the pharmacokinetic parameters of QN. These in vitro and in vivo consisted results suggest that these FQs lack the inhibitory effects on CYP3A activities in dogs. Hence, given these results, the risk of drug–drug interaction is unlikely to occur between FQs and CYP3A substrates in clinical situation in dogs.

Keywords :

Fluoroquinolones; Inhibitory Effect; Canine Microsomes; in Vitro; in Vivo

International Publications Awards
Cairo University

Name : **Prof . Abou Bakr El-Wishy**

Dep. : **Theriogenologoy**

Title : **The Postpartum Buffalo : I. Endocrinological Changes and Uterine Involution**

A.B. El-Wishy

Journal : **Animal Reproduction Science**

ISSN : 0378-4320 **Impact Factor :** 2.14

Abstract :

To maintain a calving interval of 13–14 months in buffaloes, successful breeding must take place within 85–115 days after calving. Disturbances during this period due to delay of uterine involution or resumption of estrous activity are likely to prolong the calving interval and reduce the lifetime reproductive and productiveefficiency.In this article literature on endocrinological changes in the peripartum period and on factors affecting uterine involution are reviewed. The available information indicated that although the availability of releasable FSH does not appear to be a limiting factor for resumption of postpartum cyclicity a substantial increase of releasable LH and replenishment of pituitary stores occurred around Day 20 in dairy and Day 30 inswamp buffaloes. There is evidence that follicular activity is resumed early (15–30 days) in the postpartum period. However, the factors which initiate release of appropriate LH pulses, follicular maturation and ovulation in the postpartum buffalo need further studies. The mean interval to complete uterine involution varied widely between 19 and 52 days. Assessment of cervical and uterine horn diameters by rectal palpation alone is not satisfactory to diagnose delayed uterine involution and possible subclinical uterine infection. Vaginal inspection can be included as a fundamental part of postpartum genital examination for diagnosis of such case. Uterine involution, however, does not seem to be a limiting factor for achievement of satisfactory fertility in the postpartum buffalo but the main determinant is resumption of estrous activity.

Keywords :

Buffalo; Postpartum Period; Endocrinological changes; Ovarian Changes; Uterine involution

International Publications Awards
Cairo University

Name : **Prof . Abou Bakr El-Wishy**

Dep. : **Theriogenologoy**

Title : **The postpartum buffalo II. Acyclicity and anestrus**

A.B. El-Wishy

Journal : **Animal Reproduction Science**

ISSN : 0378-4320 **Impact Factor :** 2.14

Abstract :

Prolonged postpartum acyclicity (absence of ovarian cyclic activity) and anestrum (absence of overt estrous signs) are major sources of economic loss to buffalo breeders. Studies on the epidemiology of these two problems are highly recommended to achieve successful control. Review of the available literature on controlled studies in dairy buffaloes revealed that first ovulation as detected by rectal palpation and progesterone analysis occurred between 28-71 and 24-55 days, respectively, after calving. Postpartum estrus in the same studies occurred between 44 and 87 days. Reports concerned with data compiled from breeding records of research stations, breeding farms and small holders where estrus is a subjective measure, gave much longer periods. Also data from Egypt, India and Pakistan indicate that only 34-49% of buffaloes showed estrus during the first 90 days after calving and 31-42% remained anestrus for more than 150 days. In swamp buffaloes both postpartum ovulation and estrus are more delayed than in dairy buffaloes. The role of suckling, nutrition, body condition score at calving, milk yield, parity, season of calving and other minor factors were discussed. First postpartum ovulation is frequently followed by one or more short estrous cycles (<18 days). Long anovulatory and anestrous periods due to prolonged inter-luteal phase were reported to occur after short cycles. Also long anestrous periods due to cessation of cyclic activity (true anestrus) for 3 or more weeks and prolonged luteal activity for 28 days or more were described to occur in about 25 and 8-11% of the buffaloes, respectively, after the first or second ovulation. These cycle irregularities certainly impose difficulties on estrus detection programs in postpartum buffaloes. Four main forms of anestrus i.e. true anestrus (inactive ovaries and small and medium sized anovulatory follicles), subestrus, prolonged luteal activity and ovarian cysts in addition to pregnancy are reviewed in this article. Differentiation between true anestrus and subestrus is particularly important in buffaloes because of their weak estrous signs. However, the accuracy of a single rectal palpation of the ovaries is limited with an overestimation of the frequency of true anestrus due to misdiagnosis of the corpus luteum. The possible causes are discussed.

Keywords :

Buffalo; Postpartum; True Anestrus; Subestrus; Prolonged luteal Activity; Ovarian Cysts

International Publications Awards
Cairo University

Name : **Prof . Alaa El-Deen Eissa**

Dep. : **Fish Diseases & Management**

Title : **Field trial evaluation of povidone iodine as an effective disinfectant for different stages of returning spawners salmon**

Alaa Eldin Eissa, EE Elsayed and M Faisal

Journal : **Life Science Journal**

ISSN : 1097-8135 **Impact Factor :**

Abstract :

Reaching with the fertilized gametes to the production stage is a critical process for the success of aquaculture and restoration of wild fish programs worldwide. Iodophors are routinely used to disinfect both broodstocks and fertilized eggs to control vertical as well as horizontal transmission of fish pathogens. During three successive spawning cycles, the specific fish pathogens Aeromonas salmonicida and Renibacterium salmoninarum associated with typical clinical picture have been isolated from examined salmon before gamete collection. The prevalence approximately reached 51% and 79% for A. salmonicida and R. salmoninarum respectively. On the other hand, the R. salmoninarum was isolated from the collected eggs of the broadstocks used for spawning in the above mentioned cycles. Average prevalence of infection in tested eggs was 15%. At the pre-rinsing cycles, the bacterial load was determined as 1.2 × 103 and 0.6 × 102 CFU/plate for A. salmonicida and R. salmoninarum in spawners respectively. On the level of fertilized eggs, the load was determined as 0.2 × 103 CFU/plate and 0.1 × 103 for A. salmonicida and R. salmoninarum respectively. In the following spawning cycle, the efficacy of povidone iodine as surface disinfectant for returning spawners and fertilized eggs of Chinook salmon were tested. Concentrations of 60 mg/L povidone iodine for 30 minutes as initial dose followed by a maintenance dose of 70 mg/L for 10 minutes were applied as rinsing solutions for ♂ and ♀ Chinook salmon spawners. Eggs were shell-hardened in 80 mg /L povidone iodine for 30 minutes. Isolation trials from equal number of post rinsing spawner Chinook salmon and fertilized eggs indicated a sharp decline in bacterial colonies number per plate for spawners and eggs. The achieved post-rinsing results are highly indicative for the efficacy of povidone iodine as efficient disinfectant for both fish and eggs. Ultimately, the current study will ensure the production of fish populations with less bacterial load and consequent potent health status.

Keywords :

Iodine; Spawners salmon; BKD

International Publications Awards
Cairo University

Name : **Prof . Alaa El-Deen Eissa**

Dep. : **Fish Diseases & Management**

Title : **Isolation of Aeromonas Salmonicida From Sea Lamprey (Petromyzon Marinus) with Furuncle-Like Lesions in Lake Ontario**

M. Faisal, A. E. Eissa and E. E. Elsayed

Journal : **Wildlife Diseases**

ISSN : 0090-3558 **Impact Factor :** 0.99

Abstract :

For the past six decades, parasitic sea lampreys (Petromyzon marinus) have caused devastating losses to salmonid fisheries in the Great Lakes. To reduce the number of sea lampreys, the Great Lakes Fishery Commission began a large-scale program based on trapping male sea lampreys, sterilizing them, and releasing sterile males back into streams to compete with fertile males for spawning females. The transfer of lampreys among lakes can potentially lead to the transfer of various pathogens, and this has raised major concerns regarding the possibility of resident fish populations becoming infected by introduced pathogens. During a health inspection of sea lampreys collected from Lake Ontario, lampreys with obvious furuncle-like lesions (1–2 cm in diameter) were noticed. Most of the furuncles occupied the dorso-lateral musculature, and Aeromonas salmonicida subsp. salmonicida was isolated from the kidneys. This bacterium was cultured from kidneys of 2.5% of the sea lampreys collected from two locations within the Lake Ontario watershed in 2004. The identity of bacterial colonies was presumptively verified with biochemical reactions and confirmed with polymerase chain reaction. This is the first report of A. salmonicida infection in sea lamprey in the Great Lakes basin associated with furunculosis.

Keywords :

Aeromonas salmonicida; furunculosis; Great Lakes; Petromyzon marinus; Sea lamprey

International Publications Awards
Cairo University

Name : **Prof . Amira Hasan Mohamed**

Dep. : **Clinical Pathology**

Title : Hepatitis E Virus Infection in Work Horses in Egypt

Magdi D. Saad , Hussein A. Hussein, Moustafa M. Bashandy, Hamdy H. Kamel, K. C. Earhart, David J. Fryauff, Mary Younana and Amira H. Mohamed

Journal : **Infection, Genetics and Evolution**

ISSN : 1567-1348 **Impact Factor :** 3.554

Abstract :

Hepatitis E virus (HEV) is an important cause of hepatitis among young Egyptian adults with high seroprevalence rates seen in both rural areas of the Nile Delta and in suburban Cairo. Because natural antibodies to HEV have been detected in animals and zoonotic transmission is postulated, we surveyed work horses in Cairo for evidence of HEV exposure and viremia. Sera from 200 Cairo work horses were tested by ELISA for the presence of IgG anti-HEV antibody revealed a seropositivity of 13%. Among 100 samples processed for detection of viral genome by means of nested polymerase chain reaction (N-PCR), 4% were positive and indicative of viremia. Viremic animals were less than 1 year old. Relative to PCR-negative horses, PCR-positive animals demonstrated significant elevation of AST ($p = 0.03$). Phylogenetic analysis of a 253-bp fragment, in the ORF-1,2,3 overlap region of the HEV genome from the viremic animals showed that three of these viral strains to be identical, and closely related (97–100% nucleotide identity) to two human isolates from Egypt, and distant (78–96%) from 16 other HEV isolates from human and animals and shared 99.6% NI with the fourth strain. The consensus sequence of the four strains was origin obtained elsewhere. These data indicated that horses acquire HEV infection and suggest that cross-species transmission may occur. Whether horses play a role in the transmission of HEV needs further investigation.

Keywords :

HEV; Horse; Egypt; Infection; PCR; Phylogenetic

International Publications Awards
Cairo University

Name : **Prof . Ayman Goudah**

Dep. : **Pharmacology**

Title : **Acute-phase Response Alters the Disposition Kinetics of Cefepime following Intravenous Administration to Rabbits**

A. M. Abd El-Aty, A. Goudah , S.M. Mouneir , Y. E. Sunwoo , J. H. Jang , J. G. Shin , J. H. Shim and M. Shimoda

Journal : **Veterinary Research Communications**

ISSN : 0165-7380 **Impact Factor :** 0.33

Abstract :

The effect of experimentally induced fever on the pharmacokinetics of cefepime administered intravenously at a dose of 75 mg/kg bw was studied in six healthy rabbits. The study was conducted in two consecutive phases, separated by a washout period of 2 weeks. Infection was induced by the intravenous inoculation of 5×108 cfu of Escherichia coli 24 h before the pharmacokinetic investigation was carried out. Serial blood samples for cefepime concentration determination were obtained for 48 h following drug administration. The concentrations of cefepime in the plasma were determined by a quantitative microbiological assay using an agargel diffusion method employing Bacillus subtilisATCC6633 as the test organism, with a level of detectability of approximately 0.10 μg/ml. Cefepime plasma concentrations versus time were evaluated by non-compartmental methods usingWinNonLin. Cefepime was well tolerated and no serious adverse events were observed. Rectal temperature increased 1◦C 24 h post injection in infected animals. Highly significant differences in the blood plasma concentrations of cefepime were observed between febrile and healthy animals at all the sampling times. This could explain the greater area under the plasma level–time curve of the drug in febrile compared with healthy animals. The results from pharmacokinetic calculations showed that both the distribution volume at steady state (Vdss) and body clearance (CLtot) were affected in febrile as compared to healthy animals. The mean values of Vdss and CLtot of cefepime in healthy rabbits were 1.168 L/kg and 0.303 L/kg/h, respectively. As compared with healthy animals, the mean estimates of Vdss (0.917 L/kg) and CLtot (0.205 L/kg per h) of cefepime were significantly lower, whereas t1/2λ,MRT and AUMC were significantly higher in febrile rabbits. It is concluded that, although experimental infection had an effect on the disposition kinetics of cefepime in healthy and febrile rabbits, this was not sufficiently pronounced to require alteration of the dosage during disease.

Keywords :

Cefepime; Pharmacokinetics; Microbiological assay; Healthy; Febrile; Rabbits.

International Publications Awards
Cairo University

Name : **Prof . Ayman Goudah**

Dep. : **Pharmacology**

Title : **Pharmacokinetics and Mammary Residual Depletion of Erythromycin in Healthy Lactating Ewes**

A. Goudah , S. Sher Shah, H.C. Shin, J.H. Shim and A. M. Abd El-Aty

Journal : **J. Vet. Med**

ISSN : 0931-184X **Impact Factor :** 0.76

Abstract :

The aim of this investigation was to examine the pharmacoki- netics and mammary excretion of erythromycin administered to lactating ewes (n = 6) by the intravenous (i.v.), intramuscular (i.m.) and subcutaneous (s.c.) routes at a dosage of 10 mg/kg. Blood and milk samples were collected at pre determined times, and a microbiological assay method was used to measure erythromycin concentrations in serum and milk. The concen- tration–time data were analysed by compartmental and non- compartmental kinetic methods. The serum concentration–time data of erythromycin were fit to a two compartment model after i.v. administration and a one-compartment model with first- order absorption after i.m. and s.c. administration. The elimination half-life (t1/2b) was 4.502 ± 1.487 h after i.v. administration, 4.874 ± 0.296 h after i.m. administration and 6.536 ± 0.151 h after s.c. administration. The clearance value (Cltot) after i.v. dosing was 1.292 ± 0.121 l/h/kg. After i.m. and s.c. administration, observed peak erthyromycin concentrations (Cmax) of 0.918 ± 0.092 lg/ml and 0.787 ± 0.010 lg/ml were achieved at 0.75 and 1.0 h (Tmax) respectively. The bioavaila- bility obtained after i.m. and s.c. administration was 91.178 ± 10.232% and 104.573 ± 9.028% respectively. Erythromycin penetration from blood to milk was quick for all the routes of administration, and the high AUCmilk/AUCserum (1.186, 1.057 and 1.108) and Cmax-milk/Cmax-serum ratios reached following i.v., i.m. and s.c. administration, respectively, indicated an extensive penetration of erythromycin into the milk.

Keywords :

Pharmacokinetic; Ewes; Mlk; Erythromycin.

International Publications Awards
Cairo University

Name : **Prof . Ayman Goudah**

Dep. : **Pharmacology**

Title : **Single-dose pharmacokinetics of marbofloxacin in Egyptian buffalo (Bubalus bubalis L.) steers.**

Ayman Goudah, Abd El-Aty M. Abd El-Aty, Nanda L. Regm, Ho-chul Shin, Minoru Shimoda and Jae-Han Shim

Journal : **Berl, Munch. Tierarztl, Wochenschr**

ISSN : 0005-9366 **Impact Factor :** 0.62

Abstract :

The objective of this study was to investigate the pharmacokinetics of marbofloxacin (MAR) following intravenous (iv) and intramuscular (im) administration of a 2.0 mg/kg body weight dosage to five healthy Egyptian buffalo steers. A cross-over design was used with a washout period of 2 weeks. Blood samples were obtained at 0, 5,10,15, and 20 min and at 0.5,0.75,1,2,4,6,8,10,12,24,30 and 48 hours after marbofloxacin administration. The serum marbofloxacin concentrations were quantitated using a modified agar diffusion bioassay method. Marbofloxacin exhibited a relatively high volume of distribution at steady-state (Vdss = 1.77 L/kg), which suggests good tissue penetration, and a total body clearance (Cltot) of 0.18 L/kg.h, which is associated with a long elimination half-life (tl/2beta = 7.52 h). Marbofloxacin was rapidly absorbed at a dosage of 2.0 mg/kg after im administration with an observed maximum serum concentration (Cmax) value of 2.004 µg/mL obtained at a time to peak concentration (tmax) of 0.5 h, and an absolute bioavailability (F %) of 86.79 +/- 5.53 %.The protein-binding ranged from 22 to 24.6 % with an average of 23.4 %. In conclusion, single iv and im administered doses of marbofloxacin were well tolerated by Egyptian buffalo steers. A dosage of 2 mg/kg body weight might not be enough to treat infections caused by bacteria with minimum inhibitory concentration (MIC) at or above 0.2 µg/mL, based on the calculated area under the inhibitory concentration (AUIC).

Keywords :

Pharmacokinetis; Egyptian buffalo; Marbofloxacin

International Publications Awards
Cairo University

Name : **Prof . Ayman Goudah**

Dep. : **Pharmacology**

Title : **Pharmacokinetic Variables of Moxifloxacin in Healthy Male Camels Following Intravenous and Intramuscular Administration**

A. M. Abd El-Aty, A. Goudah, S. S. Shahh, C . Shhin, M. Shim Oda and J. H. Shim

Journal : **Vet. Pharmacol**

ISSN : 0140-7783 **Impact Factor :** 1.29

Abstract :

Moxifloxacin is a fourth generation fluoroquinolone with a methoxy group in the C-8 position and C-7 side chain. It is active against Gram-positive and Gram-negative pathogens of veterinary importance. The present study was planned to investigate the serum disposition kinetics of moxifloxacin in male camels (n = 6) following a single intravenous (i.v.) bolus or intramuscular (i.m.) injections at a dosage of 5 mg/kg b.w. in all animals. A crossover study was carried out in two phases separated by 15 days. Serum samples was collected serially for 48 h and the drug concentrations were assayed using a microbiological assay. The mean serum concentrations after i.v. administration were higher than those following i.m. administration until 2 h postadministration, and were generally detectable up to 36 h. The serum concentration–time curves were best resolved into a three-compartment open model following i.v. bolus injection. The volume of distribution at steady state (Vdss) was 1.78 ± 0.79 l/kg and the total body clearance (Cltot) was 0.34 ± 0.02 l/h/kg and the area under the curve (AUC) was 14.72 ± 0.69 ug.ml/h. The value obtained for MRT was 5.77 ± 1.83 h. Following i.m. administration, the mean Tmax, Cmax, t1/2el and AUC values for plasma data were 1.04 ± 0.14 h, 2.16 ± 0.13 µg/ml, 11.95 ± 4.61 h and 12.17 ± 0.78 µg.ml/h. The i.m. bioavailability was 82.10 ± 5.50% and the in vitro serum protein binding percentage of moxifloxacin was ranged from 33 to 38 %.

Keywords :

Moxifloxacin; Pharmacokinetics; Camel; AUC; Vdss; Bioavailability

International Publications Awards
Cairo University

Name : **Prof . Ayman Goudah**

Dep. : **Pharmacology**

Title : **Pharmacokinetics if Ceftiofur after Single Intravenous and Intramuscular Administration in Camels (Camelus Dromedarius)**

A. Goudah

Journal : **Vet. Pharmacol**

ISSN : 0140-7783 **Impact Factor :** 1.29

Abstract :

Ceftiofur sodium is a third generation cephalosporin, is active against Gram-positive and Gram-negative pathogens of veterinary importance. The present study was planned to investigate the plasma disposition kinetics of ceftiofur in female camels (n = 6) following a single intravenous (i.v.) bolus or intramuscular (i.m.) injections at a dosage of 2.2 mg/kg b.w. in all animals. A crossover study was carried out in two phases separated by 21 days. Plasma and milk samples were collected serially for 72 h and the drug concentrations were assayed using a microbiological assay. A two compartment open model best described the decrease of ceftiofur concentration in the plasma after intravenous injection. The drug was rapidly distributed with half life of distribution t½α of 0.48 ± 0.07 h and shortly eliminated with elimination rate constant and elimination half-life of 0.22 ± 0.06 h and 3.18 ± 0.21 h, respectively. The volume of distribution at steady state (Vdss) of 0.13 ± 0.03 l/kg reflected limited extracellular distribution of the drug with total body clearance (Cltot) of 0.03 ± 0.001 l/h/kg and the area under the curve (AUC) was 70.53 ± 9.46 ug.ml/h. Following i.m. administration, the mean Tmax, Cmax, t1/2el and AUC values for plasma data were 1.22±0.11 h, 10.34 ± 1.24 µg/ml, 3.29 ± 0.20 h and 68.70 ± 7.19 µg.ml/h. Ceftiofur concentrations could not be detected in milk samples. The i.m. bioavailability was 97.4 ± 18.41 % and the binding percentage of ceftiofur to plasma protein was 87 %.

Keywords :

Ceftiofur; Pharmacokinetics; Camel; AUC; Vdss; Bioavailability

Name : **Prof . Hussein Abdel Hay Kaoud**

Dep. : **Clinical Nutrition**

Title : **HPAI Epidemic in Egypt: Evaluation, Risk Factors and Dynamic of Spreading**

H. A. Kaoud

Journal : **Poultry Science**

ISSN : 1682-8356 **Impact Factor :**

Abstract :

On 17 February 2006, the Egyptian government confirmed that bird flu had broken out in the nation's poultry in Egypt. In this work Trials were carried out to determine: The transmission parameter ك (i.e., the average rate at which infected flocks infect susceptible flocks) and the infectious periods (T) between various districts. Rh was calculated as the product of the estimates of the transmission parameter and the infectious period. Results revealed that, the infection was spread to 21 governorates, 5 of them with a high density of poultry farms. In all, 826 districts containing commercial flocks became infected during a period of 4 months. Suggested geographic maps for the spread of HPAI virus that had been stroked Egypt 2006 were constructed. The transmission parameters varied in-between the districts in the various governorates. It was ranged from 23 days to 87 days. Governorates of heavy density (number of poultry farms per km2) have less periods for the transmission of the virus from district to another. It was found a negative correlations between the number of the infected farms of the governorate and (T) parameter of transmission ($r = -0.415$ at $P < 0.05$) and a negative significant one between the number of infected districts and parameter (T) ($r = 0.51$ at $P < 0.05$). Also there was a significant correlation between the number of infected districts and the activity of the transporting traffic of poultry between the districts of the same governorate and to other governorates ($r = 0.66$ at $P < 0.05$). Parameter (T), it was ranged from 0.36 day to 27.6 days. Rh between-districts transmission decreased significantly after virus detection, it was still > 1 ($R = 1.2$ for both areas) suggested that the control measures were inadequate to interrupt the chain of infection. The association between the presence of the migratory birds and the occurrence of AI infection, was determined, where the relative risk was 1.17 and the magnitude of this association = 0.12 (attributable risk) i.e. 12 % of infection probably owing to migratory birds.

International Publications Awards
Cairo University

Name : **Prof . Magdy Ahmed Ghoneim**

Dep. : **Biochemistry**

Title : **Protective Effect of Curcumin and Chlorophyllin against DNA Mutation Induced by Cyclophosphamide or Benzo[a]pyrene**

Marwa A. Ibrahim, Adel M. Elbehairy, Magdy A. Ghoneim and Hassan A. Amer

Journal : **Zeitschrift Fur Naturforschung C-A Journal of Biosciences**

ISSN : 0939-5075 **Impact Factor :** 0.72

Abstract :

The current study was carried out to evaluate the potency of curcumin and chlorophyllin as natural antioxidants to reduce the oxidative stress markers induced by cyclophosphamide (CP) and benzo[a]pyrene [B(a)P] which were used as free radical inducers. For this purpose, 126 male albino rats were used. The animals were assigned into 4 main groups; negative control group; oxidant-treated group (subdivided into two subgroups: cyclophosphamide-treated group and benzo[a]pyrene-treated group); curcumin-treated group; and chlorophyllin-treated group. Liver samples were collected after two days post the oxidant inoculation and at the end of the experimental period (10 weeks). These samples were examined for determination of liver microsomal malondialdehyde (MDA), DNA fragmentation, restriction fragment length polymorphism (RFLP) and 8-hydroxy deoxyguanosine (8-OHdG) concentration. Both CP and B(a)P caused increments in DNA fragmentation percentages, liver microsomal MDA, concentration of 8-OhdG and induced point mutation. Treatment of rats with either curcumin or chlorophyllin revealed lower DNA fragmentation percentages, liver microsomal MDA concentration, concentration of 8-OhdG and prevented induction of mutation, i.e., reversed the oxidative stress induced by CP and B(a)P and proved that they were capable of protecting rats against the oxidative damage evoked by these oxidants.

Keywords :

Antioxidant; Mutation; DNA

Name : **Prof . Mohamed Ismail**

Dep. : **Pharmacology**

Title : **Disposition Kinetics of Difloxacin After Intravenous, Intramuscular and Subcutaneous Administration in Calves**

M. Ismail

Journal : **Veterinary Research Communications**

ISSN : 0165-7380 **Impact Factor :** 0.377

Abstract :

The pharmacokinetics of difloxacin (Dicural) was studied in a crossover study using three groups (n = 4) of male and female Friesian calves after intravenous (i.v.), intramuscular (i.m.) and subcutaneous (s.c.) admin- istrations of 5 mg/kg body weight. Drug concentration in plasma was determined by high-performance liquid chromatography using fluorescence detection. The plasma concentration–time data following i.v. administra- tion were best fitted to a two-compartment open model and those following i.m. and s.c. routes were best fitted using one-compartment open model. The collected data were subjected to a computerized kinetic analysis. The mean i.v., i.m. and s.c. elimination half-lives (t1/2β) were 5.56 ± 0.33 h, 6.12 ± 0.42 h and 7.26 ± 0.6h, respectively. The steady-state volume of distribution (Vdss) was 1.12 ± 0.09 L/kg and total body clearance (ClB) was 2.19 ± 0.1 ml/(min. kg). The absorption half lives (t1/2ab) were 0.38 ± 0.027 h and 2.1 ± 0.09 h, with systemic bioavailabilities (F)of96.5% ± 6.4% and 84% ± 5.5% after i.m. and s.c. administration, respectively. After i.m. and s.c. dosing, peak plasma concentrations (Cmax)of3.38 ± 0.13 µg/ml and 2.18 ± 0.12 µg/ml were attained after (tmax)1.22 ± 0.20 h and 3.7 ± 0.52 h. The MIC90 of difloxacin for Mannheimia haemolytica was 0.29 ± 0.04 µg/ml. The AUC/MIC90 and Cmax /MIC90 ratios for difloxacin following i.m. administration were 120 and 11.65, respectively and following s.c. administration were 97.58 and 7.51, espectively. Difloxacin was 31.7–36.8% bound to calf plasma protein. Since fluoroquinolones display concentration-dependent activities, the doses of difloxacin used in this study are likely to involve better pharmacodynamic characteristics that are associated with greater clinical efficacy following i.m. administration than following s.c. administration.

Keywords :

Difloxacin; Dicural; Female Calves; Male Calves; Minimum Inhibitory Concentration; Pharmacody- Namics; Pharmacokinetics; Mannheimia Haemolytica

Name : **Prof . Mohamed Ismail**

Dep. : **Pharmacology**

Title : **A Pharmacokinetic Study of Danofloxacin in Febrile Goats Following Repeated Administration of Endotoxin**

M. Ismail

Journal : **Vet. Pharmacol. Therap**

ISSN : 0140-7783 **Impact Factor :** 1.406

Abstract :

The present study indicated that endotoxin- induced febrile state in goats altered the overall clearance of the drug from the body and resulted in a significant increase in plasma concentrations, AUC and MRT of danofloxacin following both routes of administration. However these findings are not likely to adversely affect the desirable pharmacodynamic prop- erties of danofloxacin in goats.

International Publications Awards
Cairo University

Name : **Prof . Mohamed Ismail**

Dep. : **Pharmacology**

Title : **Comparative pharmacokinetics of marbofloxacin in healthy and Mannheimia haemolytica infected calves**

M. Ismail and Y. A. El-Kattan

Journal : **Research in Veterinary Science**

ISSN : 0034-5288 **Impact Factor :** 1.258

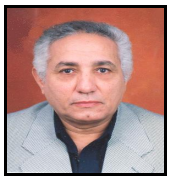
Abstract :

The pharmacokinetics of marbofloxacin were investigated in healthy (n = 8) and Mannheimia haemolytica naturally infected (n =8) Simmental ruminant calves following intravenous (i.v.) and intramuscular (i.m.) administration of 2 mg kg 1 body weight. The concen- tration of marbofloxacin in plasma was measured using high performance liquid chromatography with ultraviolet detection. Following i.v. administration of the drug, the elimination half-life (t1/2b) and mean residence time (MRT) were significantly longer in diseased calves (8.2 h; 11.13 h) than in healthy ones (4.6 h; 6.1 h), respectively. The value of total body clearance (CLB) was larger in healthy calves (3 ml min 1 kg 1) than in diseased ones (1.3 ml min 1 kg 1). After single intramuscular (i.m.) administration of the drug, the elimination half-life, mean residence time (MRT) and maximum plasma concentration (Cmax) were higher in diseased calves (8.0, 12 h, 2.32 lgml 1) than in healthy ones (4.7, 7.4 h, 1.4 lgml 1), respectively. The plasma concentrations and AUC following administration of the drug by both routes were significantly higher in diseased calves than in healthy ones. Protein binding of Marbofloxacin was not significantly dif- ferent in healthy and diseased calves. The mean value for MIC of marbofloxacin for M. haemolytica was 0.1 ± 0.06 lgml 1. The Cmax/ MIC and AUC24/MIC ratios were significantly higher in diseased calves (13.0–64.4 and 125–618 h) than in healthy calves (8–38.33 and 66.34–328 h). The obtained results for surrogate markers of antimicrobial activity (Cmax/MIC, AUC/MIC and T P MIC) indicate the excellent pharmacodynamic characteristics of the drug in diseased calves with M. haemolytica, which can be expected to optimize the clinical efficacy and minimize the development of resistance.

International Publications Awards
Cairo University

Name : **Prof . Mohamed Shoukry**

Dep. : **Surgery, Anesthesiology and Radiology**



Title : **Repair of Experimental Plaque-Induced Periodontal Disease in Dogs**

M.Shoukry, L. Ben Ali, M. Abdel Naby and A. Soliman

Journal : **Veterinary Dentistry**

ISSN : 0898-7564 **Impact Factor :** 0.314

Abstract :

Forty mongrel dogs were used in this study for induction of periodontal disease by placing subgingival silk ligatures afjixting maxillary and mandibular premolar teeth during a 12-month period. Experimental premolar teeth received monthly clinical, radiographic, and histometric/pathologic assessments. The results demonstrated significant increases in scores and values of periodontal disease parameters associated with variable degrees of alveolar bone loss. The experimental maxillary premolar teeth exhibited more severe and rapid rates of periodontal disease compared with mandibular premolar teeth. Histometric analysis showed significant reduction in free and attached gingiva of the experimental teeth. Histopathological examination of buccolingual sections from experimental premolar teeth showed the presence of rete pegs within the sulcular epithelium with acanthosis and erosive changes, widening of the periodontal ligament, and alveoLar bone resorption. Various methods for periodontaL repair were studied in 194 experimental premolar teeth exhibiting different degrees of periodontaL disease. The treatment plan comprised non-surgical (teeth scaling, root planing, and oral hygiene) and surgical methods (closed gingival curettage, modified Widman flap, and reconstructive surgery using autogenous bone marrow graft and canine amniotic membrane). The initial non-surgical treatment resulted in a periodontaL recovery rate of 37. 6 % and was found effective for treatment of early periodontal disease based on resolution of gingivitis and reduction of periodontal probing depths. Surgical treatment by closed gingival curettage to eliminate the diseased pocket lining resulted in a recovery rate of 48.8 % and proved effective in substantially reducing deep periodontal pockets. Open root planingfollowingjlap elevation resulted in a recovery rate of 85.4 % and was effective for deep and refractory periodontal pockets. Autogenous bone graft implantation combined with canine amniotic membrane as a biodegradable membrane was used in 18 premolar teeth and faiLed to improve advanced furcation defects in most teeth.

Keywords :

Periodontal Disease; Clinical; Radiographic; Histometric/Pathologic Assessments; Alveolar BoneLoss; Mandibular Premolar; Teeth Scaling; Root Planing ; Curettage; Modified Widman Flap; Reconstructive Surgery Using Autogenous Bone Marrow Graft and Canine Amniotic Membrane

Name : **Prof . Samar Mohamed Moneir**

Dep. : **Pharmacology**

Title : **New Alkaloids from Casimiroa Edulis Fruits and their Pharmacological Activity**

Amani S. Awaad, Derek J. Maitland and Samar M. Moneir

Journal : **Chemistry of Natural Compounds**

ISSN : 0009-3130 **Impact Factor :** 0.393

Abstract :

The extract of Casimiroa edulis was investigated for antihypertensive activity. The ethanol and total alkaloids (in chloroform) extracts were found to have antihypertensive properties at doses of 500 and 200 mg/kg, respectively. Four quinolinone alkaloids were isolated and identified as: 2-(2□-hydroxy-4□-methoxyphenyl)-5,8-dimethoxy-3-propyl-1H-quinolin-4-one (1), 5,8-dimethoxy-2-(3□-methoxyphenyl)-3-propyl-1H-quinolin-4- one (2), 5,8-dimethoxy-2-(3□,4□-dimethoxphenyl)-3-propyl-1H-quinolin-4-one (3), and 5,6-dimethoxy-2-(2□,5□,6□-trimethoxyphenyl)-1H-quinolin-4-one (4). Interestingly, compounds 1, 2, and 3 were found to be new alkaloids. The four isolated alkaloids showed antihypertensive activity at doses of 50, 100, 200, and 300 mg/kg, respectively.

Keywords :

Quinolinone Alkaloids; Antihypertensive; Casimiroa Edulis

The National Laser Institute

International Publications Awards
Cairo University

Name : **Prof . Hazem Mohammad Saleh**

Dep. : **Medical Applications of Lasers (MAL)**

Title : **Excision Biopsy of Tongue Lesions by Diode Laser**

Hazem Mohammad Saleh and Ali Mohammad Saafan

Journal : **Photomedicine and Laser Surgery**

ISSN : 1549-5418 **Impact Factor :** 1.074

Abstract :

The aim of this study was to evaluate the diode laser in excision biopsy of superficial proliferative tongue lesions under local anesthesia. Background Data: Most mobile tongue lesions present as surface projec- tions and have similar clinical features. They are usually excised for diagnostic purposes using conventional surgery or electrosurgery. The diode laser has proven itself useful in different oral surgeries. Methods: We re- port the results of a prospective pilot study where contact diode laser was used in excision biopsy of six mobile tongue lesions. All excised tissues were pathologically examined. To assess post-operative pain, patients were asked to correlate it to an 11-point Visual Analogue Scale (VAS); patients were also asked to assess their im- pression of alteration in tongue size on a 4-point scale. Healing, functional results, and recurrence rate were assessed. Results: All interventions were uneventful and done at the same out-patient setting. All lesions were benign. Healing occurred by secondary intention in the six cases with no residual ulceration. Post- operative pain was mild in four cases, while two cases suffered from moderate pain. Post-operative im- pression of tongue swelling occurred in all cases. The mild impression disappeared by the end of the first week and the moderate one by the end of the second week. No recurrence was observed over a mean follow-up period of 15 months. Conclusion: The diode 980-nm laser is optimal for excision biopsy of superficial and benign proliferative lesions of the mobile tongue.

Name : **Prof . Maram Taha Hussein**

Dep. : **Laser Sciences and Interactions**

Title : **Spectroscopic Properties and Amplified Spontaneous Emission of a New Derivative of Fluorescein**

M. T. H. A. Kana, H. A. S. Al-Shamiri, I. M. Azzouz and A. H. M. El-Wahy

Journal : **Applied Physics B Lasers and Optics**

ISSN : 0946-2171 **Impact Factor :** 2.023

Abstract :

The new laser dye, 2-(6-acryloyloxy-3-oxo-3H- xanthen-9-yl)-benzoic acid ethyl ester [AOXBE] has been syn- thesized. Its chemical structure was confirmed by 1 HNMR, IR, MS and elemental analysis. This new dye was covalently bonded with methyl methacrylate (MMA) and 2-hydroxy ethyl- methacrylate (HEMA) copolymer backbone. Its optical prop- erties were experimentally investigated. Amplified spontaneous emission (ASE) and photostability were studied by pumping the dye polymeric sample with a 355 nm (8 ns) pulsed Nd:YAG laser.

International Publications Awards
Cairo University

Name : **Prof . Mohamed Abdel-Harith Mohamed**

Dep. : **Laser Applications in Metrology, Photochemistry and Agriculture (LAMPA)**

Title : **Estimation of Calcified Tissues Hardness Via Calcium and Magnesium Ionic to Atomic Line Intensity Ratio in Laser Induced Breakdown Spectra**

Z. A. Abdel-Salam , A. H. Galmed , E. Tognoni and M. A. Harith

Journal : **Spectrochimica Acta Part B**

ISSN : 0584-8547 **Impact Factor :** 3.09

Abstract :

Calcified tissues representing three different matrices, namely enamel of human teeth, shells and eggshell, have been studied via Laser Induced Breakdown Spectroscopy (LIBS) technique. The experimental CaII/CaI and MgII/MgI ratios have been measured, in view of the expected correlation between the extent of ionization caused by the laser induced shock wave (SW) and the hardness of the target. The ratio CaII/CaI between the ionic calcium line at 373.69 nm and the neutral line at 428.9 nm is obtained for enamel, shells and eggshell spectra, as well as the ratio MgII/MgI between the ionic magnesium line at 280.26 nm and the neutral line at 285.22 nm. The results show that such spectral lines intensities ratio differs for different matrices and is indeed related to the target materials hardness. It is also found that the MgII/MgI ratio is preferable as an indicator of hardness since these lines are less affected by self absorption. The SW front speed has been measured in the three cases and the obtained values confirm the proportionality to the target hardness. The results here obtained suggest the feasibility of the quantitative estimation of hardness for any other calcified tissues.

Keywords :

Calcified Tissues; Hardness; LIBS; Shock Waves

International Publications Awards
Cairo University

Name : **Prof . Mohy Saad Mansour**

Dep. : **Laser Applications in Metrology, Photochemistry and Agriculture (LAMPA)**

Title : **Mixing and Nozzle Geometry Effects on Flame Structure and Stability**

Fawzy El-Mahallawy, Ahmed Abdelhafez and Mohy S. Mansour

Journal : **Combustion Science and Technology**

ISSN : 0010-2202 **Impact Factor :** 0.77

Abstract :

Flame stability and mean structure of partially premixed flames have been investigated under the effect of the level of partial premixing and nozzle cone angle. The stability curves and maps of the mean flame structure based on temperature and CO and O2 concentra- tions measurements in some selected partially premixed flames in the thin reaction zones regime are presented and discussed. More radial and axial mean profiles of temperature and CO and O2 con- centrations are also presented for another set of flames at the same equivalence ratio and several nozzle cone angles. The data show that partially premixed flames are more stable than non-premixed and premixed flames. An optimum degree of partial premixing was achieved in the present burner, beyond which the flames are less stable. This optimum level was achieved when the dimensionless mixing length normalized by the nozzle diameter is equal to 5. At this level of partial premixing the structure is likely to form three interacting reaction zones of lean, rich and diffusion with expected triple flame structure. In partially premixed flames a stabilization core has been observed close to the conical nozzle that provides more heat source at the nozzle exit. This is responsible for stabilizing the flames at high Reynolds number. The data also show that the cone angle has a great influence on the flame stability. Increasing the cone angle leads to more air entrainment, breaking the stabilization core and hence reduces the flame stability. The cone, in all cases, pro- vides protected environment at the early stage of reaction near the noz- zle exit where intense turbulence is expected. This leads to highly stable flames as compared to similar burners without cone.

Keywords :

Flames; Mixing; Partial Premixed; Stability

International Publications Awards
Cairo University

Name : **Prof . Tarek Fahmi El-Wakil**

Dep. : **Medical Applications of Lasers (MAL)**

Title : **An In-Vivo Experimental Evaluation of He–Ne Laser Photostimulation in Healing Achilles Tendons**

Tarek F. El-wakil

Journal : **Lasers Med Science**

ISSN : 0268-8921 **Impact Factor :** 1.186

Abstract :

There is no method of treatment that has been proven to accelerate the rate of tendon healing or to improve the quality of the regenerating tendon. Low level laser photostimulation has gained a considerable attention for enhancing tissue repair in a wide spectrum of applications. However, there is controversy regarding the effectiveness of laser photostimulation for improvement of the healing process of surgically repaired tendons. Accordingly, the present study was conducted to evaluate the role of helium–neon (He–Ne) laser photostimulation on the process of healing of surgically repaired Achilles tendons. Thirty unilateral Achilles tendons of 30 Raex rabbits were transected and immediately repaired. Operated Achilles tendons were randomly divided into two equal groups. Tendons at group A were subjected to He–Ne laser (632.8 nm) photostimulation, while tendons at group B served as a control group. Two weeks later, the repaired Achilles tendons were histopathologically and biomechanically evaluated. The histopathological findings suggest the favorable qualitative pattern of the newly synthesized collagen of the regenerating tendons after He–Ne laser photostimulation. The biomechanical results support the same favorable findings from the functional point of view as denoted by the better biomechanical properties of the regenerating tendons after He–Ne laser photostimulation with statistical significance ($p \leq 0.01$) at most of the biomechanical parameters. He–Ne Laser photostimulation reported a great value after surgical repair of ruptured and injured tendons for a better functional outcome. It could be applied safely and effectively in humans, especially with respect to the proposed long-term clinical outcome.

Keywords :

Laser Photostimulation; Achilles Tendon; Surgery

International Publications Awards
Cairo University

Name : **Prof . Tarek Fahmi El-Wakil**

Dep. : **Medical Applications of Lasers (MAL)**

Title : **Treatment of Carpal Tunnel Syndrome by Low-Level Laser Versus Open Carpal Tunnel Release**

Tarek F. El-wakil, Alaa El-azzazi and Hisham Shokeir

Journal : **Lasers Med Sci**

ISSN : 0268-8921 **Impact Factor :** 1.186

Abstract :

Carpal Tunnel Syndrome (CTS) is an entrapment neuropathy of the median nerve at the wrist. It is one of the most common peripheral nerve disorders. The cause of idiopathic CTS remains unclear. The diagnosis of CTS is still mainly clinical. Open carpal tunnel release is the standard treatment. The present study was conducted to evaluate the effectiveness of low level laser treatment (LLLT) for CTS in comparison to the standard open carpal tunnel release surgery. Out of 54 patients, 60 symptomatic hands complaining of CTS were divided into two equal groups. Group A, was subjected to LLLT by Helium Neon (He–Ne) laser (632.8 nm), whereas group B was treated by the open approach for carpal tunnel release. The patients were evaluated clinically and by nerve conduction studies (NCSs) about 6 months after the treatment. LLLT showed overall significant results but at a lower level in relation to surgery. LLLT showed significant outcomes in all parameters of subjective complaints ($p \leq 0.01$) except for muscle weakness. Moreover, LLLT showed significant results in all parameters of objective findings ($p \leq 0.01$) except for thenar atrophy. However, NCSs expressed the same statistical significance ($p \leq 0.01$) after the treatment by both modalities. LLLT has proven to be an effective and noninvasive treatment modality for CTS especially for early and mild-to-moderate cases when pain is the main presenting symptom. However, surgery could be preserved for advanced and chronic cases. Refinement of laser tools and introduction of other wavelengths could make LLLT for CTS treatment a field for further investigations.

Keywords :

Carpal Tunnel Syndrome (CTS); Pain; Helium Neon (He–Ne) Laser; Low-Level Laser Therapy (LLLT); Photobiomodulation.

Name : **Prof . Yehia Abdel-Hamid Badr**

Dep. : **Laser Sciences and Interactions**

Title : **Effect of PbS Shell on the Optical and Electrical Properties of PbSe core Nanoparticles Doped in PVA**

Yehia A. H. Badr and M. A. Mahmoud

Journal : **Physica B**

ISSN : 0921-4526 **Impact Factor :** 0.872

Abstract :

Nanoparticles (NPs) of PbSe were synthesized in polyvinyl alcohol polymers with different Pb/Se ratio. It is crucial that the PbSe NPs were covered by a PbS sheet layer. Absorption and photoluminescence under excitation by 441.5 nm He–Cd laser were investigated. The structure of the nanocomposites was investigated using X-ray diffraction (XRD) measurements and transmission electronic microscopy (TEM). Conductivity measurements of the PbSe NP and PbSe/PbS sheets were performed.

Keywords :

Photoluminescence; PbSe nanoparticles; PbS/PbSe; Core/shell; Absorption spectra; XRD

Name : **Prof . Yehia Abdel-Hamid Badr**

Dep. : **Laser Sciences and Interactions**

Title : **Biosynthesis of Gold Nanoparticles Using Pseudomonas Aeruginosa**

M.I. Husseiny, M. Abd El-Aziz, Yehia A.H. Badr and M.A. Mahmoud

Journal : **Spectrochimica Acta Part A**

ISSN : 1386-1425 **Impact Factor :** 1.27

Abstract :

Pseudomonas aeruginosa were used for extra-cellular biosynthesis of gold nanoparticles (Au NPs). Consequently, Au NPs were formed due to reduction of gold ion by bacterial cell supernatant of P. aeruginosa ATCC 90271, P. aeruginosa (2) and P. aeruginosa (1). The UV–vis and fluorescence spectra of the bacterial as well as chemical prepared Au NPs were recorded. Transmission electron microscopy (TEM) micrograph showed the formation of well-dispersed gold nanoparticles in the range of 15–30 nm. The process of reduction being extra-cellular and may lead to the development of an easy bioprocess for synthesis of Au NPs.

Keywords :

Pseudomonas Aeruginosa; Gold nanoparticles; Fluorescence

Name : **Prof . Yehia Abdel-Hamid Badr**

Dep. : **Laser Sciences and Interactions**

Title : **Photocatalytic Degradation of Methyl Orange by Gold Silver Nano-Core/Silica Nano-Shell**

Yehia A. H. Badr and M. A. Mahmoud

Journal : **Physics and Chemistry of Solids**

ISSN : 0022-3697 **Impact Factor :** 1.164

Abstract :

The silica nanoparticles (SiO2 NPs), silver (Ag) NPs and gold (Au) NPs coated with SiO2 NPs (core–shell) were prepared. The sizes and morphology of the particles were indicated. The three prepared NPs were used for photocatalytic degradation of methyl orange (MO) dye by xenon lamp. Rate of photocatalytic degradation reaction constant and lifetime were calculated for each catalyst. Moreover, the mechanism of the photocatalytic reaction was studied.

International Publications Awards
Cairo University

Name : **Prof . Yehia Abdel-Hamid Badr**

Dep. : **Laser Sciences and Interactions**

Title : **Spectroscopic Studies of Structural Changes in Irradiated LDPE and Its Blends**

Zakaria Ali, Yehia A. H. Badr and Waiel Eisa

Journal : **Polymer Science: Part B: Polymer Physics**

ISSN : 0887-6266 **Impact Factor :** 1.622

Abstract :

The low temperature glass transition occurring at low temperature in polyethylene samples was studied using Fourier transform infrared, FT-Raman spec- troscopic techniques, which are known to be sensitive to any structural changes in the investigated samples. Anomalous behavior was obtained in the temperature range (98 K ? 383 K) indicating the existence of phase transition occurring at about 98 K and disappearing at about 323 K while heating for unirradiated virgin low den- sity polyethylene (VPE) sample with or without crosslinking agent (trimethylol pro- pane triacrylate, TMPTA). Addition of TMPTA monomer caused severe changes in the temperature dependence of both unirradiated and irradiated polyethylene sam- ples. The results given indicated the occurrence of abnormal temperature depend- ence, which is thought to be related with low temperature structural change result- ing from local crosslinking in scrapped polyethylene (SPE) sample already suffering from high degree of crosslinking. Differential scanning calorimetry (DSC) thermo- grams confirmed the observed new phase transition observed in both unirradiated and irradiated TMPTA loaded VPE/SPE (50/50 wt %) blend. Irradiation, addition of TMPTA as a crosslinking agent, and blending VPE with SPE were found to affect remarkably the variation of the vibration spectrum of LDPE and consequently the resulting structural changes. The experimental results obtained were discussed and correlated with reorientational disorders of the molecular segments (local crosslinking).

Keywords :

Electron Beam (EB) Irradiation; FT-Raman and DSC Analysis; FTIR;Temperature-Induced Phase Transition; Virgin and Scrapped PE

Name : **Prof . Yehia Abdel-Hamid Badr**

Dep. : **Laser Sciences and Interactions**

Title : **Excimer laser Photofragmentation of Metallic Nanoparticles**

Yehia A. H. Badr and M. A. Mahmoud

Journal : **Physics Letters A**

ISSN : 0375-9601 **Impact Factor :** 1.468

Abstract :

Copper nanoparticles (Cu NPs) were prepared by different chemical methods possessing different sizes. While, silver nanoparticles (Ag NPs) were prepared by borohydride reduction method. The influences the changes in sizes of Ag NPs and Cu NPs were demonstrated by the absorption spectra. When Ag NPs and Cu NPs irradiated with 193 and 308 nm excimer laser, respectively; the maximum absorption decreased as the number of pulses increased up to 10 thousands pulse; due to the size reduction. The TEM photography gives good criteria about the size reduction process. Moreover, the mechanism of photofragmentation was described.

Keywords :

Copper Nanoparticles; Excimer laser; Silver; Photofragmentation

Statistical Studies and Research Institute

International Publications Awards
Cairo University

Name : **Prof . Abd Allah Mohamed Abdel-Fattah**

Dep. : **Mathematical Statistics**

Title : **A New Generalized Pareto Distribution**

Abd Allah M. Abdel-Fattah, Elsherpieny, E.A and Hussein, E.A.

Journal : **Inter Stat**

ISSN : **Impact Factor :**

Abstract :

In this paper, we introduce a new generalized Pareto distribution and studied its properties. Some well known distributions can be derived as a special cases as well as some derived distributions.

Keywords :

International Publications Awards
Cairo University

Name : **Prof . Abd Allah Mohamed Abdel-Fattah**

Dep. : **Mathematical Statistics**

Title : **Goodness of Fit Tests for Logistic Distribution Using the Stabilized Probability Plot**

Abd Allah M. Abdel-Fattah

Journal : **Applied Sciences Research**

ISSN : 1816-157X **Impact Factor :** 0.06

Abstract :

Goodness of fit procedure of logistic distribution, based on the stabilized probability plot is considered. This procedure is more powerful than Kolmogorov-Smirnov test. The correlation coefficient sp of the stabilized plot is also presented. This paper gives tables of critical values of Michael's statistic, D , sp and the correlation coefficient of the stabilized plot, R , for logistic distribution in case of type II censored samples. The sampling distributions for these new tests statistics are investigated. This article uses Monte Carlo and Pearson system techniques to create tables of critical values for such situations. Moreover the power comparisons of these tests are carried out for a number of alternative distributions.

Keywords :

Correlation Coefficient; Critical Values; Goodness of Fit; Logistic Distribution; Probability Plot;Type II Censoring

International Publications Awards
Cairo University

Name : **Prof . El-Hoseiny Abdel-Bar Rady**

Dep. : **Applied Statistics and Econometrics**

Title : **A Modified Rough Set Approach to Incomplete Information Systems**

E. A. Rady, M.M.E. Abd El-Monsef and W. A. Abd El-Latif

Journal : **Applied Mathematics and Decision Sciences**

ISSN : **Impact Factor :**

Abstract :

The key point of the tolerance relation or similarity relation presented in the literature is to assign a "null" value to all missing attribute values. In other words, a "null" value may be equal to any value in the domain of the attribute values. This may cause a serious effect in data analysis and decision analysis because the missing values are just "missed" but they do exist and have an influence on the decision. In this paper, we will introduce the modified similarity relation denoted by MSIM that is dependent on the number of missing values with respect to the number of the whole defined attributes for each object. According to the definition of MSIM, many problems concerning the generalized deci- sions are solved. This point may be used in scaling in statistics in a wide range. Also, a new definition of the discernibility matrix, deduction of the decision rules, and reducts in the present of the missing values are obtained.

International Publications Awards
Cairo University

Name : **Prof . El-Sayed Ahmed El-Sherpieny**

Dep. : **Mathematical Statistics**

Title : **Estimation of Parameters of Mixed Generalized Exponentionally Distributions from Censored Type I Samples**

El-Sherpieny. E. A

Journal : **Applied Sciences Research**

ISSN : 1816-157X **Impact Factor :** 0.6

Abstract :

In this pap er a failure model which can be divided into two subpopulations, each representing generalized exponential distribution (G E) is co nside re d. M aximum likelihood estimators (M LE) for the five unknown parameters are ob tained based o n type-I censored samples, as well as the elem ents of the information matrix, M e nd e nha ll & H ad er (1958) results may be considered as a special case from the present results. A numerical illustration is given.

International Publications Awards
Cairo University

Name : **Prof . Hesham Ahmed Hefny**

Dep. : **Information Technology**

Title : **Comments on ‘‘Distinguishability Quantification of Fuzzy Sets’’**

Hesham A. Hefny

Journal : **Information Sciences**

ISSN : 0020-0255 **Impact Factor :** 1.003

Abstract :

This paper presents some comments on the above paper regarding the manipulation of Gaussian fuzzy sets and provides two useful generalized formulas for both of similarity and similarity/possibility relationships of Gaussian fuzzy sets with different widths. The second is the relationship between similarity and possibility of two such fuzzy sets. Exact formulas for distinguishability measures have also been obtained. The paper also shows the best range of width ratios over which possibility approximates similarity, and hence can be used for distinguishability quantification.

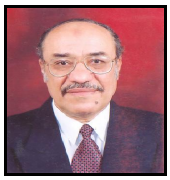
Keywords :

Similarity Measure; Possibility Measure; Distinguishability; Measure

International Publications Awards
Cairo University

Name : **Prof . Samir Kamel Ashour**

Dep. : **Mathematical Statistics**



Title : **Statistical Analysis of Exponentiated Weibull Family under Type I Progressive Interval Censoring with Random Removals**

S. K. Ashour and W. M. Afify

Journal : **Applied Sciences Research**

ISSN : 1816-157X **Impact Factor :** 0.6

Abstract :

This paper considers the analysis of exponentiated Weibull family distributed lifetime data observed under Type I progressive interval censoring with random removals, where the number of units removed at each failure time follows a binomial distribution. Maximum likelihood estimators of the parameters and their asymptotic variances are derived. The formula to compute the expected duration is given. An example is discussed to illustrate the application of results under this censoring scheme.

Keywords :

The exponentiated weibull family; Maximum likelihood estimation; interval censoring; Progressive Type Icenso ring; Random removal; Expected duration

International Publications Awards
Cairo University

Name : **Prof . Shaaban Abdel-Hamid Shaban**

Dep. : **Mathematical Statistics**

Title : **The Weibull Length Biased Distribution (Properties and Estimation)**

S. A. Shaban and Naima Ahmed Boudrissa

Journal : **Inter Stat**

ISSN : **Impact Factor :**

Abstract :

The length-biased version of the Weibull distribution known as Weibull length- biased (WLB) distribution is considered, it is shown that it is unimodal throughout examining its shape. Other properties of the distribution were studied such as the moments, and the hazard rate function. It is shown that the hazard function is upside bathtub shaped for values of the shape parameter that are less than unity and increasing otherwise. Bayesian and non Bayesian estimation problems are also considered. a numerical example is introduced for illustration.

Keywords :

Length-biased; Hazard rate function; Reliability function; Weibull distribution; Moment method; maximum likelihood estimates; Bayesian estimates

African Studies and Research Institutes

International Publications Awards
Cairo University

Name : **Prof . Mohamed El-Mohammady Rizk**

Dep. : **Language**

Title : **Women in Taarab : The Performing Art in East Africa**

Mohamed El-Mohammady Rizk

Journal : **Research in African Studies**

ISSN : 1436-1183 **Impact Factor :**

Abstract :

The study aims primarily at exploring the images of Swahili women as depicted in taarab songs in Zanzibar and factors that shape these images at different epochs or points in time. A secondary concern of the book is to highlight the history of taarab songs in Zanzibar and to identify the relationship between this art of songs and the Egyptian song. The author adopted a holistic approach, concentrating on sung lyrics. The analysis is descriptive and utilizes perspectives of literary theories of orature as well as insights from gender, cultural, structural, and functional theories.

Keywords :

Swahili women; Taarab; Performing art; Zanzibar; lyrics; East Africa

International Publication Awards
Cairo University

Index

Issue III-A, October 2008

Faculty of Science	Pages
Abdel Aziz Abdel Salam El-Maghraby	2
Abdel Gawad Ali Fahmi	3
Abdel Monam Ahmad El-Araby	4,5
Abdel-Alla Abdel-Salam Mohamed	6,7
Abdou Othman Abdelhamid	8-17
Ahmad Kamel Hegazy	25-26
Ahmad Mahmoud Farag	27-31
Ahmad Samy Shawali	18-24
Ahmed Abdoh El-Sherif	32
Ahmed Ahmed Soliman	33-36
Ahmed FahmyYoussef	37
Ahmed Galal Helmy	38-39
Ashraf Abdel-Daiem Abbas	40-41
Azza Abdel-Wahab El-Sayed Shokry	42-43
Azza Mohamed Abdel-Fattah	44-45
Badawy Abu-Ibrahim	46
Ebtesam Ateia	47-48
Eid Hasan Doha	49
El-Sayed Mohamed Abd-El-Hamid	50
El-Sayed Mohamed Abd-El-Rahman	51-54
Eman Aly Ragab	55
Fakiha El-Taieb Heakal	56

Faten Ahmed Nour El-Dien	**57-58**
Fathi Mohamed Abdel Razek	**59-60**
Fawzy Ali Attaby	**61-63**
Gamal Abdel-Nasr	**64-65**
Gehad Genidy Mohamed	**66-67**
Hala Gamil El-Shobaky	**68-69**
Hamdy Mahmoud Hassaneen	**70**
Hosny Ibrahim	**71**
Huwaida Mohamed Hassaneen	**72-74**
Ismail Abdel-Shafy	**75-76**
Kamal Mohamed Dawood	**77-79**
Khaled Mahfouz Ismail	**80-81**
Magdy Sabaa	**82-83**
Maha Anwar Ali	**84**
Maher Zaki El-Sabee	**85-87**
Mahmoud Mohamed Saleh	**88**
Mahmoud Yehia Ismail	**89**
Mamdouh Abdel Rahim	**92**
Mamdouh Ishak Wanas	**90-91**
Mohamed Abdel Aziz Elneairy	**103-104**
Mohamed Ali Abou-Tabl	**93**
Mohamed Ali Ahmed	**98-102**
Mohamed Atef Helal	**105-106**
Mohamed Mohamed Omar	**107**

Mohamed Roushdy	**108-109**
Mohamed Shoukry	**110-113**
Mohamed Waheed Badawy	**94-97**
Mohamed Zaki Ewiess	**114**
Mohga Fareed Mostafa	**115-117**
Mohsen Mahmoud Mady	**118**
Monier Mohamed Abdel-Ghani	**119**
Nabil Labib Yousef	**120**
Nada Farouk Atta	**121-122**
Nadia Ahmed Mohamed	**123-125**
Nadia Emam Ali El-Gamel	**126**
Naser Hassan Sweilam	**127-132**
Nour Eldin Tawfek Abdel-Ghani	**134-137**
Noura Mohamed Rateb	**133**
Rafat Milad Mohareb	**138-141**
Rafeea Hasan Abu-Eittah	**142**
Rashika El-Ridi	**143-145**
Saeed Ahmed Soliman Ghozlan	**146-148**
Sami Allam	**149**
Samir Soliman Hamza	**150**
Sayed Zaki Mohammady	**151**
Shahinnaz Mohamed El-Wakeel	**152**
Tamer Tawhed El-Idreesy	**153**
Tarek Sayed Ahmed	**154-158**

Tayseer Abdel Khalek Abdel-Allah	159-160
Tharwat Mahmoud El-Sherbini	161
Waheed Fathi El-Hawary	162
Yosry Mostafa Issa	163-164

Faculty of Agriculture	Pages
Ahmed Abbas	166
Ashraf Barkawi	167
Ehab Reda El-Haroun	168-170
Essam Agamy	171-172
Hany Abdel Aziz El-Shemy	173-174
Mahmoud Abdel Halim Mohamed	175
Mohamed Helmy Belal	176
Muhammad Mostafa Shams	177
Radwan Sedki Farag	178-179

Faculty of Veterinary Medicine	Pages
Abd El-Aty Mostafa Abd El-Aty	181-185
Abou Bakr El-Wishy	186-187
Alaa El-Deen Eissa	188-189
Amira Hasan Mohamed	190
Ayman Goudah	191-195
Husain Abdel Hay Kaoud	196
Magdy Ahmed Ghoneim	197

Mohamed Ismael	**198-200**
Mohamed Mostafa Shoukry	**201**
Samar Mohamed Moneir	**202**

The National Laser Institute	**Pages**
Hazem Mohammad Saleh	**204**
Maram Taha Hussein	**205**
Mohamed Abdel Harith	**206**
Mohy Saad Mansour	**207**
Tarek Fahmi El-Wakil	**208-209**
Yehia Badr	**210-214**

Statistical Studies and Research Institute	**Pages**
Abd Allah Abdel-Fattah	**216-217**
El-Huseiny Abdel Bar Rady	**218**
El-Sayed Ahmed El-Sherpieny	**219**
Hesham Ahmed Hefny	**220**
Samir Kamel Ashour	**221**
Shaban Abdel Hamid Shaban	**222**

African Studies and Research Institutes	**Pages**
Mohamed El-Mohammady Rizk	**224**

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