

## Viscoelastic Phase Separation Process and the Development of Micro and Nanomorphologies in Epoxy Based Blends for Super Toughness

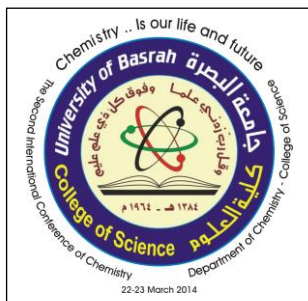
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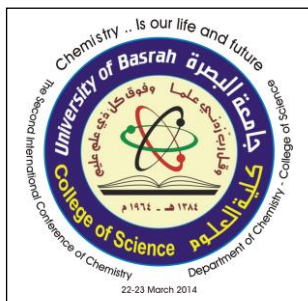
### Abstract

Phase separation in general could be either by diffusion or by diffusion and hydrodynamic flow. A new model has been suggested recently to follow the phase separation process in dynamically asymmetric mixtures composed of fast and slow components. This new model is often called the *viscoelastic phase separation process* due to the fact that viscoelastic effects play a dominant role in the phase separation process [1-6]. The dynamic asymmetry can be induced by either the large size difference (mol.wt) or the difference in glass-transition temperature between the components of a mixture or blend. The mol.wt difference often exists in complex fluids, such as polymer solutions, polymer blends, micellar solutions, colloidal suspensions, emulsions, and protein solutions. The T<sub>g</sub> differences, can exist in any mixtures. In dynamically asymmetric mixtures, phase separation generally leads to the formation of a long-lived 'interaction network' (a transient gel) of slow-component molecules (or particles), if the attractive interactions between them are strong enough. Because of its long relaxation time, it cannot catch up with the deformation rate of the phase separation itself and as a result the stress is asymmetrically divided between the components. This leads to the transient formation of network like or sponge like structures of a slow-component-rich phase and its volume shrinking [4]. In the present talk we present our new results on the viscoelastic phase separation process in epoxy/SAN and epoxy/ABS blends [1-4]. Epoxy resin is often blended with high molecular weight thermoplastics to generate micro structured morphologies for the better impact performance. These systems are



very ideal to follow the viscoelastic phase separation process on account of their mol.wt and T<sub>g</sub> differences. We have looked at the phase separation process in these blends by various techniques such as optical microscopy, scanning electron microscopy, transmission electron microscopy, atomic force microscopy, and small angle laser light scattering. The dynamics of phase separation has been carefully followed by optical microscopy and laser light scattering. In most cases the system undergo spinodal decomposition and the viscoelastic phase separation was prominent at higher concentration of the thermoplastic phase where phase inversion occurs [1-6]. The particle in particle morphology (secondary, ternary and quaternary phases), IPN type of structures and unusual shrinkage have been examined as a result of the viscoelastic phase separation process [1, 4]. All these phenomena have been carefully quantified and co-related with the viscoelastic phase separation process.

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- [1] P. Jyotishkumar, J. Pionteck, C. Ozdilek, P. Moldenaers, U. Cvelbar, M. Mozetic, S. Thomas, *Soft matter accepted*.
- [2] P. Jyotishkumar, C. Ozdilek, P. Moldenaers, C. Sinturel, A. Janke, J. Pionteck, and S. Thomas, *J. Phys. Chem. B.*, **2010**, **114**, 13271–13281.
- [3] P. Jyotishkumar, J. Koetz, B. Tierisch, V. Strehmel, R. Häbeler, C. Ozdilek, P. Moldenaers, and S. Thomas, *J. Phys. Chem. B.*, **2009**, **113**, 5418-5430.
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- [5] X. Zhong, Y. Liu, H. Su, G. Zhan, Y. Yu, and W. Gan, *Soft Matter*, **2011**, **7**, 3642-3650.
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## Bio Inspired Micro and Nanocomposites for the Future

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### Abstract

Micro and nano bio inspired composite materials are the best future materials for the coming millennium. Cellulose fibers, chitin and starch in different length scales offer outstanding properties like stiffness, toughness and other mechanical properties. Composites from polymers (rubbers and plastics) and reinforcing fibers provide best properties of each. They replace conventional materials in many structural and non-structural applications. Both natural fibers and polymers are light, on combination they give composites of very high strength to weight ratio. In recent years composites made from natural (cellulosic) fibers and organic polymers have gained a lot of interest in construction and automobile industry. Unlike synthetic fibers, natural fibers are abundant, renewable, cheap and of low density. Composites made from natural fibers are cost effective and environment friendly. However, lack of interfacial adhesion and poor resistance to moisture absorption makes the use of natural fibers less attractive for critical applications. However, these problems can be successfully alleviated by suitable chemical treatments. This presentation deals with the use of natural fibers such as pineapple leaf fiber, coir fiber, sisal fiber, oil palm fiber and banana fiber as reinforcing material for various thermoplastics, thermosets and rubbers. The fiber surface modifications via various chemical treatments to improve the fiber-matrix interface adhesion on mechanical, viscoelastic, dielectric rheological ageing and thermal properties will also be discussed. Experimental results will be compared with theoretical predications. The advantages of hybridizing natural and glass fibers also will be scanned briefly. The use of these composites as building materials will be discussed. Finally recent developments in cellulose nanocomposites, chitin nanocomposites and starch nanocomposites will also be presented.

## A novel method for synthesized Al<sub>2</sub>O<sub>3</sub> oxide using urea at elevated temperature

Moamen S. Refat<sup>1,2,\*</sup>

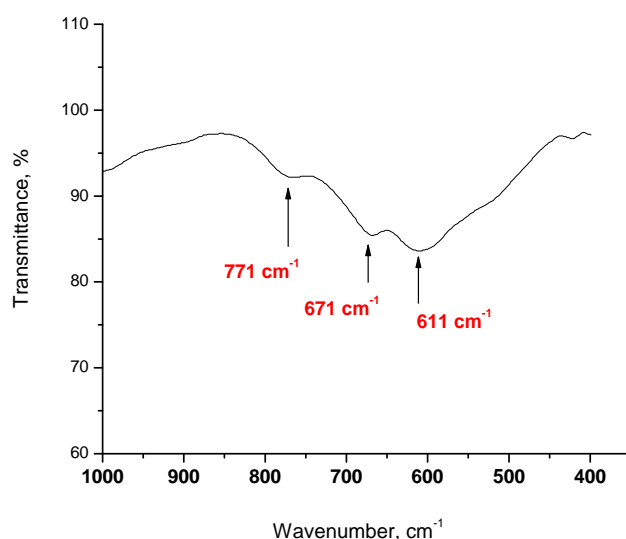
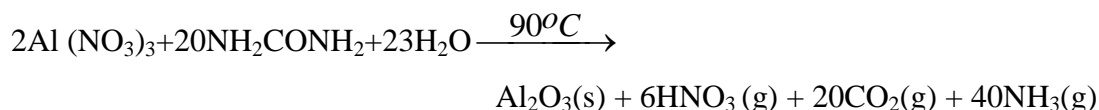
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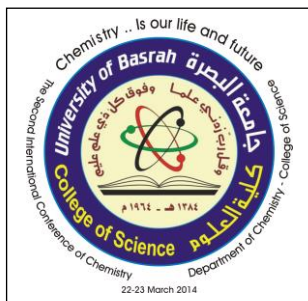
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### Abstract

The Al<sub>2</sub>O<sub>3</sub> oxide was synthesized by a novel reactions of urea with Al(NO<sub>3</sub>)<sub>3</sub> or Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>, in an aqueous media at ~ 90 °C. The infrared spectra and microanalysis, CHN, of the solid products resulted indicate that the absence of the bands of urea, but appearing the characteristic bands of oxide. A general mechanism describing the formation of oxides and decomposition of urea are suggested.



**Fig. 1:** Infrared spectrum of Al<sub>2</sub>O<sub>3</sub> oxide resulted from the reaction of urea with Al(NO<sub>3</sub>)<sub>3</sub> or Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>.



## Novel multinuclear complexes of gadolinium ion in aqueous solution

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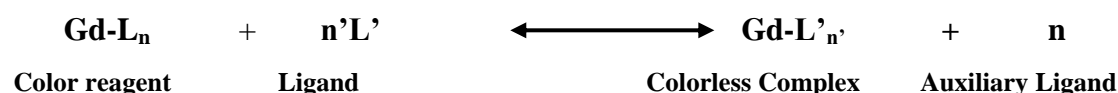
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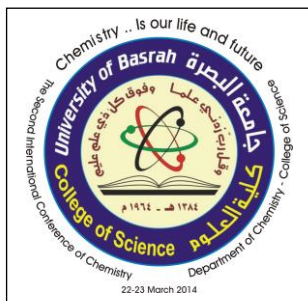
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### Abstract

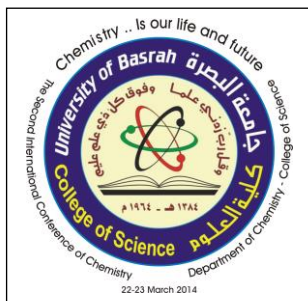
The gadolinium complexes are commonly used to improve the contrast of images obtained by MRI (Magnetic Resonance Imaging). However, gadolinium ion is highly toxic in its hydrated form  $[\text{Gd}(\text{H}_2\text{O})_8]^{3+}$ , its complexation with an organic ligand reduces this toxicity. This complexation should be administered in the form thermodynamically very stable [1]. The solution consists of enclosing the gadolinium ion in the linear or cyclic organic ligands to form complex non-toxic, inert and stable in the body [2]. In this work we have studied the formation of colorless gadolinium complexes with some linear ligands such succinic acid galactaric acid and glycine in dilute solutions and in pH range 5.50 – 7.50. To study of these colorless complexes, we developed a new analytical technique for determining the compositions and stabilities of some colorless organometallic complexes, which have no absorption band UV–visible. This technique is the indirect photometry detection (IPD), based on competitive reactions by ligand–ligand exchange and it is used successfully in several studies [3,4] :





These new complexes studied are more stable, the sites of chelation are different and the structures which certainly different. The FT-IR and FT-Raman spectroscopies were used to identify the nature of chelation sites and establish probable structures of these gadolinium complexes.

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[3] M. Riri, O. Kamal, T. Eljaddi, M. Hor, N. Sefiani, M. Hlaibi, Analytical Chemistry An Indian Journal, 13, 41 (2013).  
[4] M. Riri, O. Kamal, A. Benjjar, F. Serdaoui, M. Hlaibi, Open Journal of Physical Chemistry, 3, 49 (2013).



## Cytogenic effects of Aloe Vera (L.) leaves gel extract on mice bone marrow cells

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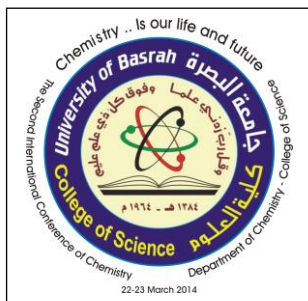
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### Abstract

Aloe vera L. (AV) plant leaves had been collected from Al-Beida farms (Libya). They were cleaned, chopped, homogenized, extracted with 80% ethanol, centrifuged, and then condensed the supernatant with vacuum evaporator and freeze-dried with lyophilizer. Two doses; 40 and 80 mg/kg body weight of mice (BW) were orally administered for four weeks to Swiss albino mice (*Mus musculus*). Cytogenic effect of AV was carried out on mice bone marrow cells. Results showed significant effect of AV extract for both doses on mitotic index (MI) and chromosomal aberration when compared with negative control.



## Electrochemical methodology for the synthesis of carbon nanotubes(CNTs)

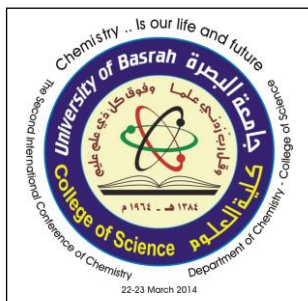
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### Abstract

In the present work, carbon nanotubes (CNTs) were grown using a simple electrolysis system encompassing a cylindrical aluminum metal as cathode electrode and a graphite rod as anode electrode. Impacts of several parameters on the rate of electrolysis have been investigated, namely, cathode radius, concentration of the electrolysis acetonitrile solution and pH of the electrolysis medium. The deposit was characterized by X-Ray Diffraction (XRD) and Fourier Transform Infrared (FTIR) spectroscopy. The reaction rate constant and activation energy of the process were subsequently computed.





## Photocatalytic degradation of Bismarck Brown R by multi-walled carbon nanotubes (MWCNTs)/TiO<sub>2</sub> composite in aqueous solutions

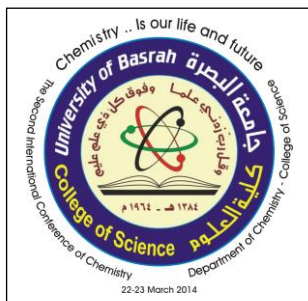
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### **Abstract**

The high rate of electron/hole pair recombination reduces photocatalytic activity of TiO<sub>2</sub> and represents its major drawback. Adding a co-adsorbent increases the photocatalytic efficiency of TiO<sub>2</sub>. Nanosized multi-walled carbon nanotubes (MWCNTs)/TiO<sub>2</sub> composite and neat TiO<sub>2</sub> photocatalysts were prepared by sol-gel method using titanium (IV) n-butoxide (TNB) as a precursor. The composite was characterized by X-ray diffraction (XRD), Fourier transform infrared absorption spectroscopy (FTIR), diffuse reflectance UV-vis spectroscopy, Scanning electron microscopy (SEM) and Raman spectroscopy. The catalytic activity of this composite material was investigated by application of the composite for the degradation of Bismarck brown R (BBR). An optimal MWCNTs:TiO<sub>2</sub> ratio of 0.5% (w/w) was found to achieve the maximum rate of BBR degradation. It was observed that the composite exhibits enhanced photocatalytic activity compared with TiO<sub>2</sub>. The enhancement in photocatalytic performance of the MWCNT/TiO<sub>2</sub> composite is explained in terms of recombination of photogenerated electron-hole pairs. In addition, MWCNT acts as a dispersing support to control the morphology of TiO<sub>2</sub> particles in the CNT/TiO<sub>2</sub> nanocomposite.



## Synthesis and characterization of anatase TiO<sub>2</sub> nanoparticles

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### Abstract

Titanium dioxide nanoparticles are used in various applications including environmental photocatalysis and solar cells. In this work we present the synthesis of TiO<sub>2</sub> nanoparticles employing sol-gel methodology. The morphology, composition, particle size, surface area and band gap of these nanoparticles have been characterized and compared with a standard anatase TiO<sub>2</sub> reference specimen exploiting several instrumental techniques namely, Scanning Electron Microscopy (SEM), Energy Dispersive X-Ray Spectroscopy (EDXS), X-Ray Diffraction (XRD), Diffused Reflectance UV-VIS spectrometry (DUR-UV-VIS), Transmission Electron Microscopy (TEM), Brunauer–Emmett–Teller (BET) theory and Raman Spectrometry.

## Infrared spectra and thermal degradation pathway of Zn(II), Cd(II) and Hg(II) alloxan diabetes adduct

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*Moamen S. Refat*<sup>2,3</sup>

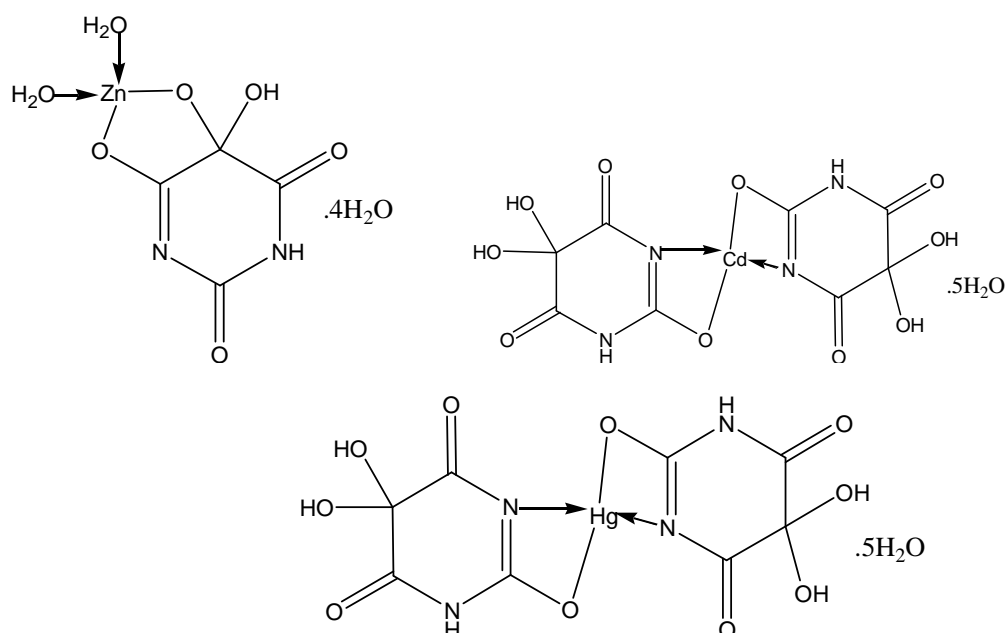
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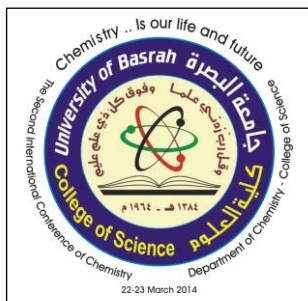
<sup>3</sup> Chemistry Department, Faculty of Science, Port Said University, Port Said, Egypt

### Abstract

Alloxan diabetes complexes with Zn(II), Cd(II) and Hg(II) metal ions have been separated in solid form and characterized on the basis of elemental analysis, molar conductivity, mid infrared spectra. The thermal decomposition the solid complexes was studied. The ligational behavior of Cd(II) and Hg(II) occurs through the oxygen in position 2 and the nitrogen in position 1. Concerning Zn(II) complex the complexation involving the carbonyl group in position 4 (or 6) can be realized through both pyrimidine nitrogen atom and one of the hydroxyl groups in position 5.



Suggested structures of Zn(II), Cd(II) and Hg(II) alloxan complexes



## Batch adsorption technique for the removal of Janus Green B dye from industrial waste water by using walnut kernel shell as adsorbent

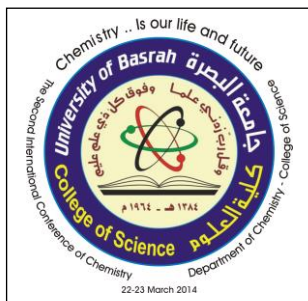
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### Abstract

Batch experiments were carried out for the adsorption of Janus Green B (JGB) onto walnut kernel shell particle. Walnut kernel shell treated with burn in 300 °C was tested as a low cost adsorbent for the removal of Janus Green B from aqueous solution . The effects of various experimental parameters, such as adsorbent dosage and particle size, initial dye concentration, pH and contact time, were investigated in batch mode. An amount of 1.5 g/l of (WKSC) could remove 99.36 % of the dye from an aqueous solution of 50 ppm with the agitation time 150 min and particle size 75 mm and with acid medium (pH=2). The well known Langmuir and Freundlich isotherm models were applied for the equilibrium adsorption data and the various isotherm parameters were evaluated. The results indicate that activated walnut kernel shell carbon (WKSC) could be employed as a low cost alternative to commercial activated carbon in wastewater treatment for the removal of color and dyes .



## Synthesis of some new Schiff base derivatives with experimental and theoretical study of vibrational spectra with some of quantum mechanical parameters

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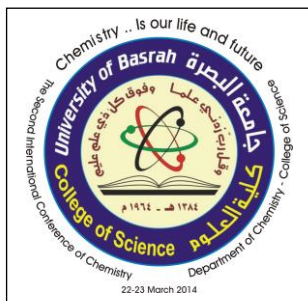
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### Abstract

Some of new derivatives of Schiff base have been synthesized in this work by condensation aromatic aldehydes with thiosemicarbazide, after that; some of physical properties and spectral parameters such FT-IR have pointed experimentally for these new compounds. On the other hand; a theoretical study have been done and some quantum mechanical results have been obtained for these compounds by using Gaussian 09W quantum chemistry program with its graphical user interface program GaussView 5.0. The applied methods are: Density Functional Theory (DFT) with hybrid function and basis set of B3LYP/6-311G (d,p), and semiempirical as PM3. The parameters that gotten theoretically are: vibrational motion frequencies, geometric and structural information, atomic charges, energies and thermal information; these results used to explain reactivity and spectral properties and also used to compare between theoretical and experimental vibrational frequencies, this comparison has shown a good corresponding between theoretical and experimental results; which indicated that quantum mechanical methods are good tools that can used to predict or to prove the vibrational frequencies parameters.



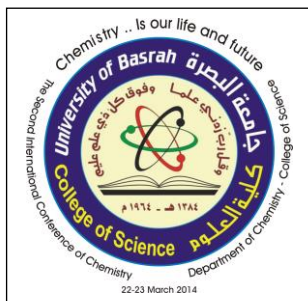
## The effect of different weight from CoO on the surface of V<sub>2</sub>O<sub>5</sub>: spectroscopy studied, physical properties and photochemical activity

*Ali Abdel Sahib*

*Hussain Idrees*

### Abstract

Naked V<sub>2</sub>O<sub>5</sub> and CoO were prepared individually; also different weights from CoO were precipitated on fixed weight 2.0 g. of V<sub>2</sub>O<sub>5</sub> as in the following percentage : 0.5 : 2.0 (25%) , 1.0 : 2.0 (50%), 1.5 : 2.0 (75%) and 2.0 : 2.0 (100%). The above oxides were prepared from its salts as sulphate and nitrate respectively. The prepared catalysts were characterized by X-Ray Diffraction, Electron Paramagnetic Resonance and Infra - Red Spectroscopy. The physical properties also studied and show increasing in porosity, pores size, and electrical conductivity while showing a decreases in the density V<sub>2</sub>O<sub>5</sub>. The photochemical activity of prepared catalysts were studied by series of preliminary experimental for oxidation of 1- octanol (6.32mole/ liter) to 1- octanal using visible light from external source through a side window of quartz inside a Pyrex photocell with capacity of 25 cm<sup>3</sup>. The results of preliminary experiments were detected and determined by UV-Visible Spectroscopy.



## Synthesis, characterization and quantum mechanical study of some new 2-benzylidenehydrazinecarbothioamide derivatives as corrosion inhibitors for carbon steel in acidic medium

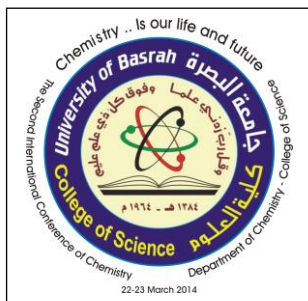
*Oday H. R. Al-Jeilawi*<sup>1</sup>    *Muntadar A. H. Al-Yassiri*<sup>2</sup>

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### Abstract

In this work some of 2-benzylidenehydrazinecarbothioamide derivatives have been prepared from condensation of thiosemicarbazide and different substituted benzaldehyde compounds in presence of glacial acetic acid, these compounds had characterized by its physical properties and spectroscopic methods such FT-IR, <sup>1</sup>H-NMR and <sup>13</sup>C-NMR. This work also included theoretical study to prove the ability of these compounds as corrosion inhibitors; The program package of Gaussian 09W with its graphical user interface GaussView 5.0 had used for this purpose; the methods of Density Functional Theory (DFT) with basis set of B3LYP/6-311G (d,p) and semiempirical method of PM3 have been used, the study included theoretical simulation for these compounds in gas phase and in acidic medium to simulate the act of these compounds as corrosion inhibitors for carbon steel, some parameters have calculated in both previous methods such E<sub>HOMO</sub>, E<sub>LUMO</sub>, ΔE<sub>L-H</sub>, Ionization Potential (I), Electron Affinity (A), electronegativity (χ), Global Hardness (η), Atomic Charges, Dipole Moment (μ) and Fraction of Electron Transferred from Inhibitor Molecules to the Metallic Atom (ΔN), these resulted parameters showed that these compounds are behaving as inhibitors for corrosion of carbon steel in acidic medium.



## New flow injection analysis for the determination of total phenols and antioxidant activity in mushroom using merging zone technique

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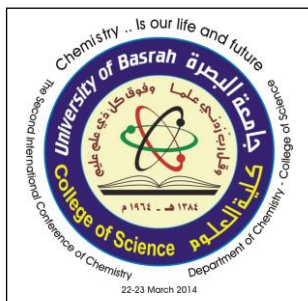
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### Abstract

Flow injection analysis (FIA) determination of the total phenols (TP) content in mushroom was performed using the Folin-Ciocalteu method, while antioxidant activity was measured in a reaction with 1,1-diphenyl-2-picrylhydrazyl radical (DPPH assay). The TP content was observed for mushrooms in comparison to Gallic acid analyzed. Consequently, antioxidant activity was lower 1/IC<sub>50</sub> values in the DPPH assay. In this work flow injection analysis unit was designed and construction a new valves for the spectrophotometric determination of TP and antioxidant activity in Gallic acid (GA). The method was based on the reaction of GA with Folin-Ciocalteu reagent in the presence of sodium carbonate (7.5% w/w) as a buffer solution. The increase in the response of the reaction product was measured at 760nm. Under the optimized experimental conditions, in an aqueous solution was determined of GA, the analytical parameters were a limit of detection (LOD) of 0.05 mg L<sup>-1</sup>, a calibration range of 0.2–40.0 mg L<sup>-1</sup> (r<sup>2</sup>=0.9993) for valve (A). And a (LOD) of 0.05 mg L<sup>-1</sup>, a calibration range of 0.2–50.0 mg L<sup>-1</sup> (r<sup>2</sup>=0.9992) for valve (B). The proposed methods were validated in terms of linearity, repeatability, detection limit, dispersion and accuracy. Under these conditions, the relative standard deviation (RSD%) of the repeatability for multiple determinations of 10mgL<sup>-1</sup> GA prepared in distilled water was found to be 2.4% (n=10), dispersion of (A) valve was 1.87, (B) valve was 1.19. The statistical analysis for the total phenolic content of mushroom extract was ranged from 8.80 to 7.88 mg/g (GA) and 12.4 to 9.28 mg/g (GA) for (A) and (B) respectively according to calibration of GA, and Determination of radicals scavenging activity% (RSA%) in Mushroom by DPPH reagent (0.2 mM) was ranged from 18.02 to 51.85%. The IC<sub>50</sub> was expressed as mg solids/mL DPPH solution and the antioxidant activity of the sample was reported as 1/IC<sub>50</sub>. Hence, the lower the 1/IC<sub>50</sub> value, the higher the radical scavenging activity (RSA). Samples and standards were analyzed in triplicate.





## Removal of dye from aqueous solution by using black tea as a low cost adsorbent

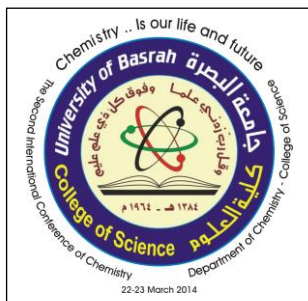
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### Abstract

The aim of this work is to adsorb the Safranin-O of dye with a low cost adsorbent. Safranin-O is a dye which comes in the effluents of textile industries during dyeing and rinsing processes. Although commercial activated carbon is a preferred sorbent for color removal, its wide spread use is restricted due to high cost. Currently, the study of black tea as a low cost sorbent for removing dye has drawn attention of various researchers working in this field. In the present work, black tea (BT) in the form of powder was investigated for removing dyes taking Safranin-O as a model system. The adsorbent was made from black tea procured from Iraq and was investigated under variable system parameters such as dose of adsorbent, PH, initial dye concentration, particle size and agitation time. An amount of 0.2 g/l of (BT) could remove 97.2 % of the dye from an aqueous solution of 50 ppm with the agitation time 150 min. The well Known Langmuir and Freundlich isotherm models were applied for the equilibrium adsorption data and the various isotherm parameters were evaluated. The results indicate that black tea could be employed as a low cost alternative to commercial activated carbon in wastewater treatment for the removal of color and dyes.



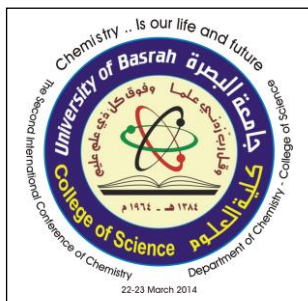
## Synthesis and characterization of some new organic compounds as inhibitors of carbon steel corrosion in sulfuric acid solution

*Oday H. R. Al-Jeilawi      Suaad M. H. Al-Majidi      Khulood A. S. Al-Saadie*

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### Abstract

Four new thiourea derivatives (I-IV) were synthesized by reaction of bromo benzene with potassium thiocyanate to afford the corresponding phenylisothiocyanate which direct reaction with primary aryl amines, the inhibitors synthesized were had proved by physical properties and spectroscopic methods (FTIR, <sup>1</sup>H-NMR, <sup>13</sup>C-NMR). the synthesized compounds as corrosion inhibitors for carbon steel in 1M sulfuric acid solution were investigated by various techniques such as weight loss and potentiostatic polarization, the obtained results showed that the percentage inhibition efficiency(%IE) different because different thiourea derivatives(I-IV) is ranging between (76-91)%, inhibition efficiency (IV) derivative increases by increasing the inhibitor concentration and the highest inhibition efficiency reach to 99.3 % by using  $5.4 \times 10^{-4}$  M at 338K and inhibition efficiency increases by increasing the inhibitor temperature in the range (308-338)K. Potentiostatic polarization curves indicated that the synthesized inhibitors under investigation act as mixed type and are adsorbed on the carbon steel surface according to a Langmuir isotherm. The thermodynamic functions of adsorption and kinetics functions at different temperature in the range (308-338) K were calculated and discussed.

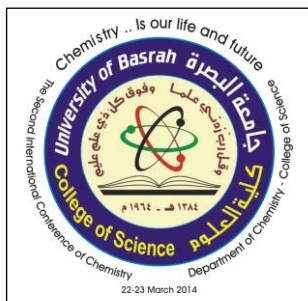


## Synthesis and evaluation antimicrobial activity of some new S-substituted quinazolinone containing different heterocyclic ring

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### Abstract

A series of new 2-mercpto-3-phenyl-4(3H)-quinazolinone linked to azetidinone, thiazolidinone or tetrazole moieties were synthesized s-ester quinazolinone derivative was obtained by reaction of 2-mercpto-3-phenyl-4(3H)quinazolinone with ethyl-2-bromopropanate in methanol as solvent. Compound was treated with hydrazine hydrate in dimethylformamide to give 2-(3-phenyl-4-oxo-3,4-dihydroquinolin-2-yl thio) propanehydrazide . Schiff bases reaction was carried out on compound using different aromatic aldehydes and few drops glacial acetic acid as catalyst, and the Schiff base derivatives were obtained. Three routes with different reagents were used for the cyclization of the prepared schiff bases. The first route to obtained 2-oxoazetidines , the second route to give tetrazoles and the third route to obtained 4-oxothiazolidines, through the reaction sciff base derivatives with Chloroacetyl chloride, sodium azide and 2-mercptoacetic acid respectively. The structures of the newly synthesized compounds were identified by spectral methods (FTIR, <sup>1</sup>H-NMR, C<sup>13</sup>-NMR) and measurement some of its physical properties, fur more were studied the effects of the preparing compounds on some strains of bacteria and fungicidal.



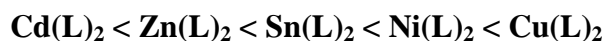
## New complexes photostabilizers for rigid PS against photodegradation

*Emad Yousif      Raghad Haddad      Ahmed Ahmed      Ali Hasan*

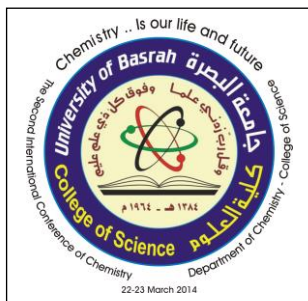
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### Abstract

Series of coordination complexes of Ni(II), Cu(II), Zn(II), Cd(II) and Sn (II) metal with {4-amino-5-(pyridyl)-4H-1,2,4-triazole-3-thiol}, as a ligand (**L**) has been prepared in this work. The photostabilization of polystyrene (PS) films by using these complexes was investigated. Polystyrene (PS) has been mixed with these complexes in chloroform solvent to form modified PS in (5%) w/v thickness, which containing concentration of complex 5% by weight were produced by the casting method from chloroform solvent. The light of the wavelength 365 nm with intensity ( $6.02 \times 10^{-9} \text{ Ein Dm}^{-3} \text{ S}^{-1}$ ) is used for irradiation of PS films at room temperature. The photostabilization activity of these compounds was determined by monitoring the carbonyl ( $I_{\text{CO}}$ ) and hydroxyl ( $I_{\text{OH}}$ ) indices, weight loss method with irradiation time. The surface morphology for these films was studied during irradiation time. The changes in viscosity average molecular weight of PS with irradiation time were also tracked (using chloroform as a solvent). The quantum yield of the chain scission ( $\Phi_{\text{cs}}$ ) of these complexes in PS films was also evaluated. Following trend is obtained for the photostabilization effect on PS films in presence of these additives:



According to the experimental results obtained, mechanisms were suggested, depending on the structure of the complexes.



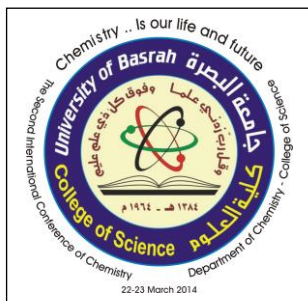
## Enhanced adsorption of orange II from aqueous solutions by chromium contained leather waste modified with cationic surfactant

*Dunya E. Al-Mamar*

*Department of Chemistry, College of Science, University of Baghdad.*

### Abstract

Modified chromium contained leather waste (CCLW) was used as adsorbent for removal of orange II as anionic dye from its aqueous solution. Cetyl trimethyl ammonium bromide (CTAB) has been taken as cationic surfactant for modification of chromium contained leather waste. The enhancement in adsorption of orange II on chromium contained leather waste treated with cationic surfactant is observed. Dye removal of CCLW after 3 hour increased from 83% in the absence of CTAB to 93.53% when CCLW treated with 2mM of surfactant. The effect of different parameters involving, contact time, adsorbent dosage, temperature, initial dye concentration and PH solution, on the orange II dye removal was examined. According to the obtained results, the removal increased with increasing contact time, the optimum PH at which the maximum removal occurred in acidic conditions, the best removal efficiency of the dye was about 93.5% for the adsorbent dosage of 0.75gm. With the increase of initial dye concentration in the range of 10 – 125 mg.L<sup>-1</sup>, the removal efficiency of the dye decreased from 85 to 76.7%. By raising the temperature from 283 K to 303K, the % removal of dye increased from 73.5 to 86%. Typical S shaped isotherm was observed for the adsorption of orange II onto modified CCLW, according to Giles classification.



## Some mechanical properties of epoxy composites and epoxy polysulfide blend composites reinforced with nano alumina particles

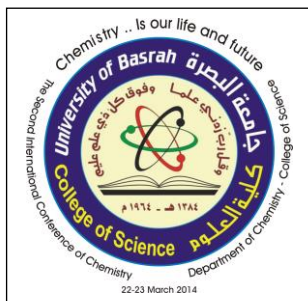
*Malia M. Farhan*

*Baraa C. Maizher*

*Technical College/Baghdad, Baghdad, Iraq  
Correspondence:maliya59@yahoo.com*

### Abstract

Investigation the effect at adding  $\gamma$  - Nano  $Al_2O_3$  particles on the mechanical properties of composite materiel based on epoxy resins and epoxy polysulfide blend matrix (OMR) was performed.. The matrix's were reinforced with 10, 15, 20, 25 and 30% of  $\gamma$  - Nano  $Al_2O_3$  particles average diameter 50nm . They are dispersed, using magnetic stirring process for 2hr at 50 °C .The mechanical properties of the prepared composite characters were enhanced by the addition of the  $Al_2O_3$  particles. The change in wear rate for the epoxy composite of 30%  $Al_2O_3$  of( 5,10,15)N was, 71.4 47 and 59.9 % respectively which is lower than epoxy resin , while the wear rate of blend (OMR) composite of 30%  $Al_2O_3$ , decrease further more at the same loads , as the values were 89, 79 and 76 percent . The photos of the surfaces of epoxy Nano  $Al_2O_3$  those composite taken by optical microscope, appeared to have the higher effect and the wear to the worse compared with the surface of blend (OMR) Nano  $Al_2O_3$  composite.



## Study of heavy metal Pb<sup>2+</sup> and Hg<sup>2+</sup> ions adsorption by synthesized chitosan

*Zuhair Jabar*<sup>1</sup>

*Angham G. Hadi*<sup>2</sup>

*Eman Hameed*<sup>3</sup>

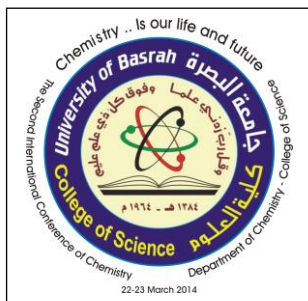
<sup>1</sup>Babylon University, College of Engine, Material Department

<sup>2,3</sup>Babylon University, College of Science, Chemistry Department.

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### Abstract

In this research work natural bio polymer “chitosan” was synthesized using fish shells and adsorption of lead and mercury by chitosan was studied. Synthesize of chitosan involved three main stages as preconditioning, demineralization, deproteinization, and deacetylation. Chitosan was characterized using Fourier Transform Infrared Spectroscopy (FTIR) and solubility in 1% acetic acid. The affinity of chitosan for lead and mercury was studied using Pb(NO<sub>3</sub>)<sub>2</sub> and HgCl<sub>2</sub> solution as the heavy metal solutions containing Pb (II) and Hg (II) ions. The ability of chitosan as an adsorbent for Pb (II) and Hg (II) ions in aqueous solution was studied. The capacity of chitosan to trap lead ions in aqueous solution was carried out at 30°C using concentration as parameters. Our results show that the adsorption process is concentration-driven with high capacity of chitosan for the adsorption of these metal ions. The Infra-red spectroscopic study on the chitosan and the metal-chitosan complexes reveal a metal coordination based on the observed characteristic band changes. At initial lead and mercury concentrations of 3, 5, 8 and 10 mg/L, the adsorbed ions concentrations are 2.7495, 4.5873, 7.4897 and 9.3648 mg/L for lead ions, and 2.8160, 4.6495, 7.2916 and 9.4551 for mercury ion



## Corrosion and corrosion protection studies of carbon steel alloys in saline water using; zirconium oxide, silicon carbide and alumina nanoparticles

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*Khulood Abed Al-Saade*

*Department of Chemistry, College of Science, Baghdad University, Baghdad, Iraq*

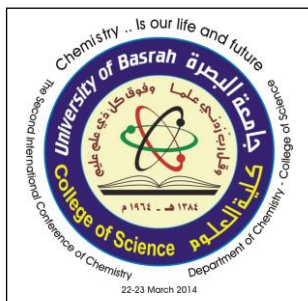
*Email: [H\\_R200690@yahoo.com](mailto:H_R200690@yahoo.com)*

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### Abstract

In this research a new fast growing field of using nanomaterials has been chosen, that is coating carbon steel alloy surfaces with such smart materials to enhance corrosion protection capability. Silicon carbide (SiC), Zirconium oxide (ZrO<sub>2</sub>) and alumina (Al<sub>2</sub>O<sub>3</sub>) nanoparticles (NPs) were used to coat specimens of carbon steel. The corrosion protection efficiency inspection of each specimen in saline water (3.5%NaCl) at different temperatures (25, 35, 45 & 55°C) has been evaluated using potentiostatic techniques with three electrodes cell. Electrophoretic deposition (EPD) was used to coat the metal surfaces by nanomaterials, the results obtained showed that the rate of corrosion of carbon steel increased with increasing the temperatures from 25°C to 55°C, the results showed that deposition of SiC, ZrO<sub>2</sub> & Al<sub>2</sub>O<sub>3</sub> NPs by used EPD caused to protection efficiency reached to 88.48%, 82.9% & 82.1 respectively in 25°C. Change in the free energy, enthalpy & entropy. Apparent energies of activation have been calculated for the corrosion process of uncoated C.S and coated C.S by NPs in saline water (3.5% NaCl).





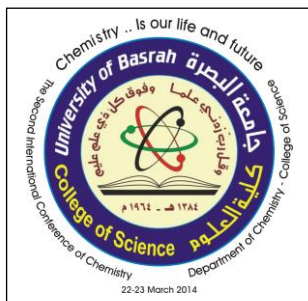
## Synthesis, spectroscopic and cytotoxic study of new sulfur nitrogen ligand and its Cd(II), Ni(II) and Zn(II) complexes

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### Abstract

A new Schiff base 3-methylbenzyl (2*E*)-2-[1-(pyridin-2-yl)ethylidene]hydrazinecarbodithioate (P3EMBHC) with NNS donor atoms was prepared from the condensation reaction 1-(pyridin-3-yl)ethanone (P3E) with 3-methylbenzyl hydrazinecarbodithioate (MBHC). Cadmium(II), Nickel(II) and Zn(II) complexes with the new ligand were synthesized, and characterized using different elemental analysis and various spectroscopic techniques. The transition metal complexes were expected to form in octahedral structure and all the new compounds were tested against two breast cancer cell lines MCF-7 and MDAMB-231 and it was found that the Ni(II) complex shows strong activity against MCF-7 cell lines than other complexes while Cd(II) complex shows high activity against MDAMB231 than other complexes.



## Natural products as corrosion inhibitors of carbon steel metal in acidic media

*Naeem T. Fili*

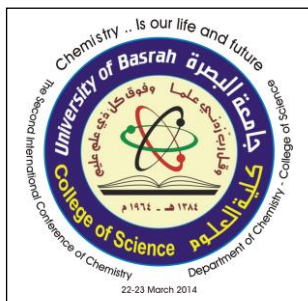
*Salah Sh. Al-Luaibi*

*Alaa-S. Al-Mubarak*

*Department of Chemistry, College of Science, University of Basrah*

### Abstract

The main objective of the present work involved the study of the inhibitive properties of some natural products as cap stem egg plant and Boswell SPB plant extracts as a safety and an environmentally friendly corrosion inhibitors for carbon steel metal in acidic media. The efficiency of inhibitors were determined for all aqueous plant extracted by the corrosion rate measurement for carbon steel with and without the presence of the extracts by electrochemical technique was used to compute the corrosion rates though Tafel plot at various extract concentrations and different temperature range between (25-65°C) The result showed that the natural products had worked effectively in reducing the corrosion rate by the formation the protect film on the metal surface .



## Preparation and study of the spectral and structural properties of nano cobalt oxide sensitize photoelectrode

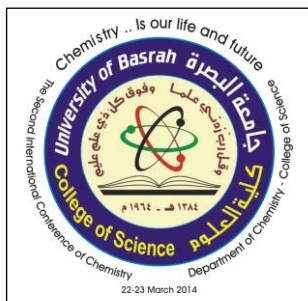
*Haleemah J. Mohammed*

*Kassim M. Sahan*

*Renewable Energies Directorate, Ministry of Science and Technology  
Email: [alhamdaniya2003@yahoo.com](mailto:alhamdaniya2003@yahoo.com)*

### Abstract

This research aims to prepare the material Nano cobalt oxide chemically, of raw materials have to for manufacturing anode sensitize photoelectrode for a cell electrolysis to produce hydrogen fuel, that the process of corrosion that occurs in the electrodes of the cell as a result of the impact of exchange between the materials and the surrounding medium by the (water), and the basic ways to adjust corrosion, a change in the structure of matter, so technique was used nanotechnology to prevent corrosion and rust on the outer surfaces of the electrode, and studied spectral and structural properties electrode using UV-VIS spectroscopy, and structured characteristics was studied through the analysis of X-ray diffraction (XRD) of the prepared sample for determining the yielding phase which are to set the with standard tables. Also, the sample was tested atomic force microscope (AFM) to identify the roughness of prepared sample surface.



## Chemical synthesis and functional analysis for hydra compound

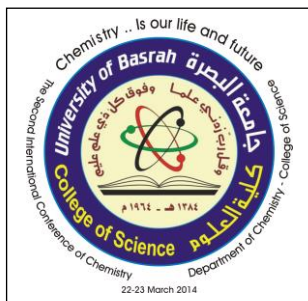
*Iqbal f. Alwan*

*Hussein A. Mohammade*

*The Ministry of Science and Technology, Department of Research Material, Baghdad-Iraq,*

### Abstract

The research synthesis compound called hydra, which belong to arresters metabolism (antimetabolites) within group chemotherapy is used to treat many types of cancer, and the blood ills. Such as excessive red blood cells (Polycythemia) property and sickle cell anemia which called hydroxy carbamide. The compound prepare by polymerize attended by the interaction of calcium caynate and hydroxyl amine hydrochloride crystal under special reaction conditions the compound crystals after drawn by dry ethanol alcohol. Chemical analysis by the device wave length 210nm by (UV-Vis.), as well as the Infra-Red device (I.R.), and have also been identified purity by HPLC technology, and compliance with the constitutions of global medicines according to the American standard (USP,24) article granted permission of medical used by pharmaceutical the drug control, must take in the form of one capsule 500mg weighing and up to 100capsules during 6 weeks by mouth and with radiation dose.



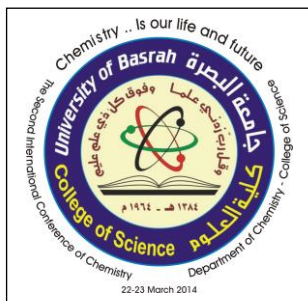
## Isolation of some active materials and aqueous, alcoholic extracts of the plant (*Gum Arabic*) and study its activity against bacteria and tumors

*Omar H. Al-Obaidi*

*Chemistry Department, Education College for Women, Al-Anbar University*

### Abstract

This study included isolation of some active materials from *Gum Arabic* such as tannins with percentage of 53% respectively. Also the study included the determination of minerals in *Gum Arabic* such as " Na, Ca and K" using Flame photometer. The concentrations of these minerals were (255 ppm),(100ppm) and (155 ppm) respectively. Also the study included the determination of materials in *Gum Arabic* such as "Ash, moisture and pH". The percentage of these materials were (2.92%),(12%) and (5.44) respectively. The anti-bacterial activity study was performed for the active materials isolated from *Gum Arabic* against two genus of pathogenic *bacteria*, *Escherichia Coli* and *aurous Staphylococcus* by using agar-well diffusion method. It appeared from this study that all of the extraction have inhibitory effect on bacteria was used. The inhibition zone diameter varies with the type of active compound, its concentration and the genus of bacteria. Has been the use of one type of cell lines of cancer to study the impact of *Gum Arabic* on the growth of cells in the laboratory and thus know the specifications of CAS anti tumor line cells, the user is (L20B) the cells of a mouse mutant (Mice Transformed cell Line).



## Preparation and study of the structural properties and electrical and optical nano conductive membrane manufacturer of composite ATO (antimony-tin)

*Kassim M. Sahan      Haleemah J. Mohammed*

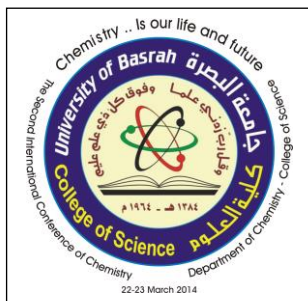
*Ministry of Science and Technology*

*Renewable Energy Directorate/Hydrogen and Bio Fuel Department*

[Sahansahan68@gmail.com](mailto:Sahansahan68@gmail.com)

### Abstract

The research aims to manufacture a thin film nano connector with broad applications in the field of solar cells using modern technology spraying ultrasound (Ultrasonic Nebulizer spray). During the preparation of compound ATO (antimony - tin), has been the study of the structural properties and electrical and optical membrane record this technique and compare membranes prepared using the traditional method and the method of atomization. Tin tetrachloride ( $\text{SnCl}_4$ ) and antimony trichloride ( $\text{SbCl}_3$ ) used as a host and impurity in the preparation of the compound of the chemical substance (ATO) by doping limits ( $\text{Sb: Sn} = 1.85\%$ ). Using the device (XRD) and device (AFM) and a (UV-Vis) and a thickness measuring membrane type (Stellar Net Inc.) and measuring device connectivity for membranes type (Four-point probe (Jandal TFC)) have been diagnosed with all the properties of the membrane record, note where the crystalline arrangement of the standard membrane record (200) and the resistance of the membrane surface limits ( $6.06 \Omega / \square$ ) and the thickness of the membrane limits (100 nm) and permeability rate was up to (70%), it was a guess grain size of the membrane up to the record (20 nm), the observed doped antimony causes an increase concentration of charge carriers and reduces the mobility of the gaps, as well as increasing the permeability of the membranes when the ratio of doped up to 2%, and less when rates doped high antimony. Mentioned characteristics show that this technique was comparable with atomization technology and traditional so this technique can be considered as an alternative desirable for other methods, conductive membranes to produce large areas and the cost of manufacturing a few.



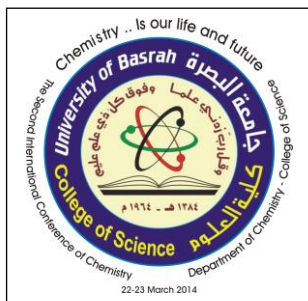
## Study of the mechanical properties of iron-epoxy composite materials

*Abdulhadi K. Al-ogaili*

*University of Technology*

### Abstract

In this paper Iron-Epoxy composite samples were prepared by added different weight percentages (0-20 wt%) from Iron particles in the range of (30-40 $\mu$ m) as a particle size . The contents were mixed carefully, and placed a circular dies with a diameter of 2.5 cm. Different mechanical tests (Shore D Hardness, Tensile strength, and Impact strength) were carried out for all samples, the samples are immersions in water for ten weeks, and after two weeks the samples were take out and drying to conducting all mechanical tests were repeated for all samples. The hardness values increase when the Iron particle concentration increased wears the Impact strength is not affected by the increasing of Iron particles concentration. The tensile strength results reveals that the tensile strength and the strain values of composite samples are decreased when the Iron particles concentration are increased. after conducted immersion processes the results of hardness are reduced wears the results of tensile strength and the impact strength are increased .



## Zinc oxide-layered hydroxide used as delivery machine for phenoxyherbicides-based nanocomposites; nano mixed phases from 4-chloro- and 2,4-dichloro phenoxy acetates

*Abbas M. Bashi*

*College of Applied Medical Sciences, University of Kerbala-Iraq*

### Abstract

The ZnO layered hydroxide play a major role in the drug release control. This role is not well understood. This paper investigates the physical properties of the nano composite (ZCDN) resulted from the intercalation of the mixed solution (4-Chloro- and 2, 4,-Dichlorophenoxyacetates-ZnO) via the sol-gel method. The mixed solution produced a Bi phase that coexists with ZnO layer hydroxide. Our results were supported by the X-RAY diffraction (XRD) and Scanning Electronic Microscopy (SEM). The in vitro release shows that the 4-Chloro Phenoxy Acetate (4CPA) has much longer release duration than the 2,4-DiChloro phenoxy acetates (24D). The total amount of phenoxy herbicides released from the nano composite interlayer into the sodium phosphate aqueous solution were 98 % (24D) and 76 % (4CPA). The release behavior of the phenoxy herbicides into the aqueous solution followed a pseudo-second order rate expression. This study suggests that Zinc Oxide layered hydroxide can be used as a carrier for a mixed active agents and the chemical structure of the intercalated moiety can be used to tune the desired release profile of the beneficial agent.



## Synthesis of novel oligomeric diarylethenes: strategy for the synthesis of poly(alkylene sulfide)'s bearing photochromic units

Asim A. Balakit<sup>1</sup>

Gamal A. El-Hiti<sup>2</sup>

Keith Smith<sup>3</sup>

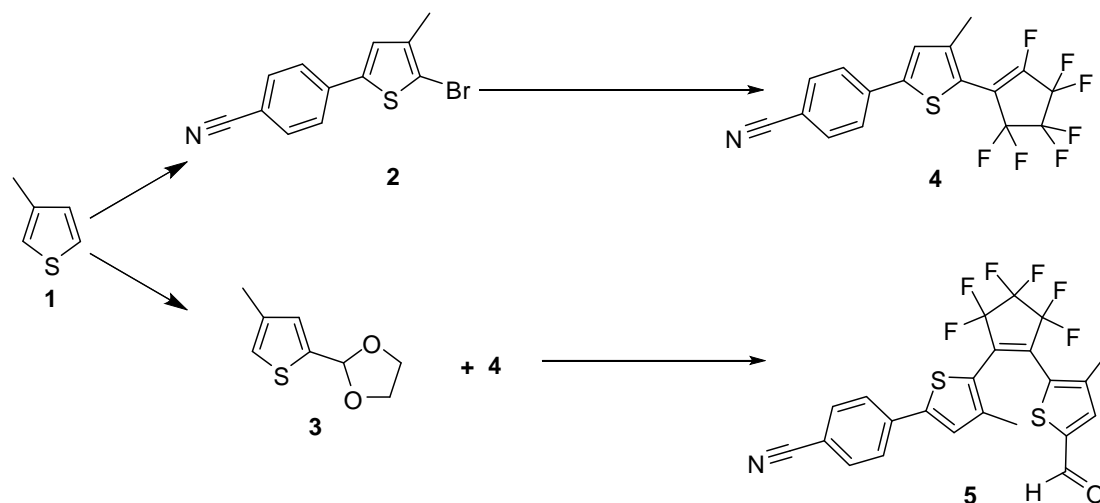
<sup>1</sup> Department of Chemistry, College of Science for Women, University of Babylon, Babylon, Iraq (E-mail: asim\_alsalehi@hotmail.com)

<sup>2</sup> Department of Optometry, College of Applied Medical Sciences, King Saud University, P.O. Box 10219, Riyadh 11433, Saudi Arabia

<sup>3</sup> School of Chemistry, Cardiff University, Main Building, Park Place, Cardiff, CF10 3AT, UK

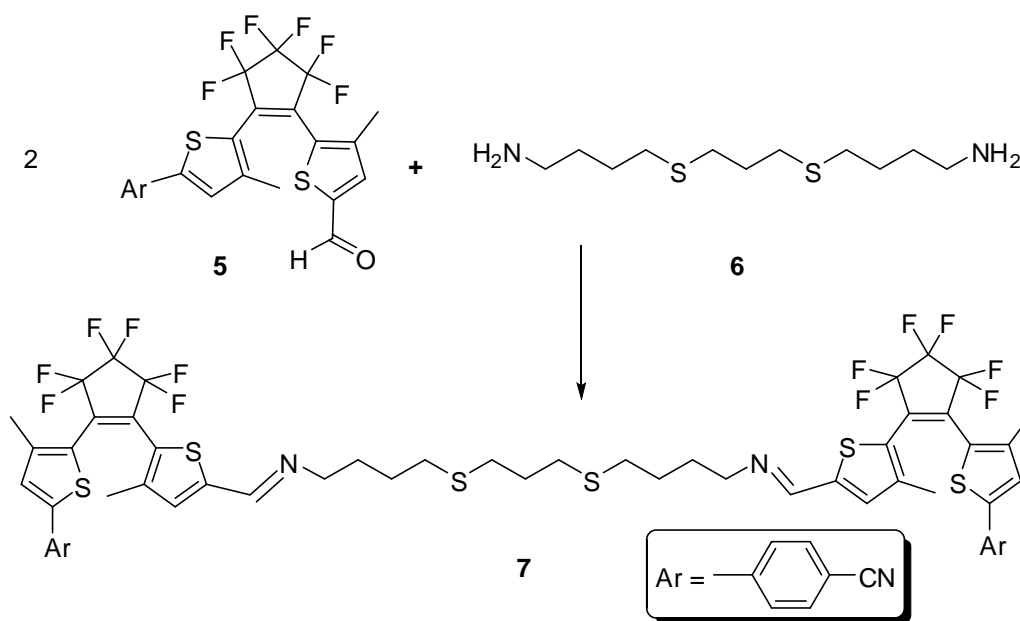
### Abstract

Due to the importance of photochromic compounds and their potential applications in optical memories and molecular switches researchers have developed a large number of diarylethenes containing heteroaromatics (especially ones having diarylperfluorocyclopentenes and thienyl groups), and the development in this field is still ongoing.<sup>1-4</sup> In this work a novel photochromic oligomeric material has been designed and synthesized *via* a multistep synthesis pathway. Starting from 2-methylthiophene (**1**), a novel photochromic diarylethene aldehyde **5** has been synthesized in a good a yield as shown in Scheme 1.



Scheme 1: Synthesis of a novel photochromic diarylethene aldehyde 5

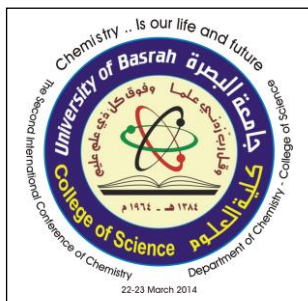
Then, 1,3-*bis*(4-aminobutylthio)propane (**6**) was synthesized as a simple model that mimics poly(alkylene sulfide)s. Reaction of two equivalents of benzaldehyde with diamino compound **6** gave 1,3-*bis*(4-(*N*-benzylideneamino)butylthio)propane in 85% yield, which can be used as a simple model for a synthetic pathway that could be used as a route for the production of functionalized poly(alkylene sulfide)s. We have applied this methodology to produce a novel photochromic oligomeric material **7** in 93% yield (Scheme 2) from the photochromic diarylethene aldehyde **5**, produced as in Scheme 1.



Scheme 2 Synthesis of novel photochromic oligomeric material **7**

## References

- <sup>1</sup> Irie, M. *Chem. Rev.*, **2000**, *100*, 1685–1716.
- <sup>2</sup> Mori, K. Ishibashi, Y., Mastuda, H., Ito, S., Nagasawa, Y., Nakagawa, H., Uchida, K., Yokojima, S., Nakamura, S., Irie, M., Miyasaka, H. *J. Am. Chem. Soc.*, **2011**, *133*, 2621–2625.
- <sup>3</sup> Kobatake, S.; Yamashita, I. *Tetrahedron*, **2008**, *64*, 7611–7618.
- <sup>4</sup> El-Hiti, G. A., Smith, K., Masmali, A., Balakit, A. A., Kariuki, B. M. *Acta Cryst.*, **2013**, *E69*, o1041.



## Biodegradation and cellular toxicity studies of the poly(Ethylene glycol)-sebacic acid polymers

Mayson H. Ziboon

Afrodeet A. Salih

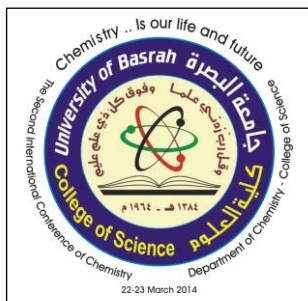
Hadi S. Al-Lami\*

Department of Chemistry, College of Science, University of Basrah-Iraq

\*E. mail: [hadisalman54@yahoo.com](mailto:hadisalman54@yahoo.com)

### Abstract

Poly (sebacic anhydride) was used to prepare poly(ethylene glycol)-sebacic acid polymers with carboxylic end groups and limited molecular weight of poly(ethylene glycol). They were purified and characterized by infrared spectroscopy and end-group analysis. *In vitro* biodegradability studies was carried using wt% loss method on samples in the form compact discs at constant body temperature (37°C) in human plasma. The results revealed that biodegradation needed nearly three months to get 90% hydrolysis; this was defiantly attributed to the molecular weight differences of the copolymers. Biocompatibility tests were carried out to represent *in vivo* biodegradation using human blood which is called cellular cytotoxicity method. All prepared polymers showed no toxicity compared to the reference control and to the toxicity of sebacoyl chloride.



## Synthesis and study of surfactant polyamide as corrosion inhibitor

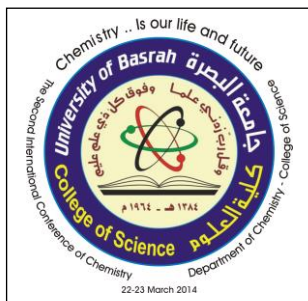
*Mahmoud Sh. Hussain\* and Ula J. khalaf*

*Chemistry department, College of Education, University of Basrah, Iraq.*

*\*E-mail address: mhu\_n99@hotmail.com*

### Abstract

A new geminisurfactant derived from Hexa methylene diamine and ethylenediamintetraacetic acid 2,2'-(1,22-diamino-8,15-dioxo-7,10,13,16-tetraazadocosane-10,13-diyl)diacetic acid was synthesized and characterized by FTIR and NMR. A series of electrochemical measurements, including corrosion potential and corrosion current has been made on polyamide. Results showed that polyamide can offer some degrees of protection in the corrosive environments. The corrosion study of this polymer outline that a new surfactant has a good resistant to the corrosion of carbon steel in 0.1M solution of HCl, which can indicate to be use as anti-corrosion materials.



## New synthesized compound as corrosion inhibitor

*Ahmed A. Al-Amiery*<sup>1</sup> *A. Kahdum*<sup>2</sup> *Abdulamier H. Kadhum*<sup>3</sup>  
*Abubakar Mohamad*<sup>3</sup>

<sup>1</sup>*Environmental Research Centre, University of Technology (UOT), Baghdad 10001, Iraq*

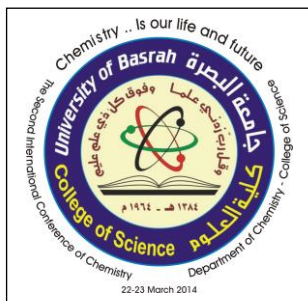
<sup>2</sup>*Renewable Energy Centre, University of Technology (UOT), Baghdad 10001, Iraq*

<sup>3</sup>*Department of Chemical & Process Engineering, Universiti of Kebangsaan Malaysia (UKM),*

*Bangi, Selangor 43000, Malaysia*

### Abstract

A new 4-aminoantipyrine derivative, DMPO was synthesized by the reaction of 4-aminoantipyrine with 2-methylbenzaldehyde and its chemical structure was elucidated and confirmed using spectroscopic techniques (UV-VIS, FT-IR and NMR). The corrosion inhibition effect of DMPO on mild steel in 1.0 M HCl has been investigated using electrochemical impedance spectroscopy (EIS) and potentiodynamic polarization measurements. The efficiency of DMPO as an inhibitor was examined using various concentrations of the solution. The obtained results indicated that DMPO has promising inhibitive effects on the corrosion of mild steel in 1.0 M HCl across all of the conditions examined.



## Synthesis, characterization and analytical properties studies of polyaniline-chitosan semi IPN's

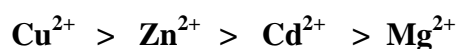
*Safaa S. Mahdi      Abdel-Amir H. Taobi      Salah Sh. Al-Luaibi*

*Department of Chemistry, College of Science, University of Basrah*

### Abstract

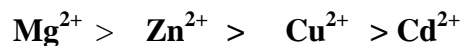
Semi IPN's polymer was prepared from polyaniline and crosslinked chitosan with gluteraldehyde. The prepared polymer was characterized by an Infrared (FTIR ). The analytical efficiency for the prepared polymers were evaluated by batch method. The effect of time and pH on the loading capacity were studied .The result is as follows: ( in mg ion / g resin)

The max. loading capacity for the studied ions were arranged as follows :



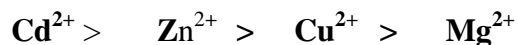
Study the analytical efficiency for poly aniline .

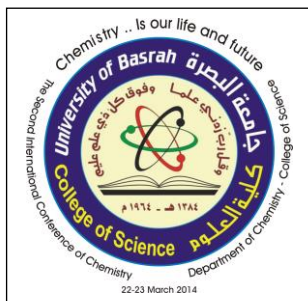
The max. loading capacity for the studied ions were arranged as follows :



Study the analytical efficiency for semi IPN's .

The max. loading capacity for the studied ions were arranged as follows :





## The discovery of a new liquid crystal phase: the Twist-Bend nematic phase, $N_{TB}$

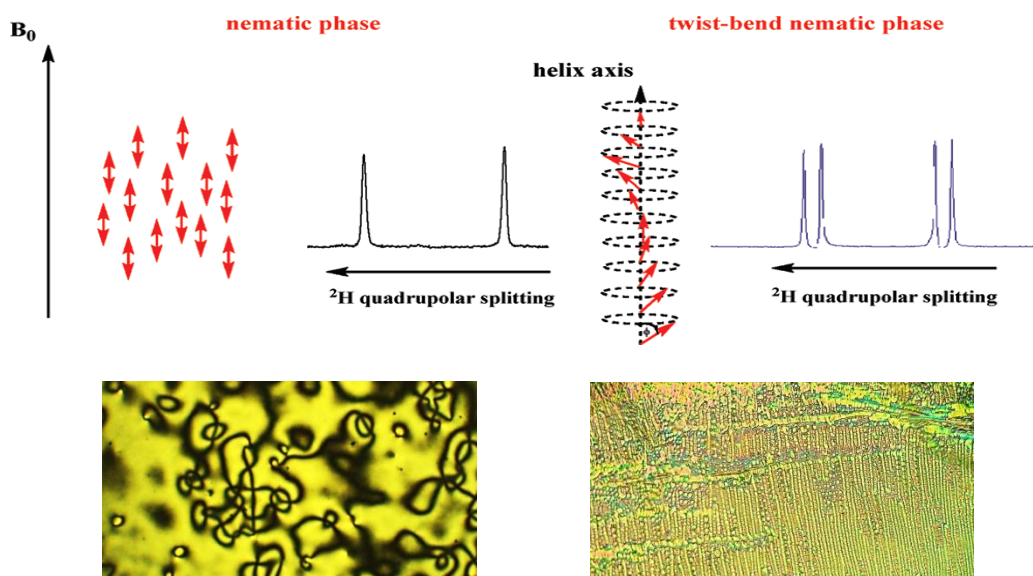
*G. R. Luckhurst*<sup>1</sup>    *B. A. Timimi*<sup>1</sup>    *N. J. Wells*<sup>1</sup>    *H. Zimmermann*<sup>2</sup>

<sup>1</sup>*School of Chemistry, University of Southampton, Southampton, UK*  
<sup>2</sup>*Department of Biophysics, Max-Planck Institute, Heidelberg, Germany*

### Abstract

In this talk the investigations which led to the experimental confirmation of the existence of a predicted twist-bend nematic phase will be briefly described. This is the study of the methylene-linked dimer 1",7"-bis(4-cyanobiphenyl-4'-yl) heptane (CB7CB)<sup>1</sup> with its average, V-shape. This work involved the use of a range of experimental techniques including deuterium NMR spectroscopy. On cooling CB7CB from the isotropic phase the standard nematic phase is formed, which, however, on further cooling is transformed into another liquid-crystal phase<sup>1</sup>. This lower temperature phase was initially identified as a smectic phase<sup>2</sup>. However, the final and correct identification of the phase was very recently achieved, as a "twist-bend" nematic phase<sup>1</sup> and assigned the symbol  $N_{TB}$ . This confirms the prediction made by Dozov<sup>3</sup> in 2001 for the existence of this novel phase. A fascinating property of the  $N_{TB}$  nematic phase is that it behaves as a chiral phase although the constituent molecules themselves are not chiral. The optical texture of this phase has rope-like stripes with each stripe having the opposite handedness from its neighbours. Further, recent work using deuterium NMR has shown that non-chiral molecules dissolved in the  $N_{TB}$  phase (like that of CB7CB) display the chiral behaviour of the phase<sup>4</sup>. The chiral nature of the  $N_{TB}$  phase was further demonstrated in a mixture of mesogenic molecules with average V-shapes one of which has methylene linkages<sup>5</sup>. In this talk new un-published<sup>6</sup> results will be given on the system based on the average V-shaped dimer CB9CB (i.e with C<sub>9</sub> alkyl spacer) in which an un-identified nematic phase is reported to occur below a normal nematic phase (this was labelled as  $N_x$ )<sup>7</sup> which

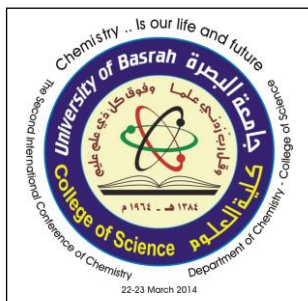
shows this  $N_x$  phase as the twist-bend nematic phase  $N_{TB}$ . If time allows, other systems which were reported to undergo a similar transition from a normal nematic to an  $N_{TB}$  phase, although at first unidentified, will be presented showing the presence of the twist-bend nematic phase. The talk will, in particular, show the role of deuterium NMR in clearly identifying the  $N_{TB}$  phase by revealing its chirality.



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- (7) C. S. P. Tripathi, P.L-Perez, C. Glorieux, A. Kohlmeier, M.-G. Tamba, and G. H. Mehl, Phys. Rev.





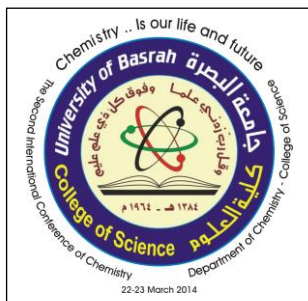
## Theoretical study for electronic and vibrational properties of nano cylinder ( $C_{140}H_{28}$ )

**Huda N. AL-Ani**

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[hudanajim2005@yahoo.com](mailto:hudanajim2005@yahoo.com)*

### **Abstract**

Semi-empirical methods were applied for calculating the vibration frequencies and IR absorption intensities for normal coordinates of the (7,7) armchair( $C_{140}H_{28}$ ) single wall carbon nanotube(SWCNT) at equilibrium geometry which was found to has  $D_{7d}$  symmetry point group. Assignment of the modes of vibration (3N-6) was done depending on the pictures of their modes by applying (Gaussian 03) program. Comparison of the vibration frequencies of the nanotube which are active in IR, and inactive in Ramman spectra. For C-H stretching vibrations. The results showed the relation for axial bonds, which are the vertical C-C bonds (annular bonds) in the rings and for circumferential bonds which are the outer ring bonds. Also include the assignment of puckering, breathing and clock-anticlockwise bending vibrations. They allow a comparative view of the charge density at the carbon atom too.



## Synthesis, spectroscopic characterization and biological activity of some amide derived from condensation of sulfanilamide and protected amino acid

*Bushra K. Al-Salami*

*Hanaa K. Moussa*

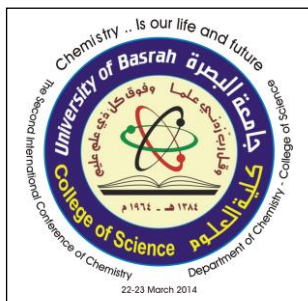
*Heba H. Sabah*

*Afrodet A. Saleh*

*Department of Chemistry, College of Science, University of Basrah*

### Abstract

Some protected amino acid namely N-phthalyl DL-Valine, N-phthalyl D-Valine and N-Phthalyl DL-Isoleucine were prepared by reaction between phthalic anhydride and  $\alpha$ -amino acid in good yield and have been condensed with sulfanilamide by using N-Dicyclohexyl carbodiimide (DCC) as condensing agent to furnish the corresponding amide. Because dicyclohexyl carbodiimide (DCC) is a reagent commonly used to form amide bonds. (DCC) makes the OH group of the carboxylic acid a better leaving group, thus activating the carboxy group toward nucleophilic attack. The compounds characterized by IR elemental analysis and H-NMR. The spectroscopic data indicate that the condensation gives products in 1:1 ratio. The antibacterial activity of the studied compounds was determined against several clinical microbial isolates which are; staphylococcus aureus and E.Coli by using different concentrations of each compound.



## Adsorption of acid Red 57 from aqueous solutions onto polyacrylonitrile/activated carbon composite

Ashraf A. El-Bindary<sup>1\*</sup>    Mostafa A. Diab<sup>1</sup>    Mostafa A. Hussien<sup>2</sup>  
Adel Z. El-Sonbati<sup>1</sup>    Ahmed M. Eessa<sup>2</sup>

<sup>1</sup>Department of Chemistry, Faculty of Science, University of Damietta, Damietta 34517, Egypt

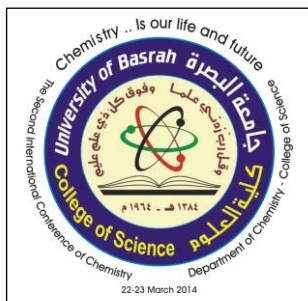
<sup>2</sup>Department of Chemistry, Faculty of Science, University of Port Said, Port Said, Egypt

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E-mail address: [abindary@yahoo.com](mailto:abindary@yahoo.com) (A.A. El-Bindary).

### Abstract

The adsorption of Acid Red 57 (AR57) onto Polyacrylonitrile/activated carbon (PAN/AC) composite was investigated in aqueous solution in a batch system with respect to contact time, pH and temperature. Physical characteristics of (PAN/AC) composite such as fourier transform infrared (FTIR) spectroscopy and scanning electron microscopy (SEM) were obtained. Experimental data indicated that the adsorption capacity of (PAN/AC) composite for AR57 was higher in acidic rather than in basic solutions. Langmuir and Freundlich adsorption models were applied to describe the equilibrium isotherms and the isotherm constants were determined. The activation energy of adsorption was also evaluated for the adsorption of AR57 onto (PAN/AC) composite. The pseudo-first-order and pseudo-second-order kinetic models were used to describe the kinetic data. The dynamic data fitted the pseudo-second-order kinetic model well. The activation energy, change of free energy, enthalpy and entropy of adsorption were also evaluated for the adsorption of AR57 onto (PAN/AC) composite. The thermodynamics of the adsorption indicated spontaneous and exothermic nature of the process. The results indicate that (PAN/AC) composite could be employed as low-cost material for the removal of acid dyes from textile effluents.



## Adsorption and inhibitive properties for corrosion of carbon steel in hydrochloric acid solution by some nicotinonitrile derivatives

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Mostafa A. Diab<sup>2\*</sup>  
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<sup>3</sup>Engineering Chemistry Department, High Institute of Engineering & Technology, Damietta, Egypt.

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### Abstract

The role of some nicotinonitrile derivatives as corrosion inhibitors for C-steel in 2 M HCl have been studied using weight loss, potentiodynamic polarization, electrochemical impedance spectroscopy (EIS) and electrochemical frequency modulation (EFM) techniques. Polarization studies were carried out at room temperature and showed that all the compounds studied are mixed type inhibitors. The effect of temperature on corrosion inhibition has been studied and the thermodynamic activation and adsorption parameters were calculated to elaborate the mechanism of corrosion inhibition. The morphology of inhibited C- steel was analysed by scanning electron microscope technology with energy dispersive X-ray spectroscopy (SEM-EDX). Electrochemical impedance was used to investigate the mechanism of corrosion inhibition. The presence of these compounds in the solution decreases the double layer capacitance and increases the charge transfer resistance. The adsorption of the compounds on C-steel surface was found to obey Temkin's adsorption isotherm. The mechanism of inhibition process was discussed.

## The role of anodizing potentials in making TiO<sub>2</sub> nanotubes in (ethylene glycol/NH<sub>4</sub>F/water) electrolyte

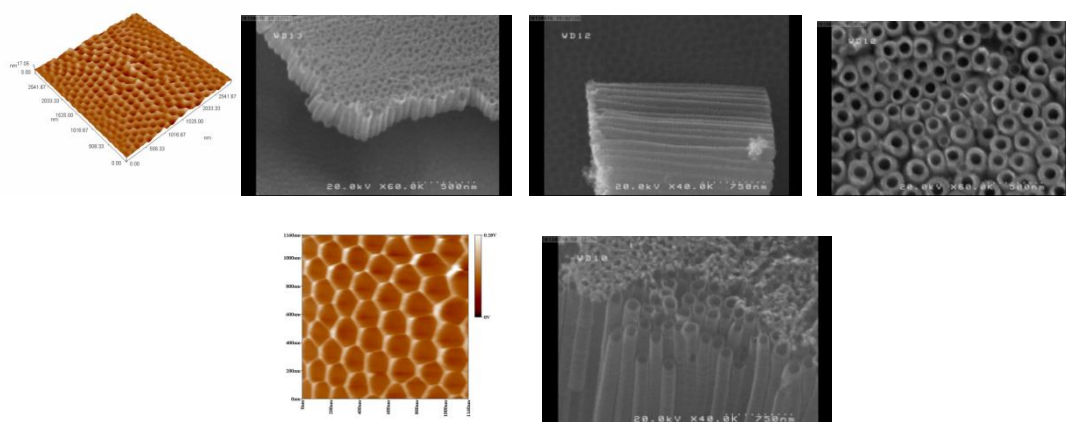
Abdulkareem M. A. Alsammaraei<sup>1</sup> Harith I. Jaafar<sup>2</sup> Kareem N. Abed<sup>2</sup>

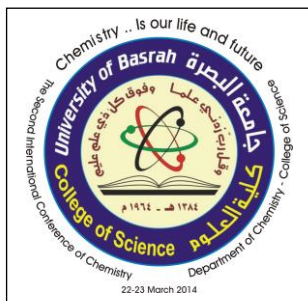
<sup>1</sup> University of Baghdad, College of Science, Department of Chemistry  
[samuraee2000@hotmail.com](mailto:samuraee2000@hotmail.com); mobil:009647901350456

<sup>2</sup> University of Baghdad, College of Science, Department of Physics

### Abstract

Titania (TiO<sub>2</sub>) nanotube is considered a very important material due to its promising applications in many fields ranging from energy harvesting to sensors and photocatalytic applications. TiO<sub>2</sub> nanotubes were grown electrochemically in Plexiglas cell, the Ti foils (99.96%) serves as anode and platinum foil as cathode while the electrolyte was ethylene glycol containing (0.5%) NH<sub>4</sub>F and (4%) de-ionized water at 20°C for one hour. The effect of anodizing voltages at the range 10 to 100v are studied by extensive current / voltage plots and microstructure examination using SEM, and AFM techniques. All potentials were led to highly ordered nanotubes but they have different micrographic parameters; tube length, tube diameter and tube wall thickness, a role of the values of anodizing potentials and these parameters are investigated.





## Thermal stability and degradation of poly(N-(4-methoxy-2-methylphenyl) acrylamide homopolymer and copolymer of N-(4-methoxy-2-methylphenyl) acrylamide with methyl methacrylate

*Adel Z. El-Sonbati\**

*Mostafa A. Diab*

*Ashraf A. El-Bindary*

*Heba M. Abd El-Ghany*

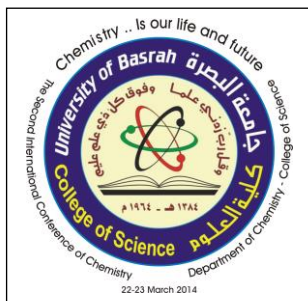
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*E-mail address: [elsonbatsch@yahoo.com](mailto:elsonbatsch@yahoo.com) (A.Z. El-Sonbati).*

### Abstract

Different concentrations of copolymer of N-(4-methoxy-2-methylphenyl)acrylamide (MA) with methyl methacrylate (MMA) were prepared and the reactivity ratio values of copolymerization were calculated using Microanalysis technique. Thermal analysis of the copolymers showed that the thermal stability are intermediate between poly(N-(4-methoxy-2-methylphenyl) acrylamide) (PMA) and poly(methyl methacrylate) (PMMA) homopolymers. Thermal degradation products of the PMA were identified by GC-MS techniques. It seems that the mechanism of degradation of PMA homopolymer is characterized by free radical formation followed by recombination along the backbone chain. The activation energies of the thermal degradation of the copolymers were calculated using Arrhenius relationship.



## Complexation of some transition metal ions with benzoxazole sulfamethazine: A potentiometric and thermodynamic studies in aqueous solution

A. R. El-Shobaky\*

A. A. El-Bindary

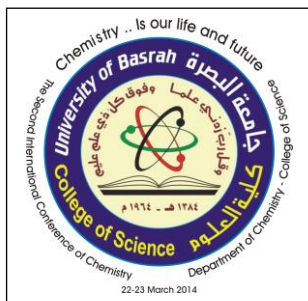
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E-mail address: [elshobaky@yahoo.com](mailto:elshobaky@yahoo.com) (A.R. El-Shobaky).

### Abstract

The interaction of  $Mn^{2+}$ ,  $Co^{2+}$ ,  $Ni^{2+}$ ,  $Cu^{2+}$ ,  $La^{3+}$ ,  $Ce^{3+}$ ,  $UO_2^{2+}$  and  $Th^{4+}$  ions with benzoxazole sulfamethazine (BOSM) have been studied in aqueous solution. The proton-ligand dissociation constant of benzoxazole sulfamethazine and metal-ligand stability constants of its complexes with metal ions ( $Mn^{2+}$ ,  $Co^{2+}$ ,  $Ni^{2+}$ ,  $Cu^{2+}$ ,  $La^{3+}$ ,  $Ce^{3+}$ ,  $UO_2^{2+}$  and  $Th^{4+}$ ) have been determined potentiometrically in  $0.1 \text{ mol dm}^{-3}$  KCl and 40 % (by volume) DMF–water mixture and at (298, 308 and 318) K. The stability constants of the formed complexes increases in the order  $Mn^{2+}$ ,  $Co^{2+}$ ,  $Ni^{2+}$ ,  $Cu^{2+}$ ,  $La^{3+}$ ,  $Ce^{3+}$ ,  $UO_2^{2+}$  and  $Th^{4+}$ . The effect of temperature was studied and the corresponding thermodynamic parameters ( $\Delta G$ ,  $\Delta H$  and  $\Delta S$ ) were derived and discussed. The dissociation process is non-spontaneous, endothermic and entropically unfavourable. The formation of the metal complexes has been found to be spontaneous, exothermic and entropically favourable.



## Effect of fillers on the mechanical properties, water absorption and thickness swelling of filled HDPE composites with MAPE as compatibilizer

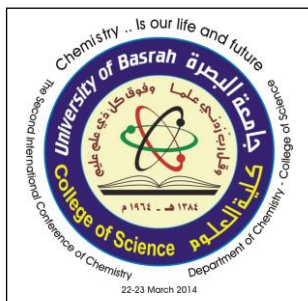
*Moayad N. Khalaf*

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### Abstract

In this paper, the effect of filler types and compatibilizing agent (MAPE) on mechanical properties (tensile strength, Young modulus and Impact strength), water absorption and thickness swelling has been studied. The types of filler were inorganic and natural lignocelluloses. The percentages of fillers were (0, 0.5, 2.5, 5, 7.5 and 10 wt%). The effect of fillers on the mechanical properties, water absorption and thickness swelling showed that the lignocelluloses is the most effect to improve the mechanical properties and it has the higher water absorption and thickness swelling duo to the hydroxyl groups present in its structure. The MAPE percentages were (0, 1, 2, 3, 4 and 5 wt%) on the HDPE/MAPE blends. The 4 wt% shows the maximum value of mechanical properties. The effect of adding 4% MAPE to the HDPE/filler composites was studied. The data shows that the mechanical properties of the composites was increased and the water absorption and thickness swelling was decreased.





## New approach for the on-line turbidimetric determination of cadmium (II) in different river water via the use of a new homemade Ayah 6SX1-2D solar-continuous flow injection analyzer

*Nagam S.Turkey*<sup>1</sup>

*Omar Ayad*<sup>2</sup>

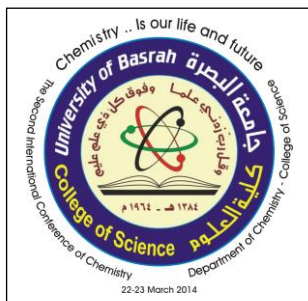
*Department of Chem., College of science, Baghdad University, Baghdad, Iraq*

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<sup>2</sup>*Email:omaralkaisi@yahoo.com*

### Abstract

A newly developed analytical method characterized by its speed and sensitivity for the determination of cadmium (II) in aqueous solution in three randomly chosen samples from river water at different location via turbidimetric measurement (0-180°) by Ayah 6SX1-2D Solar - CFI analyser. The method is based upon the formation of yellowish white precipitate for the complex  $Cd_3[Fe(CN)_6]_2$  by direct reaction of the cadmium (II) with potassium hexacyano ferrate (III) in aqueous medium. Turbidity was measured via the reflection of incident light that collides on the surfaces precipitated particles at 0-180°. Chemical and physical parameters were investigated. Linear dynamic of cadmium (II) is ranged from 0.05-12 mmol.L<sup>-1</sup>, with correlation coefficient  $r = 0.9951$ . The limit of detection (S/N=3) ( $3S_B$ ) = 25.29 ng/sample from the step wise dilution for the minimum concentration in the linear dynamic ranged of the calibration graph with RSD % lower than 1.5% for 8 mmol.L<sup>-1</sup> (n=5) concentration of cadmium (II). The method was applied successfully for the determination of cadmium (II) in three river samples. A comparison was made between the newly developed method of analysis with the classical method (Hanna instrument) for turbidity measurement using the standard addition method via the use of ANOVA-treatments ( Analysis of Variance ). It was noticed that there is a significant difference at  $\alpha=0.05$  ( 95% confidence level ) between the two methods at level of sig < 0.05 was obtained. On that basis the new method can be accepted as an alternative analytical method.



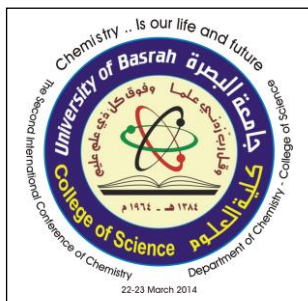
## Evaluation of some physical properties and metals in samples of Iraqi crude oil in Nasiriya refinery

*Mohammed T. Khathi*

*Department of Chemistry, College of Science, Thi-qar University  
E-mail : dr.mohammedturki@yahoo.com*

### Abstract

In the present work, many methods were used to evaluation of some chemical content as sodium ,potassium ,calcium, magnesium, vanadium and nickel in samples of Iraqi Oil in Nasiriya refinery , as well as some physical properties included color , density, Ash content wt%, carbon residue wt% , water, salt , Sulfur content % wt, Heat of combustion Kcal/Kg , Thermal conductivity, Specific heat and Latent heat of vaporization were determinate . Also in this study viscosity were measured with different temperatures to observe the effect of temperature on oil viscosity. Range concentration of metals can be cleared by the series  $Ca > Na > Mg > V > Ni > K$ . The present study has shown that high levels of metals ions in oil refinery whereas the physical properties were closed to previous findings conducted on a crude oil in Iraq and other countries. The study recommended to possible using of high levels of heavy metals in oil in scientific and industrial purposes as well as removal these metals contribute in reducing of contaminations problems .



## Preparation and characterization of calcium-fluoroaluminosilicate glass fillers for dental composite material

*Rafed. M Al-Bader*<sup>1</sup>

*Kareema M. Ziadan*<sup>2</sup>

*M. S. Al-Ajely*<sup>3</sup>

<sup>1</sup>College of Dentistry, University of Basrah, Basrah, Iraq

<sup>2</sup>Department of Physics, College of Science, University of Basrah, Basrah, Iraq

<sup>3</sup>Department of Chemistry, College of Education, University of Mosul, Mosul, Iraq

### Abstract

Development of new glass filler of the composite is very important in dentistry due to their physical, biological and mainly anti-caries properties. In this research synthesis four new series of glass filler. This filler usually consist of a fusion of aluminosilicate glass modified with other elements, and they contain large quantities of fluorine, (SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, AlF<sub>3</sub>, CaF<sub>2</sub>, NaF and AlPO<sub>4</sub> (wt. %)). The method of preparing (Calcium-Fluoroaluminosilicate Glass) powder was carried out by medium temperature method. These series of glass characterized by X-ray diffraction XRD, Fourier transform infrared spectroscopy FTIR, Scanning electron microscopy SEM And differential thermal analysis DTA. XRD show the Crystallite size between ( 20-25 )nm .The partial size of glass also find by using BET method. The morphology of glass measured by SEM. DTA/TG indicated that Calcium-Fluoroaluminosilicate Glass had better thermal stability than anther glasses, The structures of the obtained glasses compared to the commercial material was also studied using FTIR measurements.

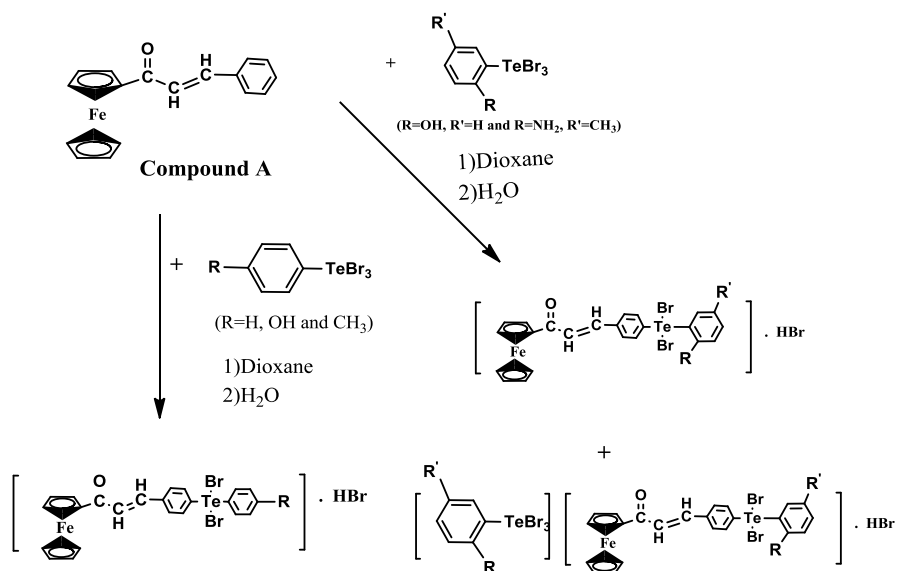
## Synthesis and identification of some new organotellurium dibromide containing ferrocenyl chalcone moiety

Majeed Y. Al-Luaibi      Kahtan A. Askar      Ali Z. Al-Rubaie

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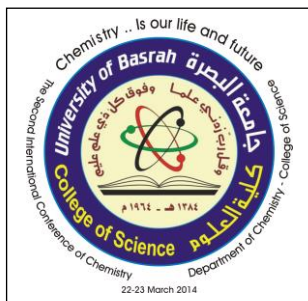
### Abstract

A new series of unsymmetrical diorganotellurium dibromide containing ferrocenyl-chalcone moiety were prepared by the reaction of 1-ferrocenyl-3-(phenyl)prop-2-en-1-one with aryltellurium tribromide (ArTeBr<sub>3</sub>, where Ar = 4-HOC<sub>6</sub>H<sub>4</sub>, 2-HOC<sub>6</sub>H<sub>4</sub>, 4-NH<sub>2</sub>C<sub>6</sub>H<sub>4</sub>, 2-NH<sub>2</sub>C<sub>6</sub>H<sub>4</sub>, 4-CH<sub>3</sub>C<sub>6</sub>H<sub>4</sub>, 2-NH<sub>2</sub>-5-NO<sub>2</sub>C<sub>6</sub>H<sub>4</sub> and 2-NH<sub>2</sub>-5-CH<sub>3</sub>C<sub>6</sub>H<sub>4</sub>). The study showed that the *para*-substituted phenyl of aryltellurium tribromides gave only one product, while the *ortho*-substituted gave two products. In all reactions, an electrophilic attack of aryltellurium tribromide on the *para*-position of the benzene ring of ferrocenyl-chalcone was observed.



**Scheme 1.** The preparation of the new compounds

All new compounds were characterized by the elemental analysis, IR, <sup>1</sup>H and <sup>13</sup>C NMR spectroscopy and mass spectrometry.



## Synthesis of polyamide based on heterocyclic rings

*Oda M. Y. Al- Zamely*<sup>2</sup>     *Ahmed S. Hamad*<sup>1</sup>     *Mustafa D. M. Ali*<sup>2</sup>

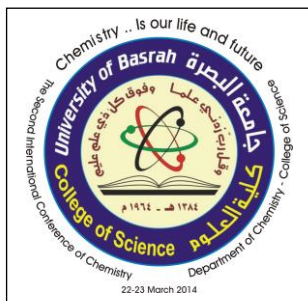
<sup>1</sup>University of Karbala, College of Pharmacy, Iraq

<sup>2</sup>University of Babylon, College of Science, Iraq

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### Abstract

Research include preparation of a two heterocyclic triazole compounds, where prepared the 3,5-diamino-1-phenyl-1,2,4-triazoles and 3,5-diamino-1-carbamyl-1,2,4-triazoles from reaction of N-cyanoguanidine with phenyl hydrazine hydrochloride and semicarbazide hydrochloride respectively. Then synthesis of poly amide compounds by the reaction of these triazoles diamine compounds with di-carboxylic acid (oxalic acid, malonic acid and adipic acid) after convert it to their acid chlorides (oxalic chloride, malonic chloride and adipic chloride) by reaction these carboxylic acids with thionyl chloride. The compounds were purified and characterized with the analytical and spectral data such as FT-IR spectrum (400-4000 cm<sup>-1</sup>), and <sup>1</sup>HNMR spectrum (300MHz).



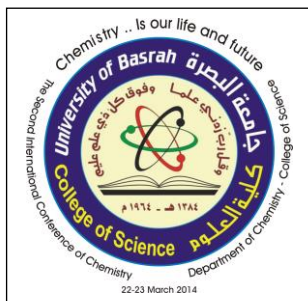
## Potentiometric study of phenytoin-PVC membrane electrodes for determination of phenytoin in pharmaceutical preparations

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Baghdad, Iraq*

### Abstract

Ion selective electrodes for phenytoin were prepared using sodium tetraphenyl borate (NaTPB) ionophore and various plasticizers: di-n-butylphthalate (DBPH), tri-n-butylphosphate (TBP), o-nitrophenyloctyl ether (NPOE), and dioctylphenylphosphonate (DOP). The response characteristics of these electrodes, including slope of the calibration plot, the corresponding concentration range, detection limit, response time, life time, pH effect, and selectivity were studied. The experimental results showed that the best electrode was based on DOPH and DBPH as plasticizers, displaying a linear range from  $1.00 \times 10^{-1}$  M to  $1.00 \times 10^{-4}$  M and  $1.00 \times 10^{-1}$  M to  $2.00 \times 10^{-4}$  with a Nernstian slope of 26.6 mV/decade and 26.2 mV/decade, correlation coefficient of 0.9993 and 0.9989, The detection limit was  $2.00 \times 10^{-5}$  M and  $3.00 \times 10^{-5}$ , the lifetime was around 30 and 28 days respectively. The proposed electrodes were successfully applied to the determination of phenytoin in a pharmaceutical preparation.



## A Novel world records of five HBV isolates by DNA sequences techniques in Basrah south of Iraq

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*Munaff J. Abd-Abbas*

*Hisham F. Mohammed*

*Department of Biology, College of Science, University of Basrah, Iraq*

### Abstract

The increased HBV infection in Basrah city elicited important question, what the source of infection? Is the viral acquired from other country or original viral. Hepatitis B virus (HBV) infection is major health problem worldwide, with two billion infected people each year. HBV belong to the Hepadnavidae family and is an enveloped viruses with double stranded DNA genome. The HBV circular genome is nearly 3200 plong with four partially over lapping open reading frames (ORF); Named surface (S), Core(C), polymerase (P) and (X). HBV is classified into eight genotype (A-H). Based on divergence of 8% or more of the complete HBV genomes. Out of 36 HBV isolates from Basrah patients plasma were identified by DNA sequences, seven isolates HBV(19.4%) which identical 100% to those isolated previously from: Italy PTVO31-D(1), Iran:919042(1), Iran:IR-14(1), Iran:Mashad-462(1), India(2) and India's(1) respectively. While the other isolates in the present study were recorded in Lien Bank of NCBI as novel isolated in the world, these are:

-IRQBASV7:HG810924.1 (24)

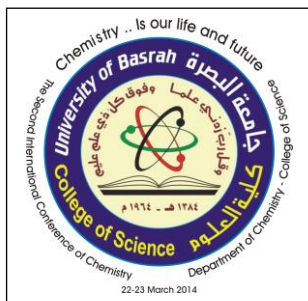
-IRQBASV8:HG810925.1 (1)

-IRQBASV8:HG810926.1 (2)

- IRQBASV8:HG810927.1 (1)

- IRQBASV8:HG810928.1 (1)

All the new isolated were closely related (99%) with those from Sudan, Iran, Australia, Turkey and India.



## The Study of thermal stability of metal containing polymers based on resol of bisphenol-A

*Huda S. Alniaeem*

*Zaki N. kadhim*

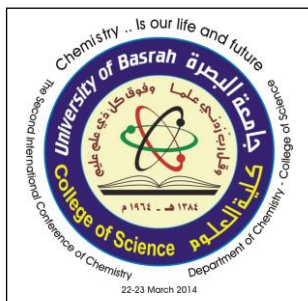
*Widad S. Honosh*

*Department of Chemistry, College of Science, University of Basrah*

### Abstract

Metal containing polymer have been synthesized by reaction of Schiff base metal complexes with resol polymers based on bisphenol A. The thermal analysis of the prepared metal polymers was evaluated by thermo gravimetric analysis (TGA) and differential scanning calorimetry (DSC). From the TGA thermogram several parameter were obtained such as char content decomposition temperature and T50% weight loss. The introduction of metal ions [V(V), Mo(VI), Ni(II), Cu(II), Zn(II) and Mo(VI)] into polymers, gave a higher thermal stability which may allow these polymer to be used in different purposes like, thermal insulator.





## Design of flow injection unit for determination Barlent Green dye

*Dakhil N. Taha      Ahmed S. Farhood      Lamia A. Mohamed*

*Nahla Salman      Hend W. Razaq*

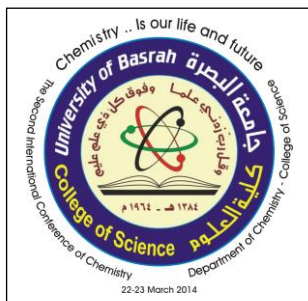
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### Abstract

This study include made new valve for flow injection analysis unit, it is enable to carry one substance, which is Berlant green in this unit . At 618 nm, the dye was determined by merging zone technique. This valve has very low cost. The optimum condition for this unit : flow rate of carrier, volume of sample , reproducibility, dead volume, dispersion coefficient and calibration curve for both methods flow injection analysis and spectrophotometry were studied.They founded : 5 ml/min, 175  $\mu$ l, high reproducibility for six times, zero dead volume and 1.3 respectively. The range of aniline blue concentration by flow injection analysis was 0.05-8 ppm and detection limit 0.05 with  $R^2= 0.9779$  and 0.1-8 ppm for spectrophotometric method with  $R^2=0.9947$  with detection limit 0.1.



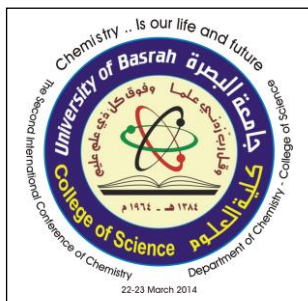
## Wet commixing synthesis, physical properties, and photocatlytic activity of nickel oxide chromate spinel

*Nada Y. Fairouz    Alaa R. Imran*

*Department of Chemistry, College of Science, University of Babylon*

### Abstract

Homogeneous crystalline Nickel oxide chromite spinels ( $\text{NiCr}_2\text{O}_4$ ) was prepared by wet commixing method containing the respective chromium hexavelent oxide  $\text{CrO}_3$  and nickel oxide then calenciation at  $700\text{C}^\circ$  for 6h . The crystalline structure of the synthesized chromite products were analyzed by X-ray diffraction (XRD) and FTIR. XRD powder diffraction data of specimens revealed the formation of a well-crystallized spinel structure of Nickel oxide chromite after calcination at 700C. The physical properties such as Density of catalyst was calculated. the photocatalytic activity of nickel oxide chromate ( $\text{NiCr}_2\text{O}_4$ ) was tested the this steady by used herpicide paraquat dichloride.



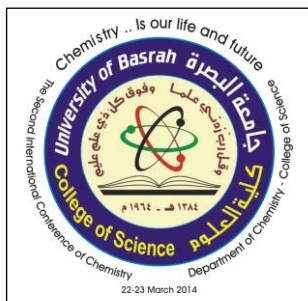
## Applications of quantum dots QDs in biological and clinical Studies

*Salim Albukhaty*

*Department of Biology, College of Science, Misan University, Misan, Iraq.  
E-mail: Albukhaty.salim@gmail.com*

### Abstract

Quantum dots QDs are a new class of fluorescent semiconductor nanoparticles provide bright, stable, and fluorescence properties for use in biological labeling applications. recent publications have been described luminescent semiconductor Quantum dots QDs consisting of a cadmium selenide core and zinc sulfide or cadmium sulfide shell as biocompatible nano-conjugates for protein and cellular labeling), as well as in enabling applications single-receptor trafficking, clinical pathology, correlative microscopy. We provide a brief overview of Quantum dots -based strategies for Biological and Clinical Studies.



## The effect of titanium precursor on the performance of Fe/TiO<sub>2</sub> supported zeolite Y for the decolorization of amaranth: Characterization and reusability study

*Atheel H. Alwash*<sup>1,2\*</sup>      *Ahmad Z. Abdullah*<sup>1</sup>

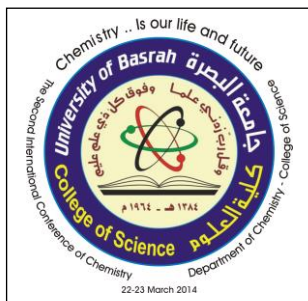
<sup>1</sup>*School of Chemical Engineering, Universiti Sains Malaysia, Penang, Malaysia*

<sup>2</sup>*Department of Chemistry, College of Science, Al-Nahrain University, Baghdad, Iraq*

\*Email: [atheel\\_eng78@yahoo.com](mailto:atheel_eng78@yahoo.com)

### Abstract

The Zeolite Y as a support was modified by the incorporating of Fe and TiO<sub>2</sub> in one single step using impregnation method. Two different types of titanium precursor i.e. potassium titanium oxalate and tetrabutyl orthotitanate were used to investigate the characteristics and catalytic performance of Fe-TiO<sub>2</sub> supported zeolite. The activity of the catalyst was tested for the degradation of amaranth dye under ultrasonic irradiation with output power of 50 W and 40 kHz frequency. Different characterization techniques were used to elucidate the physical and chemical properties of the produced catalysts. The XRD results indicated that the type of titanium precursor significantly effects on the crystallinity of the produced catalysts. The AFM results detected a drastic reductions in the roughness of the catalyst synthesized using potassium titanium oxalate compared to the catalyst synthesized using tetrabutyl orthotitanate as titanium precursor. The reusability and stability of the produced catalysts were investigated after three consecutive cycles. The results revealed that the catalyst synthesized using tetrabutyl orthotitanate was able to keep its high efficiency with minor drop in catalytic activity to about 90% compared to that using potassium titanium oxalate with catalytic activity of 24% after three consecutive cycles.



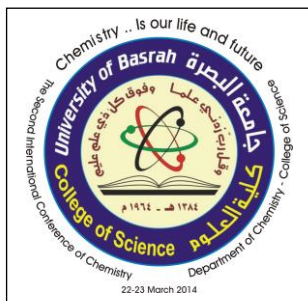
## Role of organic constituents and iron in the sorption of oxytetracycline on river sediments

*Mahmood M. Barbooti*

*Department of Applied Sciences, University of Technology, P.O. Box 18310, Baghdad, Iraq*

### Abstract

Among the many human and veterinary antibiotics, oxytetracycline, OTC, is widely used and the metabolism studies indicated only partial assimilation inside the body. The traditional wastewater treatment plants cannot remove OTC. This results in the release of considerable amounts of the drug into the aquatic environment. Much concern is paid for the role of the residual antibiotics in the development of new generation of bacteria with modified resistance to the antibiotics. The present work is an investigation of the possibility of the sorption of OTC on river sediments. Seven sediment samples were used from Passaic River in New Jersey taken from various locations and Depths. In addition to the texture analysis, the sediments were analyzed for their extractable iron content and the organic matter content. Pyrolysis-gas chromatography/mass spectrometric analysis indicated the presence of three categories of organic materials: petroleum hydrocarbons, anthropogenic and plant residual materials. The sediment samples were equilibrated with OTC solutions for 24 hrs followed by centrifugation and microsyringe filtration. The residual OTC contents were determined by UV spectral absorption at 360 nm. It appeared that 35-60% fractions of OTC were retained by the sediments. The sorption capacity values of the sediments were correlated with clay content, organic matter content and the available iron. Poor correlation was found with the clay content indicating that clay is not the dominant sorbent. Meanwhile, strong correlation of the adsorption capacity with the iron and organic matter contents of the sediments. It was concluded that the antibiotic-sediment interaction is mainly controlled by the non-hydrocarbon organic matter and iron.



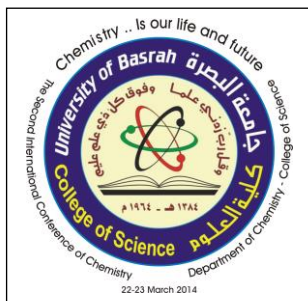
## Preparation and mesomorphic characterization of supramolecular hydrogen bonded dimer liquid crystals

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*Department of Chemistry, College of Science, Misan University, Misan, Iraq;  
E-Mail: [alimos09@yahoo.com](mailto:alimos09@yahoo.com);*

### Abstract

A new two series of hydrogen bonding liquid crystal dimers, the first symmetric liquid crystal dimers having two alkoxy terminal chain and the second having tetraalkoxy terminal chain have been prepared and their self - assemble behavior and structure-property relationship have been studied through intermolecular complementary hydrogen bond formation. Their structures were elucidated using spectroscopic techniques such as FTIR, <sup>1</sup>H-NMR , <sup>13</sup>C-NMR, X-ray diffraction (XRD) and elemental analysis. The mesophases and their corresponding transition temperatures were identified by differential scanning calorimetric measurements (DSC) and polarized optical microscope (POM), which shows typical optical textures of prepared compounds.



## Vitamin D deficiency and hypertension in diabetes mellitus

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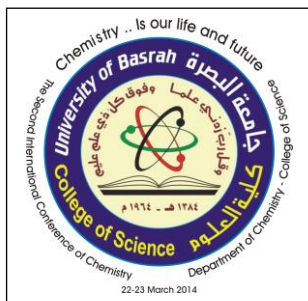
<sup>2</sup>Department of Biology, College of Science, University of Kerbala / Kerbala-Iraq.  
E. mail : [salymhamed@yahoo.com](mailto:salymhamed@yahoo.com).

### Abstract

25(OH) Vitamin D is the circulating form of vitamin D which is measurable in the blood. Vitamin D insufficiency has been defined as serum 25-hydroxyvitamin D (25-(OH) Vit. D3) levels below 30 ng/mL and it common among patients with type 2 diabetes mellitus (DM). Laboratory studies indicate that 1,25-dihydroxyvitamin D suppresses renin expression and vascular smooth muscle cell proliferation; ,suggesting that low concentrations of this micronutrient demonstrate an inverse association between vitamin D synthesis ,and blood pressure.

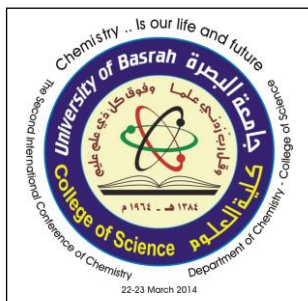
This study aimed to find the correlation between serum 25-(OH) D levels and risk of incident hypertensionand the association between predicted plasma 25(OH)D levels and lipid profile with the body mass index and glucose concentration in patients with type II diabetes mellitus (T2DM).

A total of 90 subjects (43 males and 47 female) used in this study were randomly selected from the patients with T2DM attending the Diabetic Consultation Unit in Al-Hussein Teaching Hospital / Kerbala – Iraq between Nov., 2012 to April, 2013 with age ranged between (23-75) years and their BMI is  $\geq 30$  kg/m<sup>2</sup>. Forty apparently healthy subjects were used as a control group with the same age range which was divided into two subgroups (obese , n=20 and non-obese, n=20) depending on BMI. Blood pressure were calculated in all samples. A fasting blood sample were used for the measurement of 25-(OH) D, glucose, triglyceride, total cholesterol and HDL-cholesterol levels.



The results obtained show that serum 25-(-OH) D was significantly decreased in obese diabetic with hypertension ( $16.8 \pm 9.8\text{ng/ml}$ ) as compared with control group ( $36.0 \pm 9.4 \text{ ng/ml}$ ) ( $P < 0.001$ ). Also 25-(-OH) D was moderately decrease in obese control samples and reached to  $34.8 \pm 9.2 \text{ ng/ml}$  as compared to that found in non-obese control group. It was observed that 25-(-OH) D was negatively correlated with hypertension, fasting glucose, triglycerides and BMI. 25-(-OH) D was positively significantly correlated with HDL-cholesterol in obese diabetic patients, obese control, non-obese control ( $r=0.602$  ,  $0.785$  ,  $0.712$ ) respectively ( $p=0.001$ ) and negatively correlated ( $p=0.001$ ) with BMI , systolic B.P , diastolic B.P , and blood glucose in T2DM patient ( $r= -0.360$ ,  $-0.514$  ,  $-0.382$  ,  $-0.560$ ) respectively. Several epidemiologic and clinical studies have suggested an association between vitamin D deficiency and cardiovascular risk factors (eg, hypertension, obesity and DMT2) . Intriguingly, vitamin D and its analogs act as a negative endocrine regulator of the renin-angiotensin system and increase B.P. It has also been suggested that vitamin D may play an active role in obesity and a potential explanation for such associations may relate to vitamin D sequestration in adipose tissue .Subsequently, decrease vitamin D this deficiency leads to poor secretion of insulin from pancreatic cells and increase the resistance of the body's cells to insulin ,which means inversely associated with diabetes and obesity. Serum 25-(-OH) D levels obtained suggested that clinical trials should be undertaken to assess the impact of increasing vitamin D intake as the metabolic syndrome risk factor in Diatic patients with hypertension.





## Adsorption of safranin-O dye from industrial waste water on the activated carbon of rice husk

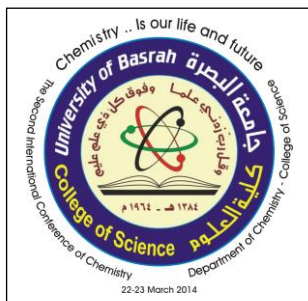
*Dakhil N. Taha\**   *Luma A. Mohammed*   *Ahmed S. Farhood*   *Haneen T. Ali*

*Department of Chemistry, University of Babylon, Babylon, Iraq*

\*E-mail: [dakhilfia@yahoo.com](mailto:dakhilfia@yahoo.com)

### Abstract

The study of activated rice husk carbon as a low cost sorbent for removing dye has drawn attention of various researchers working in this field. In the present work, rice husk carbon (RHC) in the form of powder was investigated for removing dyes taking Safranin-O as a model system. The adsorbent was made from pistachio shells procured from north of Iraq and was investigated under variable system parameters such as dose of adsorbent, pH, initial dye concentration, particle size and agitation time. An amount of 1 g/l of (RHC) could remove 98.13 % of the dye from an aqueous solution of 50 ppm with the agitation time 150 min. The well known Langmuir and Freundlich isotherm models were applied for the equilibrium adsorption data and the various isotherm parameters were evaluated. The results indicate that activated rice husk could be employed as a low cost alternative to commercial activated carbon in wastewater treatment for the removal of color and dyes.



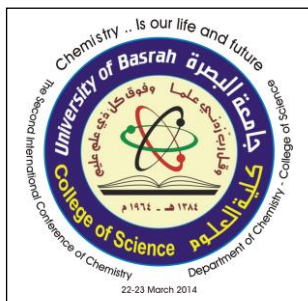
## Effect of alkaloid compounds of leaves extractes from *Mentha longifolia* and *Mentha spicata* on sex hormones level of female rats.

**Khalid G. Al-Fartosi, Eman A. Al-Rekabi**

*Department of Biology, College of Science, University of Thi-Qar, Iraq.*

### Abstract

The present work aimed to study the effect of alkaloid compounds of *Mentha spicata* and *Mentha longifolia* on sex hormones level which including follicle-stimulating hormone (FSH), luteinizing hormone(LH), estrogen and progesterone in female rats. Two doses (200 and 400 mg/kg) from each plant were used and the animals were injected intraperitoneally for 30 days as one dose/day. The results indicated that alkaloid extractes of *M. spicata* and *M. longifolia* caused a significant decrease ( $P < 0.05$ ) in plasma (FSH), (LH), estrogene and progesterone when compared with control group which treated with normal saline.



## End Group Analyses and Thermal Gravimetric Study of Different Ethylene Glycol-Sebacic Acid Polymers

*Mahir A. Jalal*

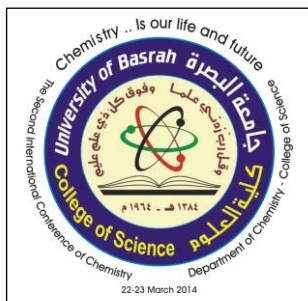
*H. Al-Lami\**

Department of Chemistry, College of Science, University of Basrah, Basra-Iraq

\*Corresponding Author E. mail: hadisalman54@yahoo.com

### Abstract

Different ethylene glycol-sebacic acid polymers having carboxylic acid end groups were prepared by condensation polymerization using ethylene glycol, diethylene glycol and poly(ethylene glycol) having different molecular weight with freshly prepared poly(sebacic anhydride) as monomers. All the prepared polymers were purified, characterized by infrared spectroscopy. Their molecular weights were determined by end-group analysis which revealed that they are of limited and controlled molecular weight. This was reflected on their thermal stability and thermal degradation studied by thermal gravimetric analysis.



## The Effect of phenolic compounds on the activity of partially purified IAA-Oxidase from Mung bean (*Phaseolus aureus* Roxb.) cuttings

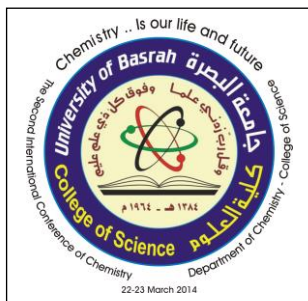
Oda M. Yasser<sup>1</sup>    Abdullah I. Shaheed<sup>2</sup>    Marwa S. M. Kheider<sup>1</sup>

<sup>1</sup>University of Babylon, College of Science, Department of Chemistry.

<sup>2</sup>University of Babylon, College of Science, Department of Biology.  
Marwas48@yahoo.com

### Abstract

An investigation was conducted to evaluate the IAA-Oxidase enzyme in control treatments of the parts of Mung bean cuttings taken from 10-day-old seedlings grown in boric acid (5µg/ml). The parts included Leaves, Hypocotyls and Roots then the maximum activity was concentrated in the crude extracts of Hypocotyls and equaled to (0.435µg IAA oxidized.min<sup>-1</sup>.g<sup>-1</sup>). The enzyme was purified in two steps including precipitation by ammonium sulfate with 100% saturation followed by size exclusion chromatography on Sephadex-G-50 column which showed (43) as fold of purification, (74.4%) as enzymatic yield and Specific activity (69.66 unit/mg). Thereafter, the purified parts of the enzyme IAA-Oxidase *In Vitro* reacted with the following phenolic compounds (*O*-coumaric acid, *P*-coumaric acid, Caffeic acid) with Specific activities for the enzyme (68.06, 67.26, 65.94 µg IAA oxidized mg<sup>-1</sup> protein min<sup>-1</sup>) respectively. The effect of phenolic compounds previously mentioned on the activity of IAA-Oxidase in different parts and physiological periods on cuttings taken from 10-day-old seedlings grown in Boric acid (5µg/ml) was evaluated that the phenolic compounds applied to the cuttings at their optimal concentration (10<sup>-3</sup>M) and each of them alone with simultaneous application with plant hormone IAA at its optimal concentration (5×10<sup>-4</sup> M).



## **Prevalence of hepatitis B, hepatitis C and human immunodeficiency virus infection among thalassemia patients in Nineveh governorate/Iraq**

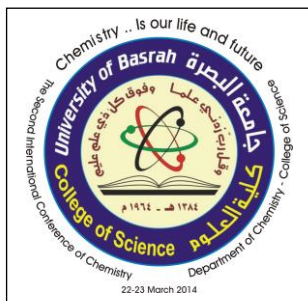
*Mohamad D. Khaled,*

*Ninava Health Directory , Ibn Al-Atheer Hospital*

*Email: [dawaj\\_2005@yahoo.com](mailto:dawaj_2005@yahoo.com) , mobil: 009647701786363*

### **Abstract**

Children suffering from beta thalassemia major, due to various genetic defects, have deficient synthesis of B globin Chain of hemoglobin, this lead to server anemia, general fatigue and debility asking from repeated or frequent blood transfusion, one the other hand repeated blood transfusion such expose them to dangerous infection such as Human Immunodefficiency virus (HIV), Hepatitis B virus (HBV), hepatitis C virus (HCV). Between march 2012 until May 2012, a total of 480 blood samples were collected from B thalassemia major patients attending thalassemia center in Ibn-Alatheer hospital in ninavha governorate. Out of 480 patients 273 (57%) males and 207 (43%) females. 50 out of 480 (10.4%) patients were found Anti- HCV positive, 44 out of 50 (88%) were found HCV RNA positive among Anti- HCV positive patients., 2 out of 480 (0.4%) were found HBSAg positive, and no any Case were reported from HIV positive among patients. We used (plasmatic kit Uk) for screening test for Anti- HCV, HBSAg and Anti- HIV 1 & 2, and used HCV RNA kit from sac ace Italy Company to quantities viral Load. The test done in PCR center in Ibn-Alatheer hospital, older age, more number of transfusion were associated with increased chance of the test to come positive suggestive of infection with respective virus, Completion of vaccination against HBV, Completely or partially, was associated with less chances getting infection with HBV.



## New design of stop flow injection unit for the determination of methyl dopa by merging zone method

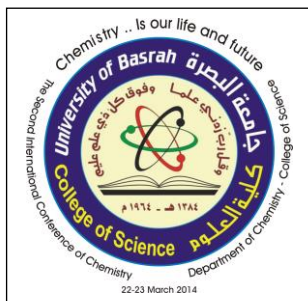
*Dakhil N. Taha\* and Ahmed Shaalan*

*Department of Chemistry, College of Science, Babylon University*

*\*E-mail: [Dakhilfia@yahoo.com](mailto:Dakhilfia@yahoo.com)*

### Abstract

The aim of this work was to design a new Stop flow injection analysis unit for the determination of methyl dopa through its reaction with iodide at  $\lambda_{\max} = 460$  nm by using charge transfer reactions and stop flow Technique. The method involves manufacturing a new valve from a cheap material which can be used in the chemical reactions. The optimum conditions for this unit which include, flow rate, sample volume, reagent volume, reagent concentration and reaction coil length. The method was applied successfully to the determination of methyl dopa in pharmaceutical compounds. Beer's law is obeyed concentration rang ( $10^{-3}$ - $10^{-4}$ M), correlation coefficient( $R^2$ ) was 0.9950.



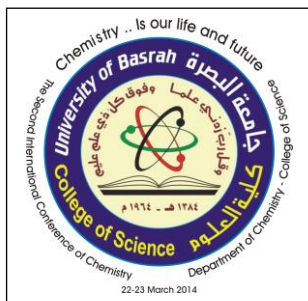
## Prevalence and severity of dental caries among 11- to 13-year-old Iraqi children consuming water and beverages with different concentrations of fluoride

*Mohammed H. Matloob*

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### Abstract

Fluoride has a crucial role in prevention of dental caries, and its deficiency may initiate some dental problems. Conversely, excessive exposure to fluoride may lead to a number of adverse effects, ranging from mild dental fluorosis to crippling skeletal fluorosis. As drinking water and beverages are usually the main source of fluoride intakes, then the level of fluoride in these sources could have a significant effect on the dental health of the individual. The aims of this study were: (1) to determine the fluoride content in bottled waters, fruit juices, carbonated soft drinks, non-alcoholic beers and 1% w/v tea infusion that were commonly consumed by Iraqis and (2) to correlate the average daily intake of fluoride by 11-13 year old Iraqi schoolchildren with dental caries, experience, prevalence and severity. This study was carried out in 2013 on 1183, 11-13 years old elementary school children, which were randomly selected in Babil, Iraq. Clinical examinations for caries were conducted by two examiners using WHO criteria. Several kinds of beverages of 132 commercial brands purchased from supermarkets and groceries stores were analyzed. The fluoride content of all samples was determined in triplicate, using a Fluoride Ion Selective Electrode. Data was analyzed using SPSS software, the Chi-square test and analysis of variance (ANOVA). The results indicated that the mean DMFT index (Decayed, Missing, or Filled Permanent Teeth) of 11-13 year old Iraqi schoolchildren was 1.68 and that the average fluoride content in drinking water and beverages (< 0.50 mg/L) was too low for caries prevention. This DMFT rate is relatively high and can be reduced further to achieve the World Health Organization aim of less than one in the Eastern Mediterranean Region. In order to improve the oral health status of young Iraqi people and to achieve the WHO goals for oral health, the Iraqi health authorities had to focus more care on the preventive oral health programme. One of the most recommended prevention techniques is water fluoridation. Water fluoridation is effective at reducing caries and has been hailed as one of the 10 greatest achievements in public health in the 20<sup>th</sup> century).



## Preparation and characteristic study of pure and Na<sub>2</sub>O doped NiO-ZnO catalyst

*Najla N. Hussein*<sup>1</sup>

*Salih H. Kadhim*<sup>2</sup>

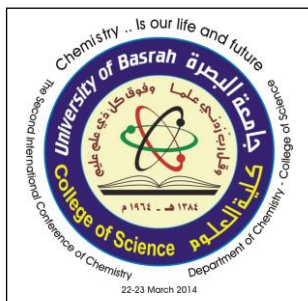
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<sup>2</sup>*Babylon University, College of Science, Department of Chemistry*

### Abstract

The catalyst NiO-ZnO was prepared in the ratio of 50:50 for the mixed oxides respectively, by using the coprecipitation method of their mixed bicarbonates, from their nitrates solution using 1M NaHCO<sub>3</sub> solution at pH constant, dried at 70°C and calcinations at temperature (600) °C for 4 hours. The doped mixed oxide were prepared by impregnating a with a solution containing different amounts of sodium nitrate (2%,4%,6% ,8% and 10%) then dried at 100°C, and added separately to a fixed quantity of zinc and nickel nitrates that dissolved in smallest amount of distill water sufficient to make paste. The paste were dried at 110°C and then calcined at 600°C for 4 hrs. In the series of doped catalysts, nickel and zinc content was fixed at 10:10 mass%, expressed as NiO and ZnO, while the amounts of sodium, expressed as Na<sub>2</sub>O. Surface and catalytic properties of the pure and doped catalyst were investigated using XRD techniques and wet impregnation method. The degree of crystallinity and crystallite size of the produced phase increased progressively as a function of calcinations temperature from 400 to 600°C, but decreased at 700 and 800 °C.





## Preparation and characterization of Ag-Cr<sub>2</sub>O<sub>3</sub> and using in decolorization of Congo red

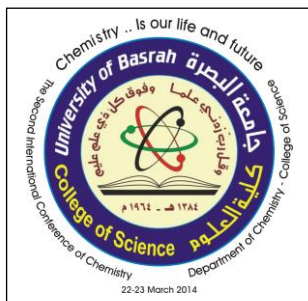
*Nada Y. Fairouz      Mohammed Z. Hassan*

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### Abstract

A photocatalyst (Ag-Cr<sub>2</sub>O<sub>3</sub>) was prepared by the co-precipitation method by mixing of two metal nitrate include of chromium(III) nitrate (Cr(NO<sub>3</sub>)<sub>3</sub>.9H<sub>2</sub>O) with silver nitrate (AgNO<sub>3</sub>) in different values and calcinated in different temperatures ( 400<sup>o</sup>c, 500<sup>o</sup>c & 700<sup>o</sup>c ) to choose the one that more (stable and formation) , and then determination of it 's effectiveness for the degradation of Congo red to optimize the best photo catalyst , it was (cat 3: Ag:Cr<sub>2</sub>O<sub>3</sub>) (40:60)% .

The characterization of the catalyst formation had been carried out by the XRD. And then some studies had been performed to optimize the optimum conditions of photocatalytic degradability: catalyst weight, initial concentration of Congo red solution.



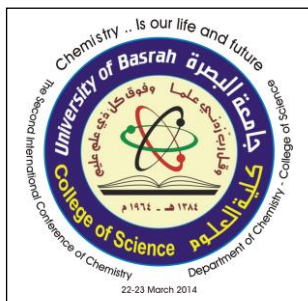
## Propanil degradation in aqueous solutions by Fenton's reagent and the photo-fenton system

*Khulood A. Al-saade    Hamdia H. Al- shmary*

*Baghdad University- College of Science*

### Abstract

The chemical degradation of pesticide propanil in water by Fenton ( $\text{H}_2\text{O}_2/\text{Fe}_2^+$ ) and photo-Fenton ( $\text{H}_2\text{O}_2/\text{Fe}_2^+/\text{UV}$ ) processes was investigated. A laboratory set-up was designed to evaluate and select the optimal oxidation process. The degradation rate is strongly dependent on the pH, initial concentrations of the pesticide,  $\text{H}_2\text{O}_2$  and temperature. The effect of these parameters has been studied and the optimum operational conditions of these two processes were found. The optimum conditions were obtained at pH 7 for the  $\text{H}_2\text{O}_2/\text{Fe}_2^+$  and  $\text{H}_2\text{O}_2/\text{Fe}_2^+/\text{UV}$ . The kinetics of degradation was found to follow first-order reaction rules. The photo-Fenton system proved to be the most efficient and occurs at a much higher oxidation rate than Fenton system and allows achieving 100% degradation of propanil in 180 min of reaction time. The results of the study showed that photo-Fenton process was an effective and economic treatment process for propanil under neutral conditions by producing higher mineralisation efficiency in a relatively short radiation time compared to Fenton process.



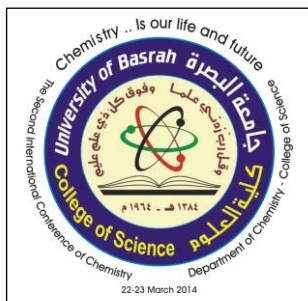
## Synthesis and characterization of new Schiff bases derived from 2-hydroxybenzaldehyde and amino acids and their vanadyl complexes

*Bushra A. Al-Salami    Amel H. Mohammed    Kahtan A. Askar*

*Department of Chemistry, College of Science, University of Basrah, Iraq*

### Abstract

New Schiff bases derived from 2-hydroxybenzaldehyde and amino acids were prepared via condensation reaction. These Schiff bases were used as ligands to form complexes with vanadyl ion. Both, the Schiff bases and their complexes were characterized by FT-IR, <sup>1</sup>H NMR, mass spectrometry and CHN elemental analysis. The analytical data showed that Schiff bases can act as bidentate ligand using their carboxylate oxygens forming 4-membered ring with the vanadyl ion, or tridentate ligand using the N-isomethine, O-phenolic and O-carboxylate forming 5- and 6-membered stable rings. The low molar conductances of the complexes indicate that they are non-electrolyte and neutral. The complexes were tested by microbial species such as *S. Aureus* and *E. Coli*. The results of the tests indicate that these complexes are more or less biological active than their own ligands.



## LDPE/ Plasticized starch blends containing EEA copolymer as compatibilizer

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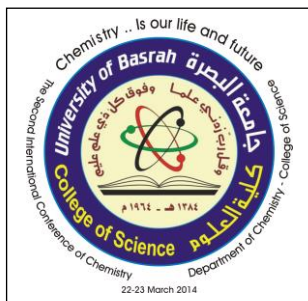
<sup>3</sup>State Company for Petrochemical Industry, Basra-Iraq

### Abstract

The blending of biodegradable polymers, (e.g. starch), with inert polymers, (e.g. polyethylene), has received considerable attention because of its possible applications in the waste disposal of plastics. Poor compatibility and the weak mechanical properties of blends led most previous studies to focus on compatibilization of the phases[1]. Almost all reported compatibilizers have block copolymers consisting of at least two blocks, One block has similar structure to starch, and another one similar to polyethylene[2]. In this study, the melt blend, of low-density polyethylene (LDPE) and starch was prepared, by adding ethylene-ethyl acrylate copolymer (EEA) as compatibilizer and glycerol as plasticizer. The low-density polyethylene LDPE grade 463( melt flow index was 0.32 g/10 min and density 0.921 gm/cm<sup>3</sup>), unmodified commercial grade starch (plasticized with 10 wt% glycerol (flucka)), and ethylene-ethyl acrylate copolymer (18 wt% ethyl acrylate and with an average molecular weight of about 18,000 (BDH)) were used. The rheological behaviors of LDPE/ starch blends were examined by a capillary Rheometer at different temperatures (150, 160,170, and 180°C) in different shear rates (5.43, 18.1, 54.3, 181, 543and 1810<sup>s<sup>-1</sup></sup>). The melt of all blends are pseudoplastic in nature. Addition of EEA to LDPE/starch blend formed hydrogen bonds among carbonyl groups in it and hydroxyl groups in starch, Also, ethylene groups(inert and hydrophobic groups) led to increase intermolecular forces and, consequently, the melt blend viscosity increased. The effects of compatibilizer content on the activation energy for all blends flow were also investigated.

### References

- 1- Leszek A. Utracki "Compatibilization of Polymer Blends", *the Canadian journal of chemical Engineering* , 80, 1008-1016, **2002**.
- 2- Qin Yin, Aiqin Dong, Jinling Wang, and Yeping Yin, *Polymer Composites*, 29:745–749, **2008**.



## Determination of some heavy metals in samples of Iraqi Crude Oil in Nasiriya Refinery by Atomic Absorbance Spectrometry (AAS)

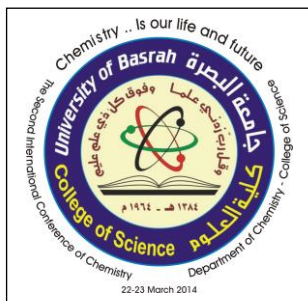
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Email : [mischetry@hotmail.com](mailto:mischetry@hotmail.com) 07802372876*

### Abstract

In the present work, an Atomic Absorbance Spectrometry AAS method was used for trace-level determination of five analytes (Ni, V, Fe, Pb and Cu) in Iraqi crude oil of Nasiriya Refinery, as well as some physical properties as viscosity, density, Ash content wt%, Carbon residue wt% and water, salt, sulfur content% were determined. Range concentration of heavy metal can be cleared by the series  $V > Ni > Fe > Pb > Cu$ .

The present study has shown that high levels of heavy metals in oil refinery compared with previous findings conducted on a crude oil in Iraq and other countries. High levels of V and Ni attributed to geochemical effects on the elemental distribution in a case study whereas the levels of other elements attributed to salt, water, sulfur content % of the crude oil. The study recommended to possible using of high levels of heavy metals in oil in scientific and industrial purposes as well as removal these metals contribute in reducing of contaminations problems.



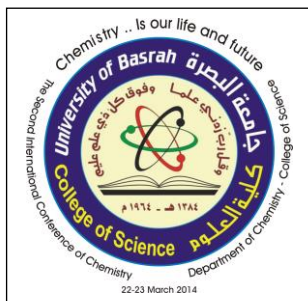
## Synthesis and characterization of some dimeric Schiff base and study activity as photostabilizer for low density polyethylene

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### Abstract

Six new compounds from  $\alpha,\omega$  - bis (p-x-aniline benzilidene-4-oxy) Octamethane; where x = H , Cl , Br , Me , OMe and NO<sub>2</sub> . have been prepared and characterized by CHN elemental analysis, UV , <sup>1</sup>H-NMR and IR . The geometrical optimization for the above dimeric compounds is carried out in order to find out the most stable stereo chemical by using PM3 method. The photo chemical efficiency of prepared dimeric compound for low density polyethylene as compared with standard photo stabilizer (BHT) was carried out.



## Effect of emitted radiation from mobile phones and mobile phone base stations on some biochemical parameters in human red blood cells

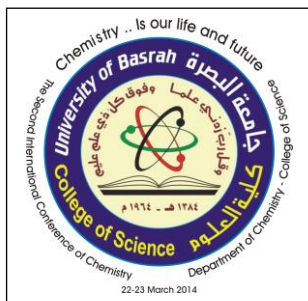
*Hathama R. Hasan*<sup>1</sup> *Ali. H. Issmer*<sup>2</sup>

<sup>1</sup> *Department of Chemistry, College of Science, University of Baghdad, Baghdad, Iraq.*

<sup>2</sup> *Marshes Research Center, University of Thi-Qar, Thi-Qar, Iraq.*

### Abstract

The effects of radiation emitted from mobile phones (MP) on humans are an emerging area of investigation. . Therefore, the purpose of this study was to investigate the effect of microwave/radiofrequency emitted from mobile phones and its possible induced oxidative damage in human body. & in order to achieve this aim it was devoted on measurement of total protein concentration, superoxide dismutase (SOD) activity, as well as the concentration of nitric oxide (NO), and peroxynitrite (ONOO) in human red blood cells (RBCs) samples. These samples were collected from 87 healthy volunteers, who were classified into three groups: - Group T (36 volunteers) who reside, at least for three years, nearby MP base- station (within 100 m around). Group M (23 volunteers) were using commercially available MP heavily (1-5 hours daily for not less than one year), and the third group was the control group (28 volunteers) who reside faraway from base- station and were using of mobile phone daily for less than , or equal to 10 minutes. Upon comparison of the above mentioned measured biochemical parameters in group T with that of control group, the results showed presence of a highly significant increase in total protein concentration ( $p = 0.002$ ), SOD activity ( $p=0.02$ ), NO concentration ( $p = 1 \times 10^{-10}$ ) and in ONOO concentration ( $p = 1 \times 10^{-4}$ ). On the other hand, the results indicated non-significant differences protein concentration ( $p= 0.2$ ) and SOD activity ( $p= 0.7$ ) , but a highly significant increase in both nitric oxide and peroxynitrite concentrations ( $p= 4 \times 10^{-4}$  ,  $p= 9 \times 10^{-4}$  respectively) in red blood cells of group M ,in comparison with that of control group, Our results coveys that the long exposure to emitted radiation from base station and the heavy use of MP at domestic level can have negative impact on human health.



## A mobile–phone as novel detector for flow injection chemiluminescence system

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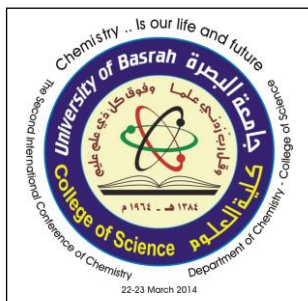
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### Abstract

A mobile phone with suitable software was used for first time in Basrah University as a detector for Chemiluminescence dB (decibel) sound intensity . A sim-automated home-made Flow injection Chemiluminescence system was the constructed and build – up to measure the Chemiluminescence dB sound intensity intensity generated from the reaction of Hydrogen peroxide with luminol. As base line- study was carry out for determination of Hydrogen peroxide with a linearity up to 250  $\mu\text{M}$  .





## Ferrocene as accelerator in free radical polymerization of methyl methacrylate

*Ulla K. Al-Khalidi*

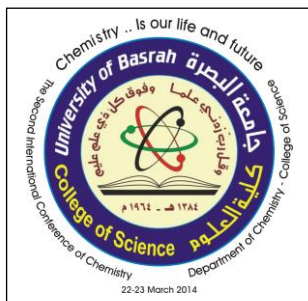
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### Abstract

Bulk free radical polymerization of methyl methacrylate monomer at certain time of reaction is described. It was initiated with dibenzoyl peroxide at 60°C. The decomposition of which to the reactive radicals is accelerated by different concentration of ferrocene. The mass of PMMA produced gave an indication of increasing of %conversion of methyl methacrylate monomer to its corresponding homopolymer. At the same time, it was in a good agreement with the values of viscosity average molecular weight measurements.



## Preparation of semi-IPNs for removal of some heavy metal ions

*Noor Dia Al-Mosawi*

*Athir Haddad*

*Niran Al-Salihi*

*Department of Chemistry,, College of Science, University of Basrah-Iraq*

### Abstract

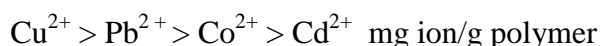
The new semi-IPNs hydrogels were prepared as following :-

1. Three polymeric composites from carboxy methyl cellulose(CMC) and cross-linked poly acryl amide with bisacrylamide as crossliker using Redox Polymerization.
2. Three polymeric composites from poly anionic cellulose(PAC) and cross-linked poly acryl amide with bisacrylamide as crossliker by using Redox Polymerization.

The analytical efficiency of these semi-IPNs hydrogels was studied using batch system. The effect of time and pH on the loading capacity was studied. The results showed that the loading capacity of all semi-IPNs hydrogels was increased with the increase of treatment time and also with the increase of pH. The loading capacity was increased with the increase of carboxy methyl cellulose or poly anionic cellulose content in the polymeric composite and it was in the order of :-

$$(2:1) > (1:1) > (1:2)$$

The order of the maximum loading capacity toward the used ions was:-



## Synthesis new pyrimidine derivative analogues as anti-kinesin Eg5 Inhibitory

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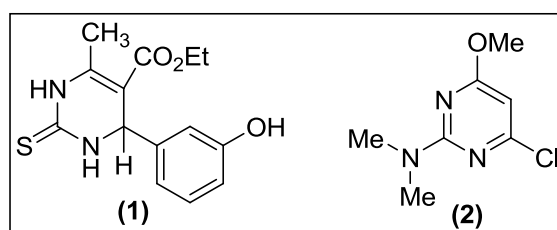
<sup>1</sup>Department of Chemistry, College of Science, University of Babylon, Babylon, Iraq

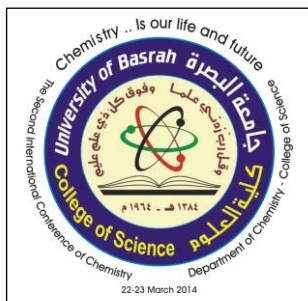
<sup>2</sup>Department of Chemistry, College of Science, University of Basrah, Basrah, Iraq

\*Corresponding author E-mail: [nathernajim@yahoo.com](mailto:nathernajim@yahoo.com)

### Abstract

The inhibition of kinesin Eg5 by small molecules such as Monastrol (1) is encouraged us to synthesis new structural models of pyrimidine analogues (2) 4-chloro-6-methoxy-*N,N*-dimethylpyrimidin-2-amine), via Suzuki cross-coupling reaction confirmed by <sup>1</sup>H-NMR, <sup>13</sup>C-NMR and HSQC-NMR, related to Monastrol and evaluation their kinesin Eg5 inhibitory, as an approach to develop a novel class of anti-proliferative drugs for the treatment of malignant tumors.





## Cloud point extraction, preconcentration and spectrophotometric determination of Nickel and Cadmium ions

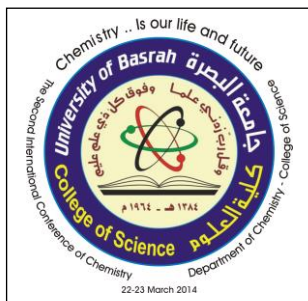
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*Department of Chemistry, College of Science, Tikrit University, Tikrit, Iraq*

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### Abstract

A simple, sensitive, rapid, and versatile cloud-point extraction (CPE) methodology has been improved for the preconcentration and determination nickel and cadmium ions. The proposed method based on forming complexes with newly synthesized 6-(2-nitroaniline azo)-2-methyl-8-hydroxyquinoline [6(2NAA2M8HQ)] as chelating agent to form hydrophobic complexes and Triton X-114 was selected as surfactant. The analyte was quantitatively extracted into the surfactant - rich phase and subsequently separated from the bulk aqueous phase by centrifugation and diluted with Ethanol and determined by UV/Visible spectrophotometry. The variables affecting the cloud point extraction such as pH, reagent concentration, surfactant concentration, equilibrium temperature, and time were optimized. The detection limit is  $0.062 \mu\text{g ml}^{-1}$  for nickel, and  $0.047 \mu\text{g ml}^{-1}$  for cadmium; the relative standard deviation for six replicate measurement is 0.84% , 1.04 % for nickel and cadmium respectively. The proposed method was successfully applied to determination of nickel and cadmium ions in rice samples available in Iraqi market.



## **In vitro release studies and stability of insulin in hydrogels polymers as oral drug delivery dystems**

***Eman Al-tamemi<sup>1</sup> Aula Al-Wattar<sup>1</sup> Auday Al-sawad<sup>2</sup> Iqbal Al-asadi<sup>1</sup> Athir Haddad<sup>1</sup>***

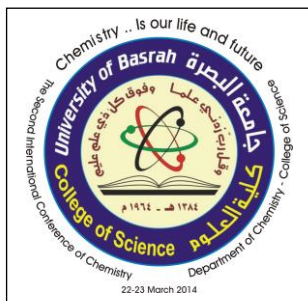
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<sup>2</sup> *College of Pharmacology, University of Basrah*

### **Abstract**

The crosslinked poly (acrylamide) and their semi-interpenetrating networks (IPNs) with poly(ethylene glycol 4000) and with poly vinyl alcohol and copolymeric material from acryl amide with methylmethacrylate were prepared by redox polymerization. The hydrogels were characterized by infra - red spectrophotometric and by measuring their swelling ratio and scanning electron microscopy. The effect of pH on the swelling ratio was studied. The polymeric IPNs which loaded by Insulin ( 50 units ) and coating with one layer of crosslinked hydroxyl ethyl cellulose by Dip coating process. The slow release of insulin was studied by using U.V. technique at (271nm) at constant temperature (37°C) in simulated gastric fluid (SGF) , simulated intestinal fluid (SIF) and distilled water.

\*The full paper was sending to published in Arab Journal of Chemistry , 2014



## Preparation of polyelectrolyte hydrogels as semi-IPNs and Study their Controlled Release of Gabapentin

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### Abstract

Fifty one polymeric composites (Z1-Z51) as semi interpenetrating network hydrogels were prepared depend on sodium alginate with linear copoly(acrylamide-co-diallyldimethylammoniumchloride) which still soluble in water ,then mixed with the acrylamide and bisacrylamide as crosslinking agent and polymerized via redox polymerization to form the semi-IPNs. All prepared semi-IPNs were loaded with three different amounts from Gabapentin as drug model. The swelling characteristics were studied for all semi- IPN hydrogels by determining the swelling ratio (Q), it is found between (67-1785) % depending on components quantities and environments. The results showed also that the semi-IPNs containing acrylamide has highly swelling ratio as compared with semi-IPNs containing gelatin in distilled water and alkaline medium but less swelling ratio in the acidic medium specially with sodium alginate . The exterior surface morphology to some dry and swollen prepared hydrogels were studied by using scanning electron microscopy (SEM) .It was found that the hydrogel in the swelling state have average large pore size (10.72-294.2  $\mu\text{m}$ ). The slow release of Gabapentin was studied by using U.V. technique at (282nm) at constant temperature (37°C) in simulated gastric fluid (SGF) , simulated intestinal fluid (SIF) and distilled water. The results of Gabapentin released indicate that all semi-IPNs have the ability to release to environment and the amount of Gabapentin released about 50% during two hours.

## Synthesis and biological studies of some sulphur, selenium and tellurium organic compounds based on diethanolamin

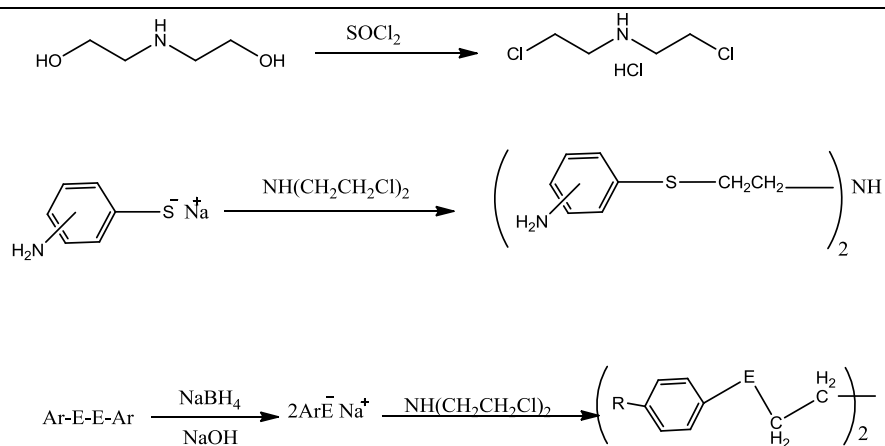
Ali Z. Al-Rubaie<sup>1</sup> Shaker A. S. Al-Jadaan<sup>2</sup> Salah M. Khadum<sup>2</sup> Eman T. Ali<sup>2</sup>  
Suha M. Ali Ali K. Suad<sup>2</sup> Hussien K. Abdul-Sada<sup>2</sup> Eman A. Saeed<sup>2</sup>

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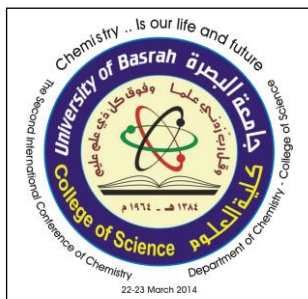
### Abstract

Several bis(2-(arylchalcogeno)ethyl)amines (i.e.  $\text{HN}(\text{CH}_2\text{CH}_2\text{EAr})_2$ ; where E= S, Se or Te, Ar =  $\text{C}_6\text{H}_5$ , 4- $\text{CH}_3\text{C}_6\text{H}_4$ , 4- $\text{CH}_3\text{OC}_6\text{H}_4$ , 4- $\text{CH}_3\text{CH}_2\text{OC}_6\text{H}_4$ , 4- $\text{BrC}_6\text{H}_4$ , 4- $\text{ClC}_6\text{H}_4$ , 4- $\text{PhC}_6\text{H}_4$ , 4- $\text{NH}_2\text{C}_6\text{H}_4$  and 2- $\text{NH}_2\text{C}_6\text{H}_4$ ) were prepared by the reaction of bis(chloroethyl)amine with the corresponding sodium arylchalcogenate (generated *in situ* by borohydride reduction of  $\text{R}_2\text{Ee}_2$ ; i.e.  $\text{ArE}^-\text{Na}^+$ ; E= Se and Te). All compounds were obtained in good yield and were characterized by elemental analysis, IR, <sup>1</sup>H and <sup>13</sup>C NMR and mass spectroscopic data. Antibacterial activity study of these compounds showed some promising activity against some bacteria.



E= Se, Te; R= H, 4- $\text{CH}_3$ , 4- $\text{CH}_3\text{O}$ , 4- $\text{C}_2\text{H}_5\text{O}$ , 4- $\text{Br}$ , 4- $\text{Cl}$ , 4- $\text{Ph}$ , 4- $\text{NH}_2$ , 2- $\text{NH}_2$

Scheme 1. Preparative methods for compounds 1-18.



**The audio frequency conductance and thermodynamic studies of  
some metal glutarate salts in aqueous medium at different  
temperatures  
(Part I: Magnesium, Manganese (II), Barium and Copper glutarates)**

*Ibtighaa K. Radhi      Anis A. AL-Najar\**

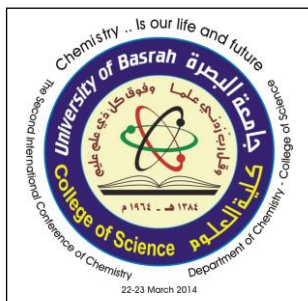
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**Abstract**

The audio frequency conductances of aqueous solutions of magnesium, manganese (II), barium, and copper glutarates have been measured at various temperatures in the range 298.15 to 313.15 K , using an audio frequency conductance bridge. These salts were prepared by two methods electrochemical method and, for the first time and chemical method. The evaluation of conductance data was carried out by minimization technique using the theoretical conductance equations of the complete and modified forms of Pitts (P) and Fuoss-Hsia (F-H), each a three parameter equation, association constant (KA), molar conductance( $\Lambda_0$ ) and distance parameter (**a**). Quantitative results showed that these salts do not behave as "strong" electrolytes, and that their dissociations are far from complete. The abnormally low conductances of these electrolytes are not attributed to the presence of electrically neutral molecules but to the ion-pair formation. The standard thermodynamic functions [i.e, the change in enthalpy ( $\Delta H^\circ$ ), entropy ( $\Delta S^\circ$ ) and free energy ( $\Delta G^\circ$ )] for the association reaction as well as the Walden product values at the four temperatures have been evaluated.





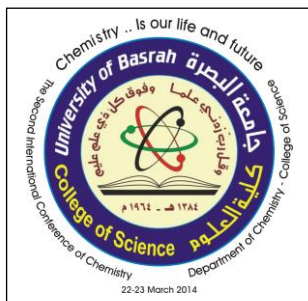
## Determination of selenium, magnesium and malondialdehyde (MDA) for ischemic heart disease patients

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### Abstract

One hundred and nineteen ischemic heart disease (unstable angina and myocardial infarction) patients (65 male and 54 female) aged between 40 to 85 years with a mean age of  $(61 \pm 11.27)$  were included in this study. The control group comprises one hundred twenty four healthy subjects (62 male and 62 female) aged between 30 to 60 years with a mean age of  $(36.37 \pm 7.72)$ . The present study were included the measurements of two essential elements (Selenium and Magnesium) and Malondialdehyde (MDA) for patients suffering from ischemic heart disease. The work results show low levels of (Se and Mg) in the whole blood and serum of patients  $(58.21 \pm 6.72)$  ng/ml,  $(15.47 \pm 0.53)$  ng/ml respectively as compared with the mean values for control group  $(83.87 \pm 6.53)$  ng/ml,  $(22.79 \pm 0.76)$   $\mu$ g/ml respectively with high significant differences ( $P < 0.001$ ) between controls and patients groups. The level of (MDA) for controls was  $(2.08 \pm 0.16)$  mmol/l and  $(6.86 \pm 0.80)$  mmol/l for patients.



## Synthesis of imidazolidine derivatives by three components reaction as a novel non-steroidal anti-inflammatory drugs

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### Abstract

There are many types of non-steroidal anti-inflammatory drugs (NSAID) act on one or more of cyclooxygenase enzymes (COX), there are at least three types of COX which is COX-1, COX-2, and COX-3. They are responsible of inflammation and pain. The new compounds has been achieved by Three component reaction by mixed of amino acid (L-tyrosine), triethoxymethane and glycine in acetic anhydride the mixture were refluxed to give (compound 1) 3-(4-hydroxy phenyl)-2-(1H-imidazolidine-4-one-3-yl) propanoic acid. In the same way, compounds 2, 3, 4, and 5 were prepared by using the following amino acids: L-asparagine, L-histidine, L-tryptophan and glycine respectively to give 3-carbamido-2-(1H-imidazolidine-4-one-3-yl) propanoic acid (compound 2), 3-(1H-imidazole-5-yl)-2-(1H-imidazolidine-4-one-3-yl) propanoic acid (compound 3), 3-(1H-indole-3-yl) -2-(1H-imidazolidine-4-one-3-yl) propanoic acid (compound 4) and 2-(1H-imidazolidine-4-one-3-yl) ethanoic acid (compound 5). Compounds were identified by CHNS analysis, FT-IR and <sup>1</sup>H NMR. The results certified the chemical structures of the compounds. The compounds were studied by two different tests the hot plate test and writhing test for analgesic activity, and two tests for anti-inflammatory activity they are formalin induced inflammation test and carrageenan induced inflammation test. The compounds were found out, has potent anti-inflammatory and anti-nociceptive activity. The compounds were tested to determined acute toxicity and found that they are safety up to dose 5 g/kg orally in mice without any mortality, and suitable for use as new non-steroidal anti-inflammatory drugs.

## A new cyclic telluride synthesis, ligand properties and antibacterial activity of 2-aminomethyl-1-telluracyclopentane

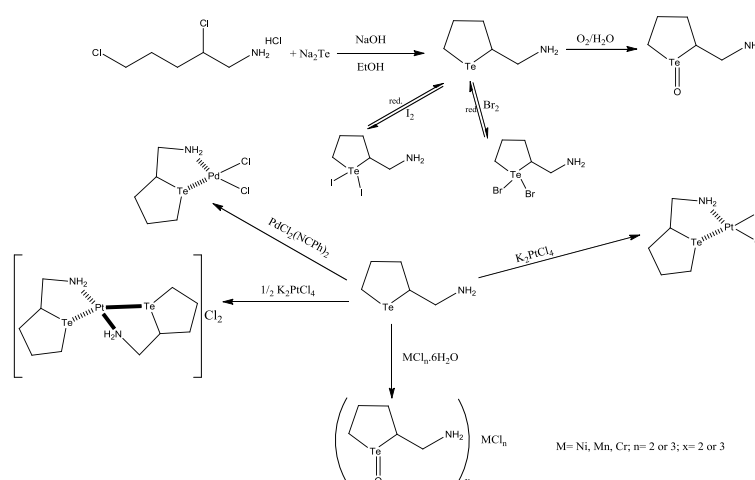
Ali Z. Al-Rubaie

Anwar T. Abdul-Wahed

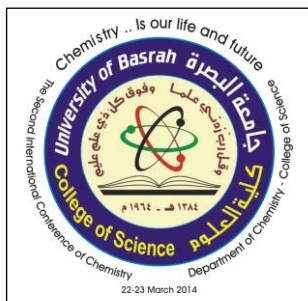
Department of Chemistry, College of Science, University of Basrah, Basrah, Iraq

### Abstract

2-Aminomethyl-1-telluracyclopentane(  $C_5H_9NTe$ , (**1**)) was prepared by the reaction of 2,5-dichloropentylamine hydrochloride with sodium telluride(prepared *in situ*) as a viscous oil with unpleasant odour in 65% yield. Reaction of  $C_5H_9NTe$  (**1**) with  $Br_2$  and  $I_2$  gave the corresponding 1,1-dibromo-(**2**) and 1,1-diiodo-2-aminomethyl-1-telluracyclopentane(**3**), respectively in good yield. Reaction of **1** with Cr(III), Mn(II) and Ni(II) salts gave complexes of the formula  $[CrCl_3.3C_5H_9NTeO]$ ,  $[MnCl_2.3C_5H_9NTeO]$  and  $NiCl_2.2C_5H_9NTeO$  in which the telluride converted into telluroxide. Pt(II) and Pd(II) of the formula  $[PdCl_2.C_5H_9NTe]$ ,  $[PtCl_2.C_5H_9NTe]$  and  $[PdCl_2.2C_5H_9NTe]Cl_2$ , were also prepared. The new ligand, its dihalo derivatives and metal complexes have been characterized by CHN analyses, molar conductivity, UV-Vis, FT-IR,  $^1H$  and  $^{13}C$  NMR spectral data. The biological activity of complexes  $[PtCl_2.C_5H_9NTe]$  and  $[PdCl_2.C_5H_9NTe]$  were studied and showed some promising biological activities against some bacteria.



Scheme 1: Preparative methods for preparation compounds.



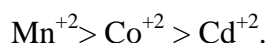
## Synthesis and characterization of some complexes based on Schiff-base compound and their copolymerization with phenol-formaldehyde resin

Noor M. Haddad      Widad S. Hanoosh      Niran J. Al-Salihi

*Department of Chemistry, College of Science, University of Basrah, Iraq*

### Abstract

Two complexes of Ni(II) and Cu (II) with Schiff-base compound based on o-amino benzoic acid and salisaldehyde have been synthesized through condensation reaction in acidic medium. These complexes were characterized by FTIR, UV-Visible and spot test methods, mole ratio and continuous variation methods were used to evaluate the chemical structure of these complexes. On the other hand polymerization technique are used to synthesis of co-polymers based on these complexes and phenol-formaldehyde resin through condensation polymerization. The chelation efficiency towards several ions were studied by batch system using (UV-Visible) techniques and the result of loading capacity was in the order



Finally thermal behavior of the prepared copolymers were investigated by TGA, DSC were taken from the TGA and DSC thermograms.



## The Audio Frequency Conductance and thermodynamic studies of Some Metal Glutarate salts in Aqueous Medium at Different Temperatures (Part II: Zinc, Nickel and Cobalt glutarates)

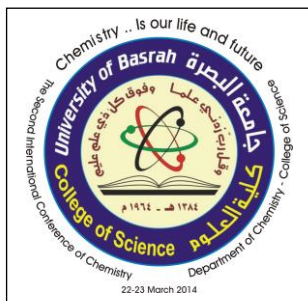
*Ibtighaa K. Radhi*      *Anis A. AL-Najar*\*

\**Department of Chemistry, College of Science, University of Basrah-Iraq*

*E. mail: anisalnajar@yahoo.com*

### Abstract

The electrical conductances at audio frequency of aqueous solutions of zinc, nickel and cobalt glutarates have been measured at four temperatures in the temperature range 298.15K to 313.15K. The limiting molar conductances ( $\Lambda_0$ ), association constants ( $K_A$ ) and the closest distances of approach ( $a$ ) were calculated using the complete and modified forms of Fouss-Hsia (F/H) and Pitts (P). Quantitative results showed that these salts do not behave as "strong" electrolytes, and that their dissociations are far from complete. The abnormally low conductances of these electrolytes are not due to the ion pair formation. The standard thermodynamic functions ( $\Delta H_0$ ,  $\Delta G_0$ ,  $\Delta S_0$ ) for association reactions as well as Walden product have been evaluated.



## Seasonal Variations of Heavy Metals in Water and Two Species of Molluscs in Al Hilla River, Iraq.

*Jasim M. Salman*\*<sup>1</sup> *A. Randall Hughes*<sup>2</sup> *Ayad M.J. Almamoori*<sup>1</sup>

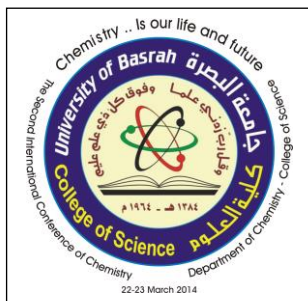
<sup>1</sup>*Department of Biology, College of Science, University of Babylon, Iraq.*

<sup>2</sup>*Marine & Coastal Lab., Florida State University, U.S.A*

\*E-mail: [jasimsalman67@yahoo.com](mailto:jasimsalman67@yahoo.com)

### Abstract

Seasonal variations of five heavy metals (Zn, Pb, Fe, Cu, Cd) in water and selected mollusks [ *Bellamya (Viviparus) bengalensis* & *Corbicula fluminea* ] have been conducted in Al-Hilla river for two sites from March 2011 to January 2012, dissolved and particulate heavy metals in water have recorded the highest concentration for Fe and Zn, and All measured metals followed this trend (Fe > Zn > Pb ≥ Cu > Cd), while in Molluscs, heavy metals showed fluctuation with most higher concentration in spring and summer season, according to statistical analysis, Close correlations were recorded between measured heavy metals in water and Molluscs species and water quality.



## Effect of bismaleimide on heat resistance of nitrile rubber composites

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<sup>1</sup>Department of Polymer and Composite Materials, College of Materials Engineering ,

<sup>2</sup> College of Science , Babylon University, Babylon, Iraq.

### Abstract

Nitrile rubber composites were prepared by the addition of asbestos and bismaleimide (BMI). The effect of asbestos and bismaleimide on thermal stability was studied. Both Thermogravimetric analysis (TGA) and dynamic mechanical analysis (DMA) reflect much better thermal stability for the prepared composites. TGA results showed an increase in onset temperature from 360 °C of pure NBR composite to 360.8 °C and 401.3 °C for NBR/Asbestos(100) and NBR/BMI(100) composites respectively. Tg of nitrile rubber increased from -5°C to 2.2°C and 12.2°C of NBR/Asbestos(100) and NBR/BMI(100) composites respectively. The work compares between asbestos and asbestos free nitrile rubber composites. Asbestos introduced as a high temperature filler but have a lot of environmental and health effects. Bismaleimide which is biocompatible proved to be a good replacement for asbestos for high temperature rubber composites.

## Synthesis of New Dimeric Nitrones as Antioxidant

*khanssa A. Al-Assdi    Ali H. Al-Mowali    Mohmed J. Al-Assdi*

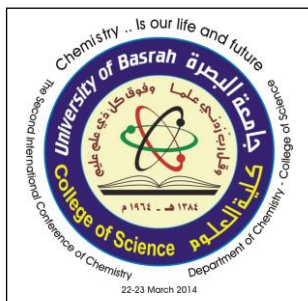
*Department of Chemistry, College of Science, University of Basrah-Iraq*

### Abstract

This research is concerned with measurement of the antioxidants efficiency of some new dimeric nitrones. Of bis(alkoxy phenyl) dinitrones were prepared and characterized by CHN analyses, FTIR, ultraviolet and nuclear magnetic resonance. The results obtained from the above mentioned analysis confirm the structure of the prepared compounds. The prepared dimeric nitrones EN1 and EN5 have been added to the fluff high density polyethylene in different concentrations (0.2, 0.4, 0.6 and 0.8) % wt. Thin films were made from the resultant mixtures and irradiated with U.V. light ( $\lambda=254$  nm) for 100hrs. Other films have been prepared and heated up to 160°C for 4 hrs., then infrared stretching behavior of the carbonyl groups of these compounds fully studied. Results show that these new dimeric nitrones are very effective on stability of polymers, and then considered as very effective antioxidant scavenging to bis(alkoxy) radicals. This behavior is explained in terms of strong scavenging properties of alkoxy radicals generated by heating and photolyzing of polymers, which in turn become resistant to oxidation and dissociation when they are heated and exposed to light. The following table shows the molecular structures of the prepared compounds:-

No.	Symbol	Structures
6	EN1	
7	EN2	
8	EN3	
9	EN4	
10	EN5	





**Synthesis of some organic compounds which contains N&S  
in order to study their activities in rubber vulcanization process .**

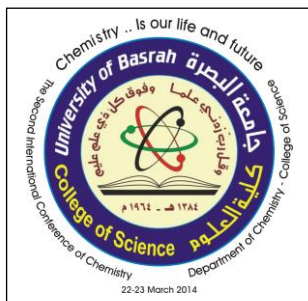
*Nardeen Adnan<sup>1</sup> Saadon Abdulah<sup>1</sup> Mohammed Almaamori<sup>2</sup>*

*Chemistry department, College of science, Babylon university<sup>1</sup>, IRAQ  
College of Materials Engeneering, Babylon university<sup>2</sup>, IRAQ*

*E. mail: nardeen@uobabylon.edu.iq*

**Abstract**

The aim of this work is to synthesize Schiff base compound by condensation reaction of Benzidine with aromatic aldehyde in absolute ethanol to give Schiff base compound in high yield, this is the first path of the work .The second path of work is reacting this Schiff base with numbers of anhydrides through cycloaddition reaction in the presence of suitable solvents to gain a novel derivatives of seven membered ring compounds (Oxazepine) .The third path of work is application of these compounds in rubber vulcanization and study there effect on vulcanization properties .



## The Effect of Heavy Metals Cadmium, Chromium and Iron Accumulation in Human Eyes

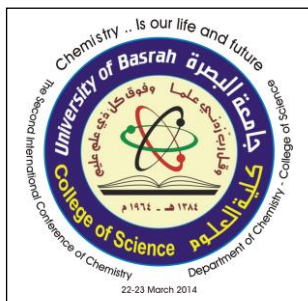
*Hanaa H. Haddad*

*Chemistry Department, College of Science, University of Basra, Basrah, Iraq*

*Email: hanaa\_hadadd@yahoo.com*

### Abstract

The object of the present study is to measure the concentrations of toxic heavy metals in human eyes (cadmium and chromium) and major mineral iron ion. The heavy metals cadmium, chromium and iron were assayed using atomic absorption spectrometry. Metals determination in human eye is the most common application of biological monitoring for screening diagnosis and assessment of metals exposures and their risks. The statistical analysis of the metals (cadmium, chromium and iron) levels in human eyes showed that levels of the three metals in non-smoker were lower than metals contents of the smoker groups. Metals levels in human eyes of males were significantly lower than females. Statistically significant differences ( $p < 0.001$ ) were observed between persons living in city centre and others who living in outskirts for concentrations of all three metals.



## A Correlation Analysis Study of Substituent Effects by <sup>13</sup>C Nuclear Magnetic Resonance : Effect of Solvent on The Chemical Shift of C<sub>α</sub> and C<sub>β</sub> of meta- and para-X-substituted Styrenes

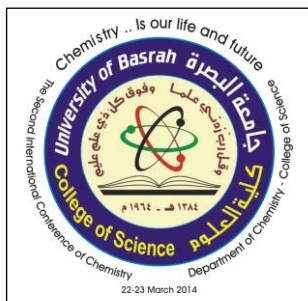
*Sabih Abdul-Wadood O. Al-Shawi*

*Department of Chemistry, College of Science, University of Basrah, Basrah, Iraq.*

*E-mail address: sabihdr@yahoo.com*

### Abstract

The <sup>13</sup>C Substituent Chemical Shifts (SCS) for C<sub>α</sub> and C<sub>β</sub> atoms for the meta- and para-X- substituted styrenes (X= H, NMe<sub>2</sub>, OMe, Me, F, Cl, Br, CF<sub>3</sub>, CO<sub>2</sub>Me, COMe, CN, NO<sub>2</sub>) in seven different solvents (75%EtOH, EtOH, Me<sub>2</sub>SO, Me<sub>2</sub>CO, CDCl<sub>3</sub>, CCl<sub>4</sub> and C<sub>6</sub>H<sub>6</sub>), were modelled by two different types of substituent parameter: namely mono substituent parameter (MSP)(Hammett's model), and dual substituent parameter DSP(modified Swain-Lupton, Reynolds' and Taft models). There is no significant difference between reaction constants values in the same model, of the same atom in the same series in different solvents. The final conclusion, is that no solvent effect on C<sub>α</sub> and C<sub>β</sub> of styrene on using Hammett, modified Swain-Lupton, Reynolds and Taft models.



## ***Conyza Dicolorides: Anew and Efficient Eco – Friendly Corrosion Inhibitor for Mild Steel in 1M HCl Solution***

*Narjes I. Khaled*<sup>1\*</sup>   *AbdAlwahab A. Sultan*<sup>2</sup>   *Rifat M. Alsinjery*<sup>1</sup>  
*Moayad N. Khalaf*<sup>3</sup>

<sup>1</sup>*Technical College of Basrah, Petrochemical Department, Basrah, Iraq*

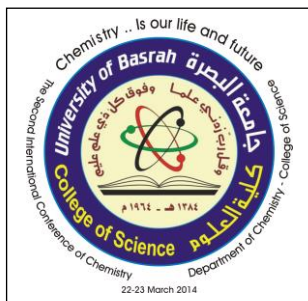
<sup>2</sup>*Technical Institute of Basrah, Basrah, Iraq.*

<sup>3</sup>*Chemistry Department, College of Science ,Basrah University ,Basrah,Iraq.*

\*E – mail: narjesibrahem@yahoo.com

### **Abstract**

The inhibitory effects of the ethanol extract of *Conyza dioscoridis* (EECD) on the corrosion of mild steel in a 1 M HCl solution were investigated by weight loss measurements at the temperature range of 25 °C to 65 °C. Results showed that the inhibition efficiency increased with increasing EECD concentration and decreased with increasing temperature. The inhibition efficiency of 2 g/L EECD reached approximately 94.87% at 25 °C. The thermodynamic functions of dissolution, activation energy, and adsorption processes were calculated and discussed. The adsorption of the additive followed the Langmuir adsorption isotherm.



## Sizing and thermal stability of prepared 3,3',3'',3'''-tetraamino and 4,4',4'',4'''-tetraamino phthalocyanine grafted with different polymers

*Mustafa H. Haider*

*Hadi S. Al-Lami\**

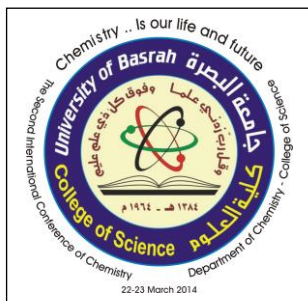
*Adil A. Al-Fregi*

*Department of Chemistry, College of Science, University of Basrah,  
Basrah-Iraq*

*\*Corresponding Author E. mail: hadisalman54@yahoo.com*

### Abstract

Different polymers were prepared by condensation polymerization of sebacic anhydride and adipic anhydride with ethylene glycol and poly(ethylene glycol). Their number average molecular weights were determined by end group analysis. Then, they were grafted on the prepared phthalocyanine compounds having amino groups in 3- and 4- positions with general formula  $\{(NH_2)_4PcCu\}$ . All prepared compounds, polymers, and phthalocyanine-grafted polymers were characterized by FTIR and UV. The grafted process resulted in decreasing in the particle size and hence increasing in the surface area comparing to the phthalocyanine original compounds. This was positively reflected on the thermal stability of the phthalocyanine-grafted polymers and 3-amino phthalocyanine-grafted polymers being the best.



## Manufacturing new Composite Materials by Recycle useless tubes tires

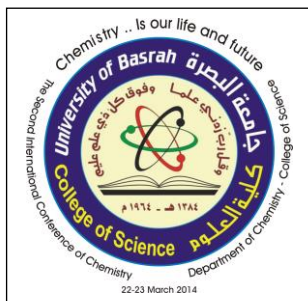
*Safaa A.S. Almtori*

*Materials Engineering Department, Collage oEngineering, University of Basrah*

*E. mail: dr.safaaalmtori@Yahoo.com*

### Abstract

Composite materials using to prepared materials by conjugated two materials, one of them is the strong virgin polymer high density polyethylene and the other is useless tube tires, each one is different in physical properties. The preparation of specimens from composite of HDPE and useless tube tires{3\*5}mm with different weight{15,30,40,45}% then evaluated by both mechanical and thermal tests , in order to measure and estimate the modulus of elasticity ,shore hardness , impact strength and thermal conductivity{by Lees Disk apparatus according to the BS 4745 } for various polymeric specimens, the resultant lead to improvement in some mechanical properties like hardness , impact strength ,elastic modulus and thermal conductivity, so the important aimed is manufacturing useful materials from west materials as a friendly research to environment .



## Synthesis, analytical and thermal study of some new chelating polymers

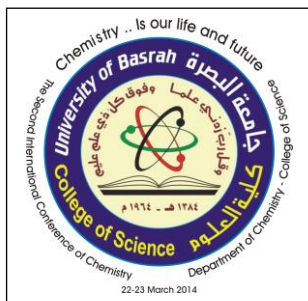
Maiada A. Adnan<sup>1</sup> Whidad S. Hanoosh<sup>2</sup> Abd-Ameer Hussian Taoby<sup>2</sup>

<sup>1</sup>Mesan University, College of Science, Chemistry Department

<sup>2</sup>Basrah University, College of Science, Chemistry department

### Abstract

Four chelating polymers based on 8-hydroxy quinoline were prepared through condensation polymerization, these polymers were characterized by CHN and FTIR techniques then these polymers were used as chelating polymers for some heavy metals using batch methods. The result shown that these polymers have good ability for chelating and the loading capacity result shown that some factors effect the ability of these polymers toward metal like times of shaking and PH, on the other hand thermal study using ( TGA,DSC) was included in this research.



## Removal of hazardous Congo red dye from dye wastewater by the process of adsorption using low cost adsorbent

*Dakhil Nassir Taha    Isra'a Sadi Samaka\*    Luma Ahmed Mohammed  
Ali Saib naige*

Department of Chemistry, College of Science, University of Babylon,  
Department of Environmental Engineering, College of Engineering, University of Babylon,  
Babylon- Iraq  
[israasamaka@yahoo.com](mailto:israasamaka@yahoo.com)

### Abstract

The aim of this study is to investigate the ability of adsorption the Congo red dye with a low cost adsorbent . Congo red dye is a carcinogenic dye which comes in the effluents of textile industries during dyeing and rinsing processes. Although commercial activated carbon is a preferred sorbent for colour removal, its wide spread use is restricted due to high cost. Currently, the study of rice husk activated carbon as a low cost sorbent for removing dye has drawn attention of various researchers working in this field. In the present study, rice husk carbon (RHC) in the form of powder was investigated for removing Congo red dye as a model system. Batch adsorption studies are carried out by observing effect of amount of adsorbent dose, contact time, pH, initial concentration of dye and particle size of adsorbent on the adsorption capacity of the adsorbent were studied. The well Known Langmuir and Freundlich isotherm models were applied for fitting the equilibrium adsorption data and the various isotherm parameters were evaluated. The results indicate that rice – husk activated carbon could be employed as a low cost alternative to commercial activated carbon in wastewater treatment for the removal of color and dyes .