Conference Proceedings

5th ICSTR Dubai – International Conference on Science & Technology Research, 11-12 December 2019

11-12 December 2019

CONFERENCE VENUE

Flora Grand Hotel, Near Al Rigga Metro Station, Deira, Dubai, United Arab Emirates

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Preface:

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KEYNOTE SPEAKER

Ramin Masoudi

Assistant Professor, American University in Dubai, Dubai, UAE

Topic: "Model Order Reduction in Dynamic Systems, Advances and Applications"

Ramin Masoudi is the recipient of a Ph.D. degree in Systems Design Engineering from the University of Waterloo, Waterloo, Canada in 2012. His expertise includes math-based modeling of dynamic systems, multibody dynamics, space robotics, micromechanics, and mechanical vibrations. He is currently an assistant professor with the American University in Dubai, Dubai, UAE since 2015, where he offers courses on dynamics, control systems, mechanical vibrations, robotics, and computer-aided mechanical design. He received the prestigious 2019 American University in Dubai School of Engineering Teaching Excellence Award.

He was formerly a postdoctoral fellow at the University of Waterloo, working on Dynamic Modeling and Design of Nonlinear Systems along with Control-oriented Model Design & Reduction, in collaboration with Toyota Technical Center in Ann Arbor, Michigan, USA and Maplesoft Inc. in Waterloo. Dr. Masoudi has been a member of ASME and AIAA since 2009. He is a reviewer of several prestigious jounral publications, including ASME Journal of Computational and Nonlinear Dynamics, IEEE Transactions on Systems, Man, and Cybernetics Systems, Multibody System Dynamics, Applied Mathematical Modelling, and Meccanica. He is also one of the key contributors in launching a web-based multibody benchmark library, in collaboration with multibody dynamics researchers from Stanford University and Laboratorio de Ingenieria Mecanica at the University of La Coruna in Spain, for the members of multibody community worldwide. He received Ontario Graduate Scholarship in Science and Technology in 2011 and University of Waterloo International Graduate Student Award.

Profile web link: www.aud.edu

PRESENTERS

Yusuf Babangida Attahirua **ERCICSTR1925052**	**Development of Green Roads and Highways using Carbon Neutral Materials: A Review** **Yusuf Babangida Attahirua** **School of Civil Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, 81310 UTM Skudai, Johor Bahru, Johor, Malaysia** **Md. Maniruzzaman A. Aziz** **School of Civil Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, 81310 UTM Skudai, Johor Bahru, Johor, Malaysia** **Abstract** **An estimated 2.2 billion people in 108 countries are expected to survive on multidimensional poverty and almost 1.5 billion out of 2.2 billion people survived on or less than US$1.25 a day. This review highlights the concept of a green economy that promotes an attractive green revolution to the present economic crises affecting developing countries for sustainable economic and environmental improvement.Green roads and highways can reduce the emissions released from fossil fuels and greenhouse gases if constructed with carbon neutral materials. Thus, carbon neutral materials used for the construction of green roads and highways can absorb temperature and excess emissions released by the vehicles because of their neutralities. This is because of the massive quantity of natural aggregates used during construction. Problems associated with green roads and highways made from carbon neutral materials are incompatibles with land use, geology, topography, substructure, landscape, rainfall, and other physical features. Therefore, physical features, geology, landscape, transportation, and development substructures were measured as crucial problems for national development. Most of the approaches used in this study are based on the context of a green economy and the development of green roads and highways. The USA possesses the highest GDP per capita of US$52,194.90 and Bangladesh possesses the lowest GDP per capita of US$1,029.60. This implies that the GDP for USA is 50.70 times higher than that of Bangladesh. The study highlights positive solutions to the above global challenges. It can be concluded that global challenges will be addressed through the concept of green revolutions.** **Keywords: Carbon Neutral Materials; Green Economy; Green Roads; Green Highways; Environmental Sustainability; Fossil Free Fuels**
Samantha Borja **ERCICSTR1925053**	**Adhesive Based upon Polyvinyl Alcohol and Chemical Modified Oca (Oxalis Tuberosa) Starch** **Vladimir Valle** **National Polytechnic School. Faculty of Chemical Engineering and Agroindustry. Department of Food Sciences and Biotechnology. Ladrón de Guevara E11-253, Quito 170517** **Samantha Borja** **National Polytechnic School. Faculty of Chemical Engineering and Agroindustry. Department of Food Sciences and Biotechnology. Ladrón de Guevara E11-253, Quito 170517** **Pamela Molina** **National Polytechnic School. Faculty of Chemical Engineering and Agroindustry. Department of Food Sciences and Biotechnology. Ladrón de Guevara E11-253, Quito 170517** **Abstract** **The preparation of adhesive for lignocellulosic substrate was studied using polyvinyl alcohol (PVA) and native oca (Oxalis tuberosa) starch as raw materials. At first, native starch was chemically modified by means of acid hydrolysis and a subsequent urea treatment. Afterward, adhesive preparation was conducted with native and modified starch, separately, according to three PVA: starch ratios (1,0:0,3; 1,0:1,0 and 1,0:1,7). Characterization was performed in terms of Fourier transform infrared spectroscopy (FTIR), instantaneous viscosity and shear strength. An analysis of the results within a functional groups context permits to corroborate the presence of starch carbamates as a product of the chemical modification processes. On the other hand, FTIR analysis of adhesive showed a significant intensity variation in the band associated to alkanes group at around 2900 cm-1.**

	Moreover, viscosity and mechanical results exhibit similar trends concerning not only to raw materials but also to native and modified starch compositions. Lowest values of viscosity and shear strength were observed at 1,0:1,0 ratio which suggest that the crosslinking in adhesive structure seems to be reduced with equal proportions of PVA and starch. From a visco–mechanical perspective, both adhesive with high concentrations of native starch and those with low composition of modified starch exhibit similar results. **Keywords: PVA, Carbamate-Starch, Viscosity, Shear Strength, FTIR**
 **Nassima Amiri** **ERCICSTR1925054**	**Development of an Integrated Model To Assess the Impact of Practices And Land Use on Agricultural Production In Morocco Under Climate Stress, Over The Next Twenty Years** **Nassima Amiri** **Biology, Faculty of Sciences Selmalia, Cadi Ayyad University, Marrakech, Morocco** **Abstract** **Climate change is expected to have a significant impact on agricultural production at local and global scale. Higher temperatures and changes in precipitation patterns projected by the Intergovernmental Panel on Climate Change (IPCC) could cause agricultural production to fall in many areas requiring significant changes in farming practices and distribution of agricultural land. A concomitant factor to climate change will be the increase of the population and its distribution and its level of consumption that also influence the strategies of agricultural production, conversion of agricultural land, the type of irrigation and technology development. Determine the consequences of these forcings on land use will depend on our understanding of past changes and market forces on the agricultural sector and how future climate change, technology, the type of irrigation, abundance, government policy vis-à-vis agriculture, the size and distribution of the population will affect agricultural production and its relation to the expansion of agricultural land. It is proposed to develop an innovative methodology that will integrate ground observations, remote sensing, socio-economic and demographic statistics and technology indicators to project the trends and patterns of agricultural land use caused by climate change and human development. A model that links environmental and socio-economic factors to project their impact on the current use of agricultural land and the potential change of this use over the next 20 years.**
Sarra Abrahem **ERCICSTR1925056**	**Determination of Sulfamethoxazole in Pure and Pharmaceutical Samples by Using Direct Method for Calibration Curve of Normal Spectrum of UV-Spectrophotometry** **Sarra A. Abrahem** **Department of Chemistry, College of Science, Al-Nahrain University, Al-Jaderia, Baghdad-Iraq** **Abstract** **Normal spectra for sulfamethoxazole solutions were developed and used for the determination of Sulphamethoxazole)SMX) antibiotic by using zero-crossing technique and simultaneously determining (SMX) at wavelength 259.00 nm. The correlation coefficient of the calibration curve for the normal spectrum was 0.9990. Linearity was maintained by using concentrations (0.990*10-4M, 0.996*10-4M, 0.999*10-4M, 1.004*10-4M, 1.005*10-4M) with relative error (99.00%, 99.60%, 99.90 %, 100.40 % and 100.50 %). A statistical analysis confirmed the precision and accuracy of simultaneous determination of (SMX). In addition, the British pharmacopoeia method was compared with the method used in this paper using F test.** **Keywords: Sulfamethoxazole, UV-spectrophotometry**
Sibel Acik Kemaloglu **ERCICSTR1925058**	**Statistical Analysis of Wind Speed Data Using Some Alternative Distributions to Weibull** **Sibel Acik Kemaloglu** **Faculty of Science, Ankara University, Ankara, Turkey** **Emel Kizilok Kara** **Kirikkale University, Faculty of Art and Science, Department of Actuarial Sciences, Kirikkale, Turkey** **Abstract** **Wind speed analysis is important to estimate the wind energy potential of a specific area. The most important issue is to determine the distribution of wind speed data. Although usually Weibull distribution is used to model wind speed data, the actual data in nature may not always be modeled**

	with the Weibull distribution. For this purpose, in this study we have proposed some distributions for modelling the wind speed data. To illustrate usefulness of this distributions, we used the real wind speed data which are taken from two specific regions in Turkey. The results of our analysis showed that the proposed distributions can be used for modeling the wind speed data. Keywords: Wind speed, Lindley distribution, Weibul distribution, wind power
Faiza Boukli-Hacene ERCICSTR1925059	**The Study of The Enzymatic Inhibition of Carbonic Anhydrase -II By A Series of 1-Desazapurins by Molecular Modeling** Faiza Boukli-Hacene Laboratory of Naturals Products and Bio actives-Lasnabio University of Tlemcen-Algeria Meriem Merad Laboratory of Naturals Products and Bio actives-Lasnabio University of Tlemcen-Algeria Wassila Soufi Laboratory of Naturals Products and Bio actives-Lasnabio University Mustapha Stambouli of Mascara Algeria Said Ghalem Laboratory of Naturals Products and Bio actives-Lasnabio University of Tlemcen-Algeria Abstract Molecular modeling techniques are widely used in chemical, pharmaceutical industries. Our theoretical approach enables to predict the mode of interaction of a ligand with its receptor. The hyperactive enzyme like carbonic anhydrase -II was selected for our study, it has been involved in the glaucoma, epilepsy, leukemia and cystic fibrosis. For this reason, a series of nitrogenous heterocyclic rings including the derivatives of 1-deazapurins were studied by molecular modeling using MOE (Molecular Operating Environment) software (1) to predict their interaction with the enzyme carbonic anhydrase- II. It was concluded that ligand_11 is the best inhibitor for the enzyme carbonic anhydrase -II. The result found is in agreement with the experimental result (2). Keywords: Molecular Modeling, DFT (Density Functional Theory), Drug Research
Wassila soufi ERCICSTR1925060	**The Study of The Enzyme Cyclooxygenase(COX-1 And COX-2) Interaction with A Series of Diarylpyrazole Synthesized by Molecular Modeling** W.Soufi1 Mascara University-AlGERIA Faculty of Science Exact, Laboratory of Naturals Products and Bio Actives-Lasnabio M.Merad University of Tlemcen-AlGERIA Laboratory of Naturals Products and Bio actives-Lasnabio F. BOUKLI Hacene University of Tlemcen-AlGERIA Laboratory of Naturals Products and Bio actives-Lasnabio Abstract Cyclooxygenase (COX-1 and COX-2), is the target of a large amount of anti-inflammatory drugs. The relatively recent discovery of the involvement of this enzyme in cancer pathology, particularly prostate cancer, has revived the interest of finding inhibitors producing fewer side effects. A series of diarylpyrazole derivatives has been synthesized and evaluated as COX-1 and COX-2 inhibitors. In general, the derivatives have been shown to be selective inhibitors of COX-1 and COX-2 with IC50 values [1,2]. In our work, the interaction between bioactive structures will be studied by molecular modeling methods (MM, DM, and Docking). We conclude that these diarylpyrazole derivatives are

	COX-1 and COX-2 inhibitors that may play an important role in the treatment of prostate cancer. **Keywords: Cancer Disease, Cyclooxygenase, Diarylpyrazole Derivatives, DFT (Density Functional Theory) , Molecular Modeling**
M.Samayaraj Murali Kishanlal ERCICSTR1925061	**Future Generation Optical Network for Wired and Wireless Networks based on OFDM using a Comb Source** **M.Samayaraj Murali Kishanlal** **Electronics and Communication Engineering, St.Joseph's Institute of Technology, Anna University, Chennai, India** **Dr.A.Jawahar** **Abstract** **In this study it is focused to design an architecture for the future optical networks based on PON (Passive Optical Network) called as FGON (Future Generation Optical Network). The FGON improves the efficiency and reliability of optical networks in providing a seamless data transmission network by integrating the three core concepts namely WDM, PON and OFDM. The proposed network also supports ROF (radio over fiber) for extended coverage of optical signals through wireless in unfavorable domains. In the FGON the input signals are given using a unique technique of creating a dense signals using WDM by creating a uniform comb like structure by using a dual arm Mach Zender Modulator based circuit whose output has 51 flat comb structures and then the modulation technique of OFDM is used for enabling the WDM-OFDM-PON. Both (AM and MZM) modulators driven by the same RF frequency of 30 GHz and proper DC biasing is given for MZM to get very flat spectral carriers. The OFCS generated by this method can be used in WDM-PON system which can serve large number of users. Each carrier out of 51 spectral lines is capable of supporting greater than 10 Gbps Quadrature Amplitude Modulation based data with the help of Orthogonal Frequency Division Multiplexing (OFDM) subcarriers. We study the performance of the signals generated by the comb structure in a ROF based OFDM-PON simulation network the various parameters such as the received signal strength FGON network, BER (Bit Error Rate) are noted and analyzed, and the received signals propagation characteristics of the FGON is noted which will be suitable for next generation optical access.**
BG Ndawonde ERCICSTR1925063	**Assessment of the Pedagogical Praxis In Higher Education: A Case of A South African Comprehensive University** **BG Ndawonde** **Mathematics, Science and Technology Education Department, University of Zululand, South Africa** **Nkoane MM** **Educational psychology Special Needs Education, University of Zululand, South Africa** **Abstract** **Academic profession upholds the values and practices of students' evaluation feedback, peer and self-evaluation and ethical professional conduct. This applies to all aspects of academic work, including curriculum design, pedagogy and scholarly learning. This paper explores evaluation practices in one of the Higher Education comprehensive institution. This is a qualitative research approach based on a case study design. Data collection instruments of this paper involved teaching evaluation policy analysis, and a self-constructed, open ended questionnaire. A sample of eight academic staff members participated in the study. The results showed that some evaluation practices differ from the processes stipulated in the policy. The preferred mode of evaluation differed among the respondents. It emerged from the policy analysis that the Higher Education Institution's student evaluation purpose was mainly assessing curriculum implementation. The paper recommends that in addition of assessing how students experience our pedagogical practices, evaluation should we as academics need to be inducted on evaluation processes and the results of evaluation should be used to promote academic staff personal growth.** **Keywords: Praxis, Principles, Evaluation Process, Feedback**

Imene Trabelsi Trigui
ERCICSTR1925065

Effects of different on-line co-design experiences on consumer-product relationship

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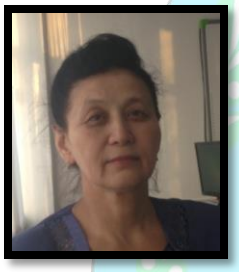
Abstract
This paper presents new conceptual framework that draws attention on the joint influence of virtual co-design activities (prototype generation and prototypes evaluation) and the design tasks (typical and atypical designs) on consumer-product relationship. In this research, we apply concepts of consumer psychology and behavioral intention, namely consumer psychological ownership, loyalty intention and purchase intention in order to illustrate consumer relationship toward the generated/evaluated packaging and the corresponding product. An online experiment through actual design situations had been carried out to test the present research hypotheses. The results show interesting main effects of the stimuli factors on consumers' psychological and behavioral intentions toward the product. We conclude that different co-design activities and tasks play a significant role in shaping consumer-product relationship.
Keywords: On-Line Co-Design Activity, Co-Design Task, Ownership Psychology, Loyalty Intention, Purchase Intention



Rabigash Segizbayeva
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Separability of the Generalized Cauchy – Riemann System in Space

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Abstract
In this paper, for a wide class of coefficients, a unique solvability in a Hilbert space for the operator of a generalized system of Cauchy-Riemann type is established, the separation-in-space theorem L_2 (E) is proved and the coercive conditions of the corresponding operator are showed.
Keywords: Solvability, Separability, Coercivity

Dr. Canan Eren Atay
ERCICSTR1925055

The Development of A Clinical Data Warehouse For Lung and Ovarian Cancer Data

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Abstract
Despite the collection of huge amounts of data by the healthcare industry, effective decision making is not achieved for serving medicine science. Data warehousing technology can be applied for collecting and managing clinical data from varied sources to provide meaningful insights for physicians and administrators. When considering the size and complexity of cancer data, a clinical data warehouse system can shed light on prevention, diagnosis and treatment processes by using On-line Analytical Processing (OLAP) tools for interactive analysis of multi-dimensional data at various granularity levels. In this study, a clinical data warehouse is developed for lung cancer data which were received kindly from the American National Cancer Institute (NCI). The lung and ovarian cancer data have brought into certain formats, cleaned from errors and repetitions. The clinical data warehouse is designed to respond efficiently to all types of queries by adopting the fact constellation schema model. A number of different OLAP queries are expressed using the proposed approach.
Keywords: Clinical Data Warehouse, OLAP, Lung Cancer Data, Ovarian Cancer Data, Fact Constellation Schema

Nworie Felix Sunday
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Removal of Methylene Blue From Aqueous Solution Using Activated Rice Husk Biochar: Adsorption Isotherms, Kinetics and Error Analysis

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Abstract

The efficiency of methylene blue (MEB) removal from aqueous media was studied under different experimental conditions of pH, contact time and initial concentration of the adsorbate. Activated rice husk biochar (ARHB) was characterized using BET surface area and XRD. The XRD diffraction indicated amorphous nature of the biochar with pore size (cc/g) and pore surface area (m2/g) of 9.369 and 27.32 respectively from BET surface area plot. Equilibrium isotherm based on coefficient of non-determination indicated the following order as best fit model: Hill >Kiselev>Elovic >Flory-Huggins >Langmuir>Jovanovic>Harkin-Jura >Freundlich>Henry>Temkin>Redlich Peterson>Durbinin-Kaganer Redushkevich >Hill–de Boer > Fowler–Guggenheim. Based on the highest correlation coefficient and the lowest values of the error functions applied to the kinetic models, Weber and Morris intra-particle diffusion and liquid film diffusion were noted to be in control of the sorption rate. The MEB sorption capacity of the activated biochar was 356.99 mmolkg-1 which was in the range of commercially available activated carbons and other biosorbents

Gh Saleh
ERCICSTR1925062

Why the Electron is Negatively Charged and the Proton Positively?

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Abstract

The discovery of the subatomic particles such as electrons, protons and neutrons raised many questions. One of them was how these subatomic particles have electric charges. The negative and positive are two general types of electric charges. For example, protons have positive charge and electrons have negative charge and most of the subatomic particles have this property of electric charges.

But why electrons have different charge from protons? This is one of the important questions in physics. The scientists don't know why the electrons would be negative and protons positive.

In this paper we are going to present a new definition to explain why the Electron is Negatively Charged and the Proton Positively?

Saleh Theory believes that the type of motion and the positioning of constructive photons of the electron give it a certain lightness and keep it in a state of emission and the compaction of proton's photons make of it an attractive particle; the discovery that could rewrite the story of electric charges.

Keywords: Electric Charge, Electron, Proton, Photon, Subatomic Particle

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Improve the Steganography Performance Based on Discrete Wavelet Transform

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This paper presents an improvement of the steganography techniques based on the Discrete Wavelet Transform (DWT), where the DWT is represented a signal processing tools which can separate the signal to its spectrum band parts. In this context, the required message can hide it in suitable band part after separated it by DWT. The Peak Signal to Noise Ratio (PSNR) is reduced with increase the message length, and increase it with increase the DWT levels. Where, the PSNR reduced from -13.8278 to -17.77208 for 161 and 505 characters as the length of massage respectively, while it increased from -13.8278 to 7.0554 and from -17.7208 to 1.7901 with increase the DWT level from 1 to 2 respectively.

Keywords: Steganography, DWT, Hidden Information

Amir A. Imam
ERCICSTR1925069

Design and Implementation of PI Controlled Shunt Active Power Filter for Power Quality Enhancement Based on P-Q Theory

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Abstract

The design of reliable power filters that mitigate current and voltage harmonics to meet power quality requirements of the utility grid is a major requirement of present-day power systems. In this paper, a detailed systematic approach to design a shunt active power filter (SAPF) for power quality enhancement is discussed. Proportional and integral (PI) controller is adopted to regulate the DC-link voltage. Instantaneous reactive power theory is employed for reference current extraction. Hysteresis current control is used to obtain the gate pulses that control the voltage source inverter (VSI) switches. The SAPF is developed and simulated for balanced nonlinear load and unbalanced nonlinear load using MATLAB Simulink. The simulation results indicate that the proposed filter can minimize the harmonics distortion to a level below that deployed by IEEE standards.

Keywords: Harmonics Mitigation, Shunt Active Power Filter, Instantaneous Reactive Power Theory, Hysteresis Current Control

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ERCICSTR1925070

Modelling The Factors Influencing Urban Households Food and Nutrition Security Status in Niger Delta Region of Nigeria

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Abstract

The issue of food and nutrition security are pressing global concerns and subject of discourse among researchers and policy makers especially with the widespread surge and volatility in food prices. Recently, there has been rapid migration of the rural poor to already swelling urban areas in search of better employment opportunities and improved livelihoods. Although some of the rural migrants have succeeded in finding better life, majority are unable to secure improved quality of life as their hopes have been dashed into a nightmare of economic and food insecurity. An empirical study was conducted to determine the impact of urbanization on households food security and hunger status, and estimate the factors influencing food security of households in Akwa Ibom State, Niger Delta region of Nigeria. Multistage sampling technique was employed to select the representative families for the study. With the aid of questionnaire, primary data were obtained from 240 households. Food security index was used to analyze the food security status of households; Foster, Greer, Thorbecke (FGT) weighted poverty measure was adapted to analyze the incidence and severity of hunger in the swollen urban households whereas Tobit regression model was employed to analyze the determinants of food security in the households. Result of analysis showed that households were food insecured with hunger. Findings revealed that food insecurity and hunger incidences were 0.52 and 0.61 respectively, and rose with increase in age and family size. Hunger was less severe in households with skilled labour than those with extractive occupation. Results further showed that food insecurity increased with

urbanization. Result further showed that age, educational level, occupation, income level of household heads, household size and location of residence were the most critical determinants of food security. Policies to improve the living standard in rural communities would be a sensible policy decision to prevent the influx of rural people into urban areas. Efforts should also be geared at increasing urban food production by integrating urban farming in urban development and planning. This will not only increase food supply but ensure food and nutrition security.

Keywords: Food; Households; Nutrition; Security; Urbanization

Asad Khan Tanoli
ERCICSTR1925071

Synthesis, Spectral Investigation, Antioxidant and Cytotoxic Activities of Co(II), Ni(II) and Cu(II) Complexes with Hydrazone Derivatives

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Abstract

Metal (II) complex of cobalt, nickel & copper have been synthesized with hydrazone ligand i.e. 2-Hydroxybenzaldehyde-N-(5-choloro-2-oxo-1,2-dihydro-3H-indol-3-ylidene) hydrazone (HL). Structures of the synthesized compounds were elucidated by 1H-NMR, FTIR, CHN, magnetic susceptibility, Electronic spectroscopy and conductance measurements. All the complexes are soluble to limited extent in common organic solvents but soluble to larger extent in DMF and DMSO and are non-electrolytes in DMF and DMSO. These results confirmed the behavior of metal complexes as weak electrolyte from their low value of molar conductivity. It has observed from spectral and analytical studies that hydrazone ligand bind in tridentate manner around the corresponding metal ion. Three binding sites expected to be the azomethine nitrogen, aromatic hydroxyl oxygen and the phenoxide oxygen. The predicted geometry cobalt and nickel complexes is Oh (octahedral) while for copper it might be square planner. The antioxidant studies suggest that ligands and their metal complexes exhibited moderate to good reduction potential. The brine shrimp bioassay was also carried out to study their in-vitro cytotoxic properties.

Keywords: Metal Complexes, Hydrazone Derivatives, FTIR, Electronic Spectroscopy, Antioxidant Activities, Cytotoxicity

Barry Akatah
ERCICSTR1925072

Comparative Study of the Kinetics of Substrate Utilization in a Septic Wastewater Treatment Plant (A Case of Packed Bed Microbial Fuel Cell)

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Abstract

A comparative evaluation of the first order and fractal kinetics of substrate utilization in a septic wastewater treatment plant usinga packed bed Microbial Fuel Cell (MFC) was carried out. The first order kinetics from the Monod model $S_t = S_o \exp(-kt)$ and the fractal reaction kinetics

	$S_t = S_o \exp\left(-\frac{K_x}{\mu_o}\left[\exp\frac{\mu_o}{-h+1}\left((t+1)^{-h+1}-1\right)\right)-1\right]$ were used to predict substrate utilization from septic wastewater in a packed bed MFC (batch reactor). The predicted results were compared with the experimental results obtained from the different set-ups. The result revealed that the fractal kinetics gives more accurate result than the first order kinetics with an accuracy of about 98.02%. The paper recommends that fractal kinetics should be used to predict substrate utilization for packed bed MFCs. **Keywords: Substrate, Kinetics, Treatment, Packed Bed, Biochemical Oxygen Demand (BOD)**
 **Onungwe, I.** **ERCICSTR1925073**	**Comparative Evaluation of the Models Used for the Calculation of Re-Aeration Coefficient of Surface Water Bodies (A Case of Deezim Creek, Khana l.g.a., Rivers State, Nigeria)** **Onungwe, I.** **Department of Civil Engineering, Kenule Beeson Saro-Wiwa Polytechnic, Bori, Rivers State, Nigeria** **Akatah, B. M.** **Department of Civil Engineering, Kenule Beeson Saro-Wiwa Polytechnic, Bori, Rivers State, Nigeria** **Izinyon, O.C.** **Department of Civil Engineering, University of Benin, Edo State, Nigeria** **Abstract** **Some models used in the computation of re-aeration coefficient of rivers/streams were evaluated. The models include Agunwamba et al (2007), Jha et al (2001), Baecheler and lazo (1999), O'Connor and Dobbins (1958), Bowie et al (1985), owens (1964), Ugbebor et al, (2011), Omole and longe (2012), churchill et al, (1962), Gualtieri and Gualterie (1999), Owens and Gibbs (1964) and Bennett and Rathburn (1972). The models were evaluated and analyzed using hydraulic data obtained for Deezim creek in Khana Local Government Area of Rivers State using Coefficient of determination (R2) values. The model performance results indicate that Omole and Longe (2012) model has R2 value of 0.996, Gualtieri and Gualtierie (1999) model 0.9622, Ugbebor et al (2011) first model 0.995, Agunwamba et al (2007) model 0.9551 and Omole and Longe (2012) model has a better fit than other models.** **Keywords: Models, Evaluation, Re-Aeration, Self-Purification, Creek**
Dr. Brijesh Pathak **ERCICSTR1925074**	**Monitoring of Naturally Occurring Radionuclides in the Environs of Udaipur vis-a-vis Effect of Uranium on Growth and Physiology of Plants** **Dr. Brijesh Pathak** **Assistant Professor, University College, Dhilwan, Punjab** **Abstract** **The concentration of the Naturally Occurring Radioactive material (Norm) of soil and plant samples collected from nearby villages to udaipur and their host communities was measured by determining the gross alpha activity concentration. Determination of the gross alpha radioactivity of soil, field soil and plant samples were obtained by using Alpha Counting System, Nucleonix, Hyderabad. Background measurement test was done to determine the background radioactivity. A number of soil, plant and water samples were collected (between November 2002 to November, 2005) in the environs of radioactive deposits at the two sites. Gross alpha activity were estimated. The gross alpha activity for soil and plant samples are in the range of 175- 2260 and 48-477 Bq kg-1 , respectively on dry weight basis. In plant samples, maximum gross alpha activity (477Bq kg-1) was observed in Coriandrum sativum. In soil samples, maximum gross alpha activity (821 Bq kg-1) was observed in sample no. US VI-6S (Jatropha curcus) and minimum (303 Bq kg- 1) in Diospyros cordifolia at US VI-2S site. The mean alpha activityconcentration for the control soil sample was 22.78.0±1.02Bqkg-1which is low compared with the observed alpha activity values in community's soil, field soil and plant samples respectively. The result indicates an elevation of Norm content due to mineral exploration and production in the area. This could be detrimental to health of individuals exposed to these radiations.** **Keywords: Gross alpha, Norm, Natural Radioactivity, Plant, Soil Introduction Naturally Occu**

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