



## **Conference Proceedings**

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## **CONFERENCE VENUE**

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## **Preface:**

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## **KEYNOTE SPEAKER**



**Dr. Mohammed Alsumiri**

**Assistant Professor, Electrical Power Program Coordinator, Electrical and Electronics Engineering Technology Department, Yanbu Industrial College, Yanbu, Saudi Arabia**

Dr. Mohammed Alsumiri is an Assistant professor at Electrical Power Program coordinator, Electrical and Electronics Engineering Technology Department, Yanbu Industrial College, Yanbu, Saudi Arabia. Dr. Alsumiri Completed his B.Sc. in Electrical Power Engineering in 2008, in 2010 completed his M.Sc. in Electrical Energy Conversion Systems from The University of Manchester. He was awarded a Ph.D. Degree in Electrical Energy Conversion Systems- Renewable Energy Generation Systems in 2015 from the University of Liverpool UK. Dr. Alsumiri field of interest is in electrical and renewable energy conversion systems, power electronics, electrical machines and smart-grid

**Chika Ikele**  
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**The Nature And Severity Of Histopathological Changes In African Catfish,  
Clarias Gariepinus Infected With Ichthyophthiriasis**

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**Abstract**

Ichthyophthiriasis, caused by a ciliate protozoan *Ichthyophthirius multifiliis*, contributes to tissue dysfunctions in the gills and skin of wildfish and cultured fish. Histopathological changes in the gill and skin of Ich-infected *Clarias gariepinus* was studied. A total of 180 apparently post juvenile *Clarias gariepinus*, were randomly distributed into three groups in 50 L plastic tank with 20 fish per replicate. The infective stage, theront of *I. multifiliis* was obtained from wild infected fish as a parasite source and serial passage by cohabitation and amplification cycle was adopted. Approximately 24,000 theronts and 44,000 theronts were used to infect the fish for 14 days in group B and C, while group A was uninfected. The skin and gill tissues (n=3) were excised for histopathological analysis. Severity of the lesion was progressively classified in three stages of tissue damage. The skin and gill of uninfected fish showed normal skin morphology, intact chromatophores and intact primary and secondary lamellae. Significant lesion scores ( $P < 0.05$ ) were recorded between group B and C. The observed histopathological changes were aneurysm, edema, epithelial lifting with evidence of trophont accumulation, inflammation, distortion of lamellae while in the skin, hyperemia, abscess formation, edema and inflammatory responses observed between groups B and C recorded significant change ( $P < 0.05$ ). The observed tissue damages in the gill and skin of ich-infected fish proved that both routes are mainly compromised when there is an outbreak of Ichthyophthiriasis and can alter the functionality of the both tissues. Therefore, the need for proper sensitization of Ich infection and aquatic life safety is paramount.



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**Heavy Metal Pollution In Drinking Water And Soils In Gold Mining Region Of  
Migori County, Kenya**

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**Abstract**

Water and soils resources in the world have been profoundly influenced over the last years by human activities. Mining is second to agriculture in impacting negatively to the environmental media. In Kenya small scale gold mining continues to be carried out with grave consequences to the environmental media. The study was carried out in Migori gold mining areas, to assess current status of HM in drinking water and soils. This paper reports on heavy metal (HM) concentrations in drinking water and soils that are higher than some international guideline values. This has unsafe ramifications as HM pollution in drinking water and soils get integrated into the food chain, with a grim

	<p>implication for the human and environmental health. Available data shows that over 900, 000 people are involved in gold mining activities in Migori County who could be exposed to heavy metal contamination through drinking water and ingestion of foods grown on contaminated soils. Drinking water and soils samples were collected from various sites in the study area covering R. Migori which empties into L. Victoria. The samples were processed, packed and shipped to Vancouver Canada for heavy metal analysis. Selected heavy metals namely mercury, lead, arsenic, copper and zinc were analyzed. Mercury recorded high concentrations in both water and soils. This study recommends rehabilitation of the soils using bioremediation technique and the development of robust, cheap and sustainable technologies to improve the quality of drinking water.</p> <p><b>Key words:</b> Drinking water, bioremediation, food chain, water pollution</p>
 <p><b>Rofi Rosdiani</b> ERCICSTR1808054</p>	<p><b>FINTECH Utilization in Optimizing the Potential of Micro, Small and Medium Enterprises (MSMEs) through Global Halal Hub as an Effort to Achieve Sustainable Development Goals</b></p> <p><b>Raudatul Munauwarah</b> University of Gunadarma</p> <p><b>Rofi Rosdiani</b> University of Gunadarma</p> <p><b>Sania Karaman</b> University of Gunadarma</p> <p><b>Abstract</b></p> <p>MSMEs is a growing business unit and not a few in Indonesia. Many of MSMEs entrepreneurs who are members of micro business are still in poverty line. MSMEs only have access to global production chains which enter the sector without a plan because it is not absorbed by the formal sector. Lack of attention from the government also became the trigger. UMKM in Indonesia to date can be said to be less developed because it has access to financing access and technology.</p> <p>Community-managed MSMEs and collaboration between government and communities is one way to advance MSMEs in Indonesia on capital and financial issues. Not quite there MSMEs can be more optimal when collaborating with MSMEs halal hub. Given Indonesia is the largest Muslim country that has great potential to be a halal product industry. The combination of technology with finance or known as fintech is also no less in supporting the smoothness of MSMEs which is concluded with halal hub.</p> <p>Halal optimization hubs that synergize with government programs in terms of poverty alleviation and improving MSMEs will be more developed if the government directly assist the community through communities established each region. This program that drives a region to develop regional potential will be more efficient because we can mobilize local communities to jointly manage a product and develop a halal industry, infrastructure and increase public purchasing power. This program can also improve the economy and create jobs. In addition, ZISWAF instruments can be more productive as a source of capital and cooperate with sharia banking as a means to simplify the financial system will benefit from the program and significant capital growth.</p> <p><b>Keyword:</b> Financial Technology, Halal hubs, Indonesia, MSMEs</p>
<p><b>Rasheed Tunde Bhadmus</b> ERCICSTR1808056</p>	<p><b>The Construction And Implementation Of Sustainable Toilets As A Panacea To Open Defecation In Bauchi State</b></p> <p><b>Rasheed Tunde Bhadmus</b> School of Environmental Technology, Federal Polytechnic, Gwallameji, Bauchi</p>

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**Abstract**

It is a known fact that lack of affordable sanitary facilities is one of the nagging problems confronting the health sector apart from poverty. In most African countries, especially some states in Nigeria have not actually migrated to the next, higher level in terms of hygiene as open defecation is still a norm. As a result of this, the Federal, State and Local governments are presently trying to achieve safe hygiene practices for a collective responsibility, sustainable waste management and benefits to the society. Bauchi is one of the states identified with open defecation free environment in Nigeria. The need for adequate and affordable toilet design, construction and management of such sanitary facilities are too much of a heavy burden to bear due to some circumstances beyond the funding of the management, which requires special interventions and supports. The provision of sustainable toilets in Bauchi are geared towards improved sanitation trend, certain innovative constructions, hygienic behaviours and attitudes, promotions, cutting-edge technologies, innovations, principles, laws and regulations among others. Therefore, the main objective of this paper is to examine the issues and challenges facing the construction of sustainable toilets using local materials and technology for evidence based solution to the menace of open defecation through a sustainable clean water and sanitation. In conclusion, a detailed study with relevant qualitative analysis showed an acceptable positive result. It was then recommended among others that at all levels, stake holders should enforce the law, fund, develop and promote health sector of the economy in terms of easy design, construction and renovations of temporary/permanent, public/private toilets.

**Key words:** Construction, Design, Sanitation, Sustainable, Toilet.



**Moussa Khelifa**  
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**FEM Study of the influence of different embrace values of permanent magnets pole on performance of Brushless DC Motor**

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**Abstract**

Permanent magnet materials in electric machines have an essential role and interest to many machines manufacturers and designers as cost of rare-earth materials, because magnets are limited source. And also the difficulty of manufacturing has an increasing concern. According to this, the choice of a magnet shape needs a good accurate, comparison between all types and forms of magnet. In this study the researcher presents analytical study of the performance of BLDC motor with four different embrace values of permanent magnets pole. So that, the magnetic, electrical and mechanical properties such as, flux density, power, speed, cogging torque and efficiency of BLDC motor are

	<p>analyzed via RMxprt and Maxwell software based on FEM And also MATLAB software to illustrate the figures, with this comparison, it is investigated the effect of the embrace on the effectiveness of the motor, this approach is a powerful and useful tool to study. Therefor, it is very necessary to choice form of a permanent magnet to optimize the performance of machine.The proposed motor has 24 slots and surface mounted 16 pole.</p>
<p><b>L. Boumehdi</b> <b>ERCICSTR1808060</b></p>	<p><b>Treatment Of Oil Drilling Deblais By Stabilization / Solidification Process</b></p> <p><b>Z. Salem</b> University of Sciences And Technology of Houari Boumediene/ Fgmgp, Lsgpi, Bp 32 El-Alia. Bâb - Ezzouar, 16111. Algiers, Algeria</p> <p><b>L. Djekoune</b> University of Sciences And Technology of Houari Boumediene/ Fgmgp, Lsgpi, Bp 32 El-Alia. Bâb - Ezzouar, 16111. Algiers, Algeria</p> <p><b>K. Abdelli</b> University of Sciences and Technology of Houari Boumediene/ Fgc, Bp 32 El- Alia. Bâb - Ezzouar, 16111. Algiers, Algeria</p> <p><b>Sahraoui</b> University of Sciences and Technology of Houari Boumediene/ Fgmgp, Lsgpi, Bp 32 El-Alia. Bâb - Ezzouar, 16111. Algiers, Algeria</p> <p><b>A. Malek</b> University of Sciences and Technology of Houari Boumediene/ Fgmgp, Lsgpi, Bp 32 El-Alia. Bâb - Ezzouar, 16111. Algiers, Algeria</p> <p><b>L. Boumehdi</b> University of Sciences and Technology of Houari Boumediene/ Fgmgp, Lsgpi, Bp 32 El-Alia. Bâb - Ezzouar, 16111. Algiers, Algeria</p> <p><b>Abstract</b> This work focuses on the study of the treatment of pollution caused by oil drilling fluids by Stabilization / Solidification. This method would make it possible to reduce the polluting potential of drilling fluids, for their possible valorisation in the field of civil engineering or their landfill. For this, we first began with a characterization of drill cuttings collected on petroleum industry sites. This study confirmed that the quagmire studied poses risks to the environment because of its composition which exceeds the limits: DCO of 3520 mg / Kg above the maximum standard of 2000 mg / Kg, Hydrocarbon levels of 185.5 mg / kg higher than the maximum standard of 10 mg / kg, hydrocarbon level of 7.78% above the maximum standard of 5%.. Different formulations were made containing different fractions of cuttings, cement, additives (sodium silicate and sawdust). After 3.7 and 28 days of treatment, we carried out compression and leaching tests for each formulation after 28 days. The results after the leaching tests showed that most formulations obeyed the standards of admission to the landfill and the tests of compressions confirm the aptitude of valorization in the field of the civil engineering <b>Keywords: Oil Drilling, Stabilization, Solidification, Valorization.</b></p>
<p><b>Zineb Salem</b> <b>ERCICSTR1808061</b></p>	<p><b>Valorisation Of Agricultural Wastes For Biogaz Production By Co-Methanisation</b></p> <p><b>Z. Salem</b> University of Sciences and Technology of Houari Boumediene/ FGMGP, LSGPI, BP 32 El-Alia. Bâb - Ezzouar, 16111. Algiers, Algeria</p>

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**Abstract**

Biogas production is a widely used technique in the world. Very rich in biomethane, this gas allows renewable energy supply, particularly in agricultural and rural zones, where the organic biomass is abundant. In this context, we are exploring the biogas production pathway from organic wastes, which remain an energy source not yet exploited in Algeria.

The aim of this study was to study the effect of humidity on the production of biogas by co-methanization of whey with cow dung in two experimental digesters (D1 and D2).

The mesophilic bio-methanization at 40 ° C allowed 42 liters of biogas produced by 1 kilogram of cow dung. After 100 days of digestion, the best biogas production was carried out by the digester 2. The best biogas production was carried out by the digester with the highest humidity, with an average biogas composition of 80% in methane and 14% carbon dioxide.

**Keywords:** Agricultural wastes, Methanisation, Biogaz.



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**Effect Of Different Austenitizing Temperatures On The Impact Strength And Hardness Of Nodular Cast Iron Austempered In Hot Sesame Oil (Sesamum Indicum Oil) Bath**

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**Abstract**

The effect of different austenitizing temperatures on the impact strength and hardness of nodular cast iron austempered in hot sesame oil (sesamum indicum oil) bath was investigated. Samples of nodular cast iron were machined to standard dimensions for impact strength test, hardness test and microstructural analysis prior to the austempering process. The sesame oil was used as hot quenching bath for the austempering process. The samples were normalized and thereafter, austempered in hot Sesame oil bath at 300oC for periods of 1,2,3,4 and 5 hours from austenitizing temperatures of 850oC and 910oC. Mechanical properties (impact strength and hardness) of the test samples were evaluated. The test results obtained showed that the highest hardness value of 403HVN was obtained from samples austenitizing at 910oC. Maximum impact strength of 157 kJ/m2 was also obtained from samples austenitizing at 910oC. Microstructures of the samples were analyzed using optical microscopy (OM) and scanning

	<p>electron microscopy (SEM). The microstructure, which consist of graphite nodules embedded in a matrix of ausferrite (acicular ferrite and carbon enriched austenite) was observed. The research showed that different austenitizing temperatures have effect on the hardness and impact strength of nodular cast iron austempered in sesame oil and austempering in sesame oil was able to cause the formation of ausferrite structure, hence could be recommended for used as an austempering quenching medium for nodular cast iron.</p> <p><b>Keywords:</b> austempering, Quenching medium, ausferrite, nodular cast iron, sesame oil</p>
<p><b>Muhammad T. Baba</b> ERCICSTR1808063</p>	<p><b>Effects Of Cutting Speed And Depth Of Cut On Surface Roughness (Ra) Of Aisi 1027 Steel In Turning Operation:</b></p> <p style="text-align: center;"><b>Muhammad T. Baba</b> Department of Mechanical Engineering, Federal Polytechnic, Pmb 35 Mubi, Adamawa State, Nigeria</p> <p style="text-align: center;"><b>Tumba, J.</b> Department of Mechanical Engineering, Federal Polytechnic, Pmb 35 Mubi, Adamawa State, Nigeria</p> <p style="text-align: center;"><b>Abstract</b></p> <p>The study was carried out to evaluate the effects of cutting speed and depth of cut on surface roughness (Ra) of AISI 1027 steel in turning operation. The Experimental samples of AISI 1027 Steel were turned on E3N-01 lathe machine using machining parameters of 40mpm, 50mpm and 60mpm for cutting speed (Cs), 0.5mm, 1.0mm and 1.5mm for depth of cut (Dc) and a constant feed rate (Fr) of 0.120mm/rev. The surface roughness of the turned samples were afterwards determined with the aid of Scanning Electron Microscope (SEM) and the results which range between 1.2456<math>\mu</math>m and 11.6069<math>\mu</math>m. The maximum Ra values of 6.4443<math>\mu</math>m, and 8.2161<math>\mu</math>m and 11.6069<math>\mu</math>m were obtained at cutting speed of 40mpm and the minimum Ra values of 1.2456<math>\mu</math>m, 1.9761<math>\mu</math>m and 5.9401<math>\mu</math>m were obtained at cutting speed of 60mpm. The results were subjected to statistical analysis using analysis of variance (ANOVA) as a statistical tool at 95% confidence interval (<math>p=0.05</math>). The results showed that the significant value (<math>p</math> value) for cutting speed is 0.036 which is less than 0.05 (<math>p=0.036&lt;0.05</math>). Similarly, the <math>p</math> value for depth of cuts 0.403 which is greater than the <math>p</math> value of 0.05. This implies that the surface roughness increases with increase in cutting speed statistically and vice versa. Similarly, the <math>p</math> value for depth of cut is 0.403 which are greater than the <math>p</math> value of 0.05. This, therefore, depict insignificant changes in surface roughness with increase in the values of this parameter (<math>p&gt;0.05</math>).</p> <p><b>Keywords:</b> Cutting speed, Depth of cut, mild steel, Surface roughness and Turning.</p>
<p><b>Nwifior K.</b> ERCICSTR1808064</p>	<p><b>Optical Analysis Of Aluminum Nickel Sphide Ternary Thin Films For Device Applications</b></p> <p style="text-align: center;"><b>Nwifior K.</b> Department of Physics, Ebonyi State College of Education, Ikwo, Ebonyi State, Nigeria</p> <p style="text-align: center;"><b>Ifeanyichukwu B. J.</b> Department of Physics, Ebonyi State College of Education, Ikwo, Ebonyi State, Nigeria</p> <p style="text-align: center;"><b>Abstract</b></p> <p>The solution growth technique was used to deposit ternary thin film on substrates at different bath parameters which include temperature, concentration of solution, volume of solution and water, time of deposition and</p>

pH, from bath composition of aluminum chloride (AlCl<sub>3</sub>), Nickel Chloride (NiCl<sub>2</sub>·6H<sub>2</sub>O), thiourea (CS(NH<sub>2</sub>)<sub>2</sub>), distilled water, ethylene diamine tetraacetic acid (EDTA) and ammonia (NH<sub>3</sub>). Ethylene diamine tetra acetic acid and ammonia served as the complexing agents. A UN-VIS-NIR spectrophotometer was used to measure transmittance, while absorbance and reflectance were determined by calculation. The GBC enhanced mini material analyzer (EMMA) X-ray diffractometer was used to measure the elemental compositions of the films. The optical properties revealed that films of Aluminum Nickel sulphide (Al<sub>4.5</sub>Ni<sub>7</sub>S<sub>3</sub>) have high absorbance and reflectance but moderate transmittance throughout the ultraviolet, visible and infrared regions. The above results show that Al<sub>4.5</sub>Ni<sub>7</sub>S<sub>3</sub> could be applied in solar cells, photo-thermal solar energy devices etc. It could also be used as anti-reflection coatings.

**Key words:** solution growth technique, optical properties, anti-reflection coatings.

**Ramin Kazemi**  
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**Bucket recursive trees with variable bucket capacities**

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**Abstract**

Recursive trees are rooted labelled trees, where the root is labelled by 1 and the labels of all successors of any node  $v$  are larger than the label of  $v$ . Kazemi introduced a new version of these trees where the nodes are buckets with variable capacities labelled with integers  $1, 2, \dots, n$ . In this model, the capacity of buckets is a random variable. A size- $n$  bucket recursive tree  $T_n$  with variable bucket capacities and maximal bucket size  $b$  starts with the root labelled by 1. The tree grows by progressive attraction of increasing integer labels: when inserting label  $j+1$  into an existing bucket recursive tree  $T_j$ , except the labels in the non-leaf nodes with capacity  $< b$  all labels in the tree (containing label 1) compete to attract the label  $j+1$ . For the root 1 node and nodes with capacity  $b$ , we always produce a new node  $j+1$ . But for a leaf with capacity  $c < b$ , either the label  $j+1$  is attached to this leaf as a new bucket containing only the label  $j+1$  or is added to that leaf and make a node with capacity  $c+1$ . This process ends with inserting the label  $n$  (i.e., the largest label) in the tree. In this paper, we give results on depth, degree, descendant, eccentric connectivity index and branches in bucket recursive trees with variable bucket capacities.

**Keywords:** Bucket recursive trees with variable bucket capacities, depth, degree, descendant, eccentric connectivity index, branch.

**Construction of Equivalent Model of Patch Antenna Using Magnetic Dipole**

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**Abstract**

This paper proposes a fast and efficient technique for constructing an equivalent



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	<p>model of patch antenna for predicting its radiation pattern. A code was developed to determine the electric field of a magnetic dipole based on Green function derivation. The result of the radiation pattern for the far-field and near-field were computed and validated with the result of a commercial software tool (FEKO). The magnetic dipole was used to construct the equivalent model of patch antenna based on the radiation mechanism to predict its radiation pattern. Only two design parameters needed to be optimized which makes it more computational efficient. The radiation pattern of the derived equivalent model was validated with that of the patch antenna to evaluate its efficiency. The simulation results show that the proposed equivalent model based on a magnetic dipole do not require detailed geometry and material information of the patch antenna.</p> <p><b>Keywords :</b> Magnetic dipole, patch antenna, optimization, equivalent model, radiation pattern</p>
<p><b>Nedjma Melais</b> ERCICSTR1808068</p>	<p><b>Green Preparation Of Enantiomerically Enriched 4-Chromanol Through Lipase-Catalyzed Acylation Under Unconventional Activation</b></p> <p><b>Nedjma Melais</b> Ecocompatible Asymmetric Catalysis Laboratory. Badji Mokhtar Annaba-University. B.P 12, 23000 Annaba, Algeria Département De Chimie - Faculté Des Sciences Université 20 Août 1955 Skikda Bp 26 Route El-Hadaiek 21000 Algeria</p> <p><b>Mourad Boukachabia</b> Département De Chimie - Faculté Des Sciences Université 20 Août 1955 Skikda Bp 26 Route El-Hadaiek 21000 Algeria</p> <p><b>Louisa Aribi-Zouioueche</b> Département De Chimie - Faculté Des Sciences Université 20 Août 1955 Skikda Bp 26 Route El-Hadaiek 21000 Algeria</p> <p><b>Olivier Riant</b> Imcn/Most. Université Catholique De Louvain, Belgique</p> <p><b>Abstract</b></p> <p>In recent years, biocatalyzed kinetic resolution associated with chemo-enzymatic methodologies are tools frequently used to prepare enantiomerically active molecules, its potential in organic catalysis is far from being fully exploited. Particularly, heterocyclic compounds are common fragments found in several natural and unnatural bioactive compounds [1]. Herein, we present studies on the resolution of (R/S) - 4-chromanol used for the preparation of enantiomerically pure building blocks in a green fashion. The microwave irradiation and ultrasonication are widely used in organic chemistry [2]. We have reported a convenient procedure for the lipase-catalyzed acylation with succinic anhydride as acylating agent [3] under unconventional activation. The use of the PCL lipase allowed the resolution of heterocyclic alcohol in enantiomerically enriched form with a very high selectivity. The (R)-enantiomer of 4-chromanol is obtained with high selectivity (<math>E &gt; 200</math>) and a conversion of <math>C = 32\%</math> under ultrasound irradiation and microwave activation.</p> <p><b>Keywords:</b> microwave; biocatalysis; ultrasound.</p>
	<p><b>Enhanced Attendance Management System: A Biometrics System of Identification Based on Fingerprint</b></p> <p><b>Grace U. Nneji</b> University of Electronic Science and Technology of China Department of Information and Software Engineering, Chengdu, 611731, China</p> <p><b>Jianhua Deng</b></p>



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**Abstract**

Lately, there has been a high level of impersonation experienced on a daily basis in private and public sectors. Fingerprints are a form of biometrics identification which is unique and does not change in one's entire lifetime. This paper presents an enhanced attendance management system using fingerprint technology in a university environment. It was developed using the waterfall methodology. This system consists of two procedures; enrolment and identification. During the enrolment, the fingerprint of the user is captured and its unique features extracted and stored in the database along with the user's identity as template for the subject. During identification, the fingerprint of the user is again captured and the extracted feature is compared with the template in the database in a ratio 1: N-templates, to identify a match (a user) before attendance is made. The enhanced attendance management system was implemented with Java programming language on a Net Beans IDE framework. The system is secured and reliable, and capable of averting impersonation.

**Keywords:** Biometrics, Fingerprint, Attendance management, waterfall, enrollment, identification

**Danjumma B.J**  
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**Effects Of Leaf Powder Of Three Plants On The Development Of Maize Weevil (Sitophilus Zeamais Motschulsky, Coleoptera: Curculionidae) Infesting Maize**

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**Abstract**

Leaf powders from three plants viz. *Acacia nilotica*, *Balanite aegyptiaca*, and *L. martinicensis* were studied for their effect on the development of *Sitophilus zeamais* (Motsch.). Doses use, 2.0g, 4.0g and 6.0g/100g of maize seeds where were infested with 20 pairs of newly emerged adult *S. zeamais*. These were tested alongside the synthetic insecticide (0.5g pirimiphos methyl) under laboratory conditions. Data were obtained on Mortality, developmental duration, emergence. Weight loss, grain damage and viability of the grain, these were assessed in a completely randomized design. The mortality of all the plant materials were found significantly reducing the survival of the *S. zeamais* at different application rates. Effects of plant powder on the emergence of adult *S. zeamais* was significantly ( $p < 0.05$ ) higher and reduced the F1 progeny emergence. The highest emergence ( $29.33 \pm 0.67$ ) was observed from the grains treated with 2.0g of *B. eagyptiaca* and least ( $3.33 \pm 0.33$ ) was from 6.0g of *A. nilotica*. The quantitative loss was also significantly ( $p < 0.05$ ) different. All the

	<p>treated seeds prove to be viable after three months of infestation. These observations have indicated that all the tested materials have potentials for use in protecting the maize from maize weevil infestation during storage.  <b>Keywords-</b> Maize weevil, Plant powders, Perimiphos methyl.</p>
<p><b>A. Cheriet</b>  <b>ERCICSTR1808071</b></p>	<p style="text-align: center;"><b>Methylated Silicon As Anode Material For Li-Ion Batteries</b></p> <p style="text-align: center;"><b>A. Cheriet</b>  LPMC, CNRS, Ecole Polytechnique (UMR7643), Palaiseau, France</p> <p style="text-align: center;"><b>M. Rosso</b>  LPMC, CNRS, Ecole Polytechnique (UMR7643), Palaiseau, France</p> <p style="text-align: center;"><b>C. Henry De Villeneuve</b>  LPMC, CNRS, Ecole Polytechnique (UMR7643), Palaiseau, France</p> <p style="text-align: center;"><b>F. Ozanam</b>  LPMC, CNRS, Ecole Polytechnique (UMR7643), Palaiseau, France</p> <p style="text-align: center;"><b>A. Keffous</b>  Research Center Of Semiconductors Technology For Energy CRTSE, Algiers, Algeria</p> <p style="text-align: center;"><b>L. Louail</b>  Faculty Of Sciences, Farhat Abbas University, Sétif (19000), Algérie</p> <p style="text-align: center;"><b>Abstract</b></p> <p>Silicon is a very promising material for improving the energy density of lithium-ion batteries due to its high theoretical charge capacity, 3579 mAh.g<sup>-1</sup>. However, it is necessary to circumvent its disadvantages before using it in commercial devices. One major problem is the mechanical failures associated with the two-phase lithiation and the large volume changes during lithiation/delithiation cycles of amorphous Silicon.</p> <p>We recently reported [1,2] that amorphous silicon-carbon alloys prepared by low-power PECVD exhibit significantly improved performances. In these films carbon is mostly inserted as methyl groups, forming the compound a-Si(1-x)(CH<sub>3</sub>)<sub>x</sub>H (0 ≤ x ≤ 0.4). This material was used in two-electrode half-cells in order to evaluate its electrochemical properties. It exhibits a capacity similar to that of pure amorphous silicon with an enhanced cyclability and a better stability of the solid electrolyte interphase.</p> <p>The observed improvement in cyclability between a-Si and Methylated Silicon anode is attributed to mechanical softening by the incorporation of CH<sub>3</sub> groups and their behavior during charge/discharge process.</p> <p>In this work, we study the amorphous methylated-silicon film evolution, during cycling by in-situ optical imaging, and a dedicated cell was built, enabling in situ imaging the crack evolution induced by lithiation/delithiation cycles. Methylation was shown to delay crack formation, indicating an enhanced plasticity of methylated layers. Ex situ non-contact AFM allowed us to characterize quantitatively the deformation of the layers after cycling and quantify the grain size evolution during lithiation.</p> <p><b>Keywords:</b> Amorphous silicon, Li-ion batteries, Charge capacity, AFM.</p>
	<p style="text-align: center;"><b>Production of the Soil-paper Block with Appropriate Technology as substitute for brick in rural Indonesia</b></p> <p style="text-align: center;"><b>Vincentius Totok Noerwasito</b>  Departement of Architecture Institut Teknologi Sepuluh Nopember Surabaya</p> <p style="text-align: center;"><b>Erwin Sudharma</b>  Departement of Architecture Institut Teknologi Sepuluh Nopember Surabaya</p>



**Vincentius Totok  
Noerwasito  
ERCICSTR1808073**

**Abstract**

This study describes the process of making the soil-paper block from the beginning to become a ready-made block by residents in rural areas using appropriate technology. Location of manufacture is in village area. This is done because there is a lot of paper waste in the area and also to replace the use of red brick. Red brick production in the area is a problem, because it is difficult to find firewood to burn bricks perfectly.

The Soil-paper block production is a combination of the production process of Compressed Earth Block (CEB) with Papercrete. The Soil-paper block that occurs has a lower density than compressed earth block. The basic material of the block is soil; paper; cement and lime. The composition of the mixture is regulated by weight. The compaction and moulding process is done manually and dried in a natural way.

The soil-paper block making is not focused on the compressive strength of the block but on its thermal characteristics. Temperature measurement is done to determine the level of heat insulation of the soil-paper block. External and internal temperature measurements are performed on building simulation and using a data logger. The final result of the research is the shape of the soil-paper block sample according to the size of the red brick (10 x 20 x5 cm) and the temperature conditions in the model of the building with the soil-paper block wall for 24 hours. Future used the soil-paper block can reduce paper waste and use local materials.

**Keywords:** Soil-paper block; CEB; Papercrete; Appropriate technology; Temperature.

**N. Al-Zaqri  
ERCICSTR1808074**

**Formation Of Five-Coordinate Cycles (-N-Pd-O-) In A Palladium Catalyst For The Heck Reaction**

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**Abstract**

A neutral Pd complex of 1-(2-pyridinyldiazenyl)-2-naphthol (PAN) was prepared by reacting [PdCl<sub>2</sub>] in dichloromethane at room temperature with PAN. The objective of this study is to prepare Pd(II) complexes of nitrogen-containing compounds. These new complexes were analyzed using spectral measurements (infrared, NMR, and ultraviolet spectroscopy) and thermal measurements (thermogravimetry and differential thermal analysis). The Pd-PAN complexes showed good catalytic activity for C-C cross coupling reactions (Heck reaction).

**Syntheses, Characterization, Catalyst and Heck reaction**

**Youcef Ghernouti  
ERCICSTR1808075**

**Mechanical Performance Development By Steam Curing Of Self-Compacting Concretes Based On Silica Fume And Limestone Powder**

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**Abstract**

In this paper, influence of heat treatment on the evolution of mechanical strengths at early age, less than 24 hours of self-compacted concretes with limestone powder and silica fume was investigated. Two mixtures containing Portland cement (PC), silica fume (SF), and limestone powder (LP) was produced with 462kg/m<sup>3</sup> of total cementitious materials content and with a constant water/binder ratio of 0.39. For each mixture, concrete samples were either cured in water at (23±1°C), or steam cured at 65°C maximum temperature over 06h curing period. Tests of mechanical strengths were performed with specimens cooled down slowly to room temperature after heating.

The test results demonstrated that all SCCs mixtures satisfying the criteria of self-compacting concrete exhibited satisfactory fresh properties (slump flow diameter, L-box and sieve stability tests), which is an indication of a good deformability. Interesting compressive strengths are obtained, higher than 35MPa at the age of 24 hours for the SCC mixtures undergoing heat treatment; they are equivalent and similar to that of SCC mixtures not undergoing heat treatment at the age of 7 days. The compressive strength gain of SCCs mixtures with limestone powder and with silica fume, steamed at the age of 24 hours, compared to SCCs mixtures cured in water is 85% and 75%, respectively.

**Keywords:** Concrete, limestone powder, silica fume, heat treatment, mechanical strengths

**Lila Boulekbache-Makhlouf**  
ERCICSTR1808077

**Antioxidant activity, carotenoids, chlorophylls, and mineral composition from leaves of *Pallenis spinosa*: an Algerian medicinal plant**

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**Abstract**

Plant and medicinal herbs are important sources of bioactive compounds and minerals that can play a role in preventing various diseases and in maintaining

	<p>the equilibrium of the internal environment of our body.</p> <p>We investigated the content of carotenoids and chlorophylls of leaves from <i>P. spinosa</i> (<i>P. spinosa</i>), as well as their antioxidant activity and mineral composition. Then, we optimized the solvent extraction for the recovery of total carotenoids and chlorophylls using spectrophotometric method. Finally, we tested the antioxidant activity of the optimized extract by three assays (DPPH, ABTS and FRAP) and we determined the mineral composition by Emission Spectrometer Induced Couple Plasma (ICP).</p> <p>Carotenoid (CART), chlorophylls (CHLa+b), chlorophyll a (CHLA), chlorophyll b (CHLB) contents were about <math>36.337 \pm 0.312</math> mg/ 100 g dw; <math>347.769 \pm 6.326</math> mg/100 g dw; <math>224.286 \pm 5.601</math> mg/100 g dw; <math>123.483 \pm 1.339</math> mg/100 g dw, respectively. We revealed an interesting antioxidant capacity by the tested extract (DPPH: <math>127.522 \pm 1.406</math> mmol ET/Kgdw, ABTS: <math>104.827 \pm 1.222</math> mmol ET/Kgdw and FRAP <math>71.89 \pm 0.495 \pm 0.994</math> mmol ET/Kgdw). Carotenoids and chlorophylls content correlate positively with the antioxidant activity of <i>P. spinosa</i> leaves extract (<math>r = 0.646-0.986</math>). Eight minerals have been detected (Ca, Mg, P, Fe, Mn, Zn, Cu and Cr), Ca and Mg being the predominant ones (<math>38511.88 \pm 130.63</math> mg/Kg and <math>6479.32 \pm 48.33</math> mg/ Kg, respectively). These results have shown that <i>P. spinosa</i> leaves are a good source of carotenoids and chlorophylls with a potent antioxidant potential with a high amount of minerals.</p> <p><b>Keywords:</b> <i>P. spinosa</i>, extraction, carotenoids, chlorophylls, antioxidant activity, mineral composition.</p>
 <p><b>Maitreeye Dutta</b> ERCICSTR1808079</p>	<p><b>Performance Enhancement of Epilepsy Detection using Optimization Techniques</b></p> <p><b>Maitreeye Dutta</b> Professor and Head, Computer Science Engineering Department and ETV Department, National Institute of Technical Teachers Training and Research, Chandigarh, India</p> <p><b>Jagriti Saini</b> Ph.D. Research Scholar, National Institute of Technical Teachers Training and Research, Chandigarh, India</p> <p><b>Abstract</b></p> <p>Epilepsy is a neurological disorder that is identified by the presence of reoccurring seizures. Around 65 million people are suffering from this disease throughout the world, and like many other neurological disorders, the most commonly used method for epilepsy detection is electroencephalogram (EEG). However, EEG signals are nonstationary and nonlinear in nature, so it becomes quite difficult for medical doctors to interpret details about the significant data. In this work, an Artificial Neural Network (ANN) based design is proposed for automatic detection of epileptic signals from an EEG data set obtained from the healthy and epileptic brain. Results of detection system are evaluated on the basis of four major parameters: classification accuracy (99.3%), sensitivity (99.02%), specificity (99.34%), and precision (99.3%). Further, Particle Swarm Optimization, Genetic Algorithm, and Simulated Annealing are used to reduce the Mean Square Error of the detection system so that performance of ANN based Expert System for Epilepsy Detection can be improved.</p> <p><b>Keywords:</b> Epilepsy, Electroencephalogram, Mean Square Error, Particle Swarm Optimization, Genetic Algorithm, Simulated Annealing.</p>
<p><b>N. Azouaou</b> ERCICSTR1808081</p>	<p><b>Removal Of Metylene Blue From Aqueous Solution By Adsorption Onto Olive Cake</b></p> <p><b>N. Azouaou</b> Laboratory of Reaction Genius, Faculty of Mechanical And Processes Genius,</p>

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#### Abstract

Water contamination caused by dye industries, including food, leather, textile, plastic, cosmetics, paper-making, printing and dye synthesis, has caused more and more attention, since most dyes are harmful to human being and environments. Olive cake was used as a high-efficiency adsorbent for the removal of a cationic dye (methylene blue, MB) from aqueous solution. The adsorption experiments were carried out in batch at room temperature. A given mass of adsorbent was added to methylene blue (MB) solution and the entirety was agitated during a certain time. The samples were carried out at quite time intervals. The concentrations of MB left in supernatant solutions after different time intervals were determined using a UV-vis spectrophotometer. The amount of MB adsorbed per unit mass of olive cake (qt) and the dye removal efficiency (R %) were evaluated. The effects of contact time, adsorbent dose, initial solution pH and initial concentration were systematically investigated. Results showed the adsorption kinetics followed the pseudo-second-order kinetic model. Langmuir isotherm model is in good agreement with the experimental data as compared to Freundlich and D-R models. The maximum adsorption capacity was found equal to 58.13mg/g. In addition, the possible adsorption mechanism was also proposed based on the experimental results.

The good capacity of olive cake to remove MB from aqueous solution was demonstrated in this study, highlighting its potential for effluent treatment processes. The kinetic experiments show that the adsorption is rapid and maximum adsorption capacities  $q_{max} = 58.13\text{mg/g}$  achieved in 40min. The adsorption process is a function of the adsorbent concentration, pH and metal ion concentration. The optimal parameters found are: adsorbent dose  $m = 4\text{g}$ ,  $\text{pH} = 8$  and ambient temperature. FTIR spectra showed that the principal functional sites taking part in the sorption process included carboxyl and hydroxyl groups.

**Key words:** Adsorption, kinetic study, Methylene blue, olive cake.

#### Study Of Thermal Stress In Enterococcus Strains

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**Abstract**

Enterococci have important implications in the dairy industry. They play an acknowledged role in the development of sensory characteristics during ripening of many cheeses and have been also used as components of cheese starter cultures. The technological application of enterocins, shown to be produced during cheese manufacture, led to propose enterococci as adjunct starter or protective cultures in cheeses. These strains should resist to adverse conditions encountered in industrial processes, for example during starter handling and storage (freeze-drying, freezing); to which they respond by activating adaptive mechanisms which in turn affect their survival and technological performances. We studied the effect of thermal stress on the viability of ten strains of *Enterococcus* isolated from different sources and identified with the VITEK system, the viability of the strains is affected differently by this stress and the CFU number is lower when the intensity of stress was increase. We have found that the two strains LF4 and CHM17 isolated from breast milk and camel milk respectively are the most resistant to extreme thermal stress (-20°C et 65°C), while the rest of the strains show a very high mortality (90% mortality) at these temperatures. The mortality rate is variable according to the strains for the temperatures of 10°C to 45°C. The results obtained allow us to note that the lethality was determined at 75 °C for the majority of strains. The analysis of intracellular proteins by SDS-PAGE electrophoresis, whose profiles are processed by Image J® software, reveal the appearance of proteins involved in the mechanism of fight against this stress, and also causes the disappearance of other proteins under intense stress conditions.  
Key words: Thermal stress - viability -CFU- *Enterococcus*-SDS PAGE - Image J®



Wahab Ali Shah  
ERCICSTR1808084

**An Experimental Study On The Positive Streamer Leader Propagation Under Slow Front Impulse Voltages In A 10m Rod-Plane Air Gap**

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**Abstract**

In this work, we performed a large-scale investigation into leader development in a 10-m rod-plane gap under a long front positive impulse. To describe the leader propagation under slow front impulse voltages, we recorded the leader propagation with a high-speed charge coupled device (CCD) camera. It is important to figure out this phenomenon to deepen our understanding of leader discharge. The observation results showed that the leader mechanism is a very complex physical phenomenon; it could be categorized into two types of leader process, namely, continuous and the discontinuous leader streamer-leader propagation. Furthermore, we studied the continuous leader development parameters, including two-dimensional (2-D) leader length, injected charge, and final jump stage, as well as leader velocity for rod-plane configuration. We observed that the discontinuous leader makes an important contribution to the appearance of channel re-illuminations of the positive leader. The comparative study shows better results in terms of standard switch impulse and long front positive impulse. Finally, the results are presented with a view toward improving

	<p>our understanding of propagation mechanisms related to restrike phenomena, which are rarely reported. To clarify the above doubts under long front cases, we carried out extensive experiments in this study.</p> <p><b>Keywords—</b> Continuous and discontinuous leader, high-speed photographs, long air gap, positive long front impulse, restrike phenomena.</p>
<p><b>Falak Khan</b> ERCICSTR1808085</p>	<p><b>Is All That Glitters, Gold? A Behavioral Financial Aspect Of Cryptocurrency.</b></p> <p><b>Falak Khan</b> Assistant Professor, FAST NU, Islamabad, Pakistan</p> <p><b>Abstract</b> Information Technology has emerged as an integral part of globalization, where it is not only used in e-commerce, e-business and R&amp;D but is also a crucial part of complex data mining used in developing digital currencies. These currencies have become popular in the last decade and people have started investing in blindly. The current paper focuses on exploring the investor biases in investment decision making of digital currency/crypto currency by employing qualitative measures and interviewing individuals who have purchased cryptocurrency . It is established from the results that due to complexity of price determination and profit attractiveness, investors become a victim of biases and heuristics when they are investing in digital currencies. <b>Keywords :</b> digital currency, crypto currency, investment decisions, investor biases</p>
<p><b>Linton Fhatuwani</b> <b>Munyai</b> ERCICSTR1808088</p>	<p><b>The potential of Spectro-radiometer and satellites sensors (SPOT) to detect Harmful Algal Blooms (HABs) on inland aquaculture fish dams: A case study in Vhembe District, Limpopo Province, South Africa</b></p> <p><b>Linton Fhatuwani Munyai</b> Department of Ecology and Resource Management, South Africa</p> <p><b>Farai Dondofema</b> Department of Geo &amp; Geo-Informatics, South Africa</p> <p><b>Inos Dhau</b> Department of Geography and Environmental Studies, Sovenga, 0727, South Africa</p> <p><b>Jabulani Ray Gumbo</b> Department of Hydrology &amp; Water Resources, University of Venda, P/Bag x5050, Thohoyandou, 0950, South Africa</p> <p><b>Abstract</b> Satellite remote sensing techniques have been proved to be the best methods for quantifying chlorophyll-a levels by inference algal concentrations in water reservoirs. Harmful algal blooms (HABs) are posing significant threat to the many water bodies in South Africa, especially on inland aquaculture. This study aims at developing empirical remote sensing models to estimate chlorophyll concentrations in small fish dams using Spot 6 and 7 Images. It is the first study to provide quantitative water quality information for Vhembe region's inland aquaculture from a time series of satellite remotely sensed data. The objectives of this study are to evaluate spatial and temporal distributions of algae in small-fish-ponds and to assess chlorophyll-a concentration in fish farming dams. Three fish ponds were identified: Nkowankowa, Tshifulanani and Lwamondo; the concentration of Chl-a was found to be 0.056mg/L, 0.021mg/L and 0.065mg/L respectively. Reflectance curve were produced from both data sets. The curves show high dominance of cyanobacteria blooms in fish ponds. Remote sensing can play a significant role supplementing in situ efforts which are time consuming and costly. This study presents the development and use of algorithms based on</p>

	<p>reflective characteristics of HABs to create a more accurate model for the fish ponds. The study was established to combine satellite remote sensing approaches including spectral analysis, spatial analysis and visual interpretation for chlorophyll detection and HABs monitoring.  <b>Keywords:</b> Satellite remote sensing; SPOT satellite, chlorophyll-a, Harmful algal blooms (HABs), monitoring and detection.</p>
 <p><b>P.V.S. Machiraju</b>  <b>ERCICSTR1808090</b></p>	<p><b>Quality Evaluation of Subsurface Waters In Rural Habitations By Assessing Chemical, Metal Toxicity And Microbial Contamination</b></p> <p><b>P.V.S. Machiraju.</b>  <b>Department of Chemistry, Pragati Engineering College (A), Surampalem-533437, A.P. India</b></p> <p><b>P.Satyanarayana.</b>  <b>Department of Chemistry, Pragati Engineering College (A), Surampalem-533437, A.P. India</b></p> <p><b>Abstract</b>  Water is a universal solvent and significant natural resource which is vital for the survival of all ecosystems on the planet of the earth. Agricultural activities with their intensive utilization of agro chemicals pose a significant potential for negative impact on the quality of subsurface water. Expansion and intensification of cultivation are among the predominant global changes of this century. The purpose of the present study is aimed at evaluating the ground water quality in rural habitations near agricultural activity in East Godavari District, Andhra Pradesh, India. Impacts have been assessed through the systematic collection of subsurface water samples in the study areas and characterized for a range of physicochemical parameters viz., pH, EC, TDS, TH, Ca<sup>2+</sup>, Mg<sup>2+</sup>, TA, Na<sup>+</sup>, K<sup>+</sup>, Cl<sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, PO<sub>4</sub><sup>3-</sup> and NO<sub>3</sub><sup>-</sup> for assessing chemical contamination. Irrigation parameters are determined to evaluate the water quality for assessing their potentials for application. Multivariate Factor analysis is performed for the parametric data set. This provides an insight into the source of parameters which are responsible for the water quality changes that occur in subsurface waters. The waters are further characterized for metal ions to assess the level of metal toxicity and microbial analysis to estimate the bacterial contamination. The present study elucidated the effectiveness of factor analysis in evaluating the changes in subsurface water quality which is dominated by natural and anthropogenic activities. The research results revealed that waters though are free from metal toxicity, chemical contamination make the waters unsuitable for drinking and domestic purposes. Presence of pathogenic bacterial species confirms that these waters affect human health by causing waterborne diseases.  <b>Key words:</b> Ground water, Agriculture, Characterization, Parameter, Metal ion, Bacteria.</p>
<p><b>Nwadike Emmanuel Chinagorom</b>  <b>ERCICSTR1808091</b></p>	<p><b>Steel Work Design And Analysis Of A 2-Wheeled Scooter</b></p> <p><b>Nwadike Emmanuel Chinagorom</b>  <b>Department Of Mechanical Engineering, Nnamdi Azikiwe University, P.M.B. 5025, Awka, Anambra State, Nigeria</b></p> <p><b>Okafor Christian</b>  <b>Department Of Mechanical Engineering, Nnamdi Azikiwe University, P.M.B. 5025, Awka, Anambra State, Nigeria</b></p> <p><b>Obika Echezona Nnaemeka</b>  <b>Department Of Mechanical Engineering, Nnamdi Azikiwe University, P.M.B. 5025, Awka, Anambra State, Nigeria</b></p>

	<p style="text-align: center;"><b>Azaka Onyemazuwa Andrew.</b>  <b>Department Of Mechanical Engineering, Nnamdi Azikiwe University, P.M.B.</b>  <b>5025, Awka, Anambra State, Nigeria</b></p> <p style="text-align: center;"><b>Abstract</b></p> <p>This motorized Two-wheel scooter is specifically designed for low speed, and hence is more suitable for short distance commute. It incorporates a mild steel frame which houses the transmission mechanism. This transmission system in itself is a motor- chain-sprocket assembly: a 350w DC motor powered by a 24v, 18A battery generates sufficient torque which is transmitted by a 16 toothed sprocket through a chain comprising of 64 links to a rear sprocket (22 teeth) attached to the rear wheel. On either side of the handle bar is the brake lever (left) and speed controller (right) for ease of navigation. The stress analysis revealed that the maximum stress induced on the frame due to design load is 49.156N/m<sup>2</sup>. The maximum design load of this scooter is 686.7N, and from the graph analysis the scooter travels at a maximum velocity of 0.51m/s. The graph also revealed that the velocity of the scooter is inversely proportional to the load. Similarly, the discharge rate of the battery increases as the load is increased. Also, the scooter velocity is directly proportional to the rate of battery discharge. The continuous working time of the battery is 40min at rated load and normal working condition.</p> <p><b>Keyword; scooter, electric vehicle, design, velocity, motorize, wheel.</b></p>
<p><b>Mukhtar Opeyemi Yusuf</b>  <b>ERCICSTR1808092</b></p>	<p style="text-align: center;"><b>Blockchain Technology for Electoral Process in Africa: A Short Review</b></p> <p style="text-align: center;"><b>Mukhtar Opeyemi Yusuf</b>  <b>Department of Computer Science, Noida International University, Plot 1,</b>  <b>Yamuna Express Way, Sector 17A, Greater Noida, Utter Pradesh, 203201</b>  <b>(India)</b></p> <p style="text-align: center;"><b>Nazifi Alhassan Sani</b>  <b>Department of Computer Science, Noida International University, Plot 1,</b>  <b>Yamuna Express Way, Sector 17A, Greater Noida, Utter Pradesh, 203201</b>  <b>(India)</b></p> <p style="text-align: center;"><b>Abstract</b></p> <p>The electoral process in Africa has suffered from deep political instability following the post-colonial independence of most African nations. Moreover, the electoral process in many African countries is characterized by massive rigging, high cost of electoral materials, and declaration of false results. In this paper, I will present a review of the Blockchain Technology and some of the potential roles it will play in conducting a transparent election in Africa. A Blockchain is designed as an open distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way, using a peer-to-peer network protocol. This paper opines that with the emergence of the Blockchain Technology, African nations should tap from it and build a reliable, secure, and convenient electoral voting system. It further suggests that a Blockchain Electoral Voting System will eliminate most of the challenges faced by African nations in conducting a free, fair and transparent election with low cost and total security. A few highlighted advantages over the traditional voting system (ballot-box system), includes — It is safer and more convenient for both voters and electoral body to use and manage respectively. Votes saved via the system are very well secured and almost impossible to alter. It is very transparent because the blockchain itself is a public, indestructible, ledger. It is economically cheaper to run and maintain compared to the traditional ballot-box system. The issue of election rigging is almost completely eradicated with this technology (if well installed). An attempt to rig the system database can be spotted easily, because it is a very transparent and public technology, such an attempt is considered void and denied permission to access, alter, or destroy any of the previously saved</p>

	<p>votes. However, the paper argues that there are institutional challenges to implementing this technology within the continent. Specifically, there is a need to educate the masses as well as create robust policies that can accommodate this technology within the continent. Failure to acknowledge these challenges may well prevent the application of Blockchain Technology in African electoral process in the foreseeable future.</p> <p><b>Keywords:</b> Blockchain Technology, Electoral Process, Ballot-box, Voting System, Africa, Votes.</p>
<p><b>Mohammed M. Shukr</b> ERCICSTR1808093</p>	<p><b>Determination of serum copper, iron and zinc in pregnant women who induced miscarriage using FAAS</b></p> <p><b>Mohammed M. Shukr</b> Faculty of dentistry / Ishik University / Kurdistan Region - Iraq</p> <p><b>Abstract</b></p> <p><b>Introduction:</b> Abortion is defined as the termination of a pregnancy resulting in or closely followed by the death of the embryo or fetus. It also called miscarriage which is the loss of the pregnancy prior to viability (before 22 weeks of pregnancy or less than 500g).</p> <p><b>Aim:</b> The idea behind this research was to evaluate concentrations of essential metals like copper (Cu), iron (Fe) and zinc (Zn) in blood serum of pregnant women who induced miscarriage and healthy pregnant women who didn't have miscarriage history.</p> <p><b>Materials &amp; method:</b> Serum concentrations of essential metals like copper, iron and zinc were assayed using flame atomic absorption spectroscopy (FAAS) technique in n=50 patients (women who induced miscarriage) and n= 15 healthy pregnant women (control).</p> <p><b>Results:</b> The results of the study showed that; there were significant decrease (<math>p &lt; 0.0001</math>) in serum Cu, Fe and Zn concentration levels in miscarriage patients as compared to healthy pregnant controls.</p> <p><b>Keywords:</b> atomic absorption spectroscopy, essential metal, copper, iron and zinc.</p>
<p><b>Michael O. Dioha</b> ERCICSTR1808094</p>	<p><b>Rooftop Solar PV in Urban Residential Buildings of Nigeria: A Methodology for Potential Estimation</b></p> <p><b>Michael O. Dioha</b> Department of Energy and Environment, TERI University, 10 Institutional Area, Vasant Kunj, New Delhi - 1100 70 (India)</p> <p><b>Atul Kumar</b> Department of Energy and Environment, TERI University, 10 Institutional Area, Vasant Kunj, New Delhi - 1100 70 (India)</p> <p><b>Abstract</b></p> <p>Solar Photovoltaic (PV) technology has become the fastest growing renewable energy technology in the world. Nigeria is blessed abundantly with solar resource and the government of Nigeria has expressed its interest in deployment of solar energy technology in the country. This paper presents a computationally logical methodology to estimate the technical potential of rooftop solar PV in urban residential buildings of Nigeria. The paper also heads on to estimate the annual energy yield, levelized cost and break-even capital cost of rooftop solar PV. The available roof area for solar PV in urban residential buildings of Nigeria is estimated at 796 km<sup>2</sup> and technical potential at around 124 GWp. Annual energy yield and levelized cost of electricity from rooftop solar PV were analysed for sample cities. The policy implications for deployment of rooftop solar PV was also highlighted. Based on the findings of this study, rooftop solar PV can play a major role towards energy security in the country. This paper will be of immense importance to the Nigeria energy stakeholders.</p>

	<p><b>Keywords: Rooftop solar PV, Technical potential, Urban residential buildings, Nigeria</b></p>
<p><b>A. Mezidi ERCICSTR1808095</b></p>	<p style="text-align: center;"><b>Effect Of Rubber Crumb On The Behavior Of Concrete Sand</b></p> <p style="text-align: center;"><b>A. Mezidi</b> Laboratory of Construction and Environment (LCE) National Polytechnic School of Algiers, Algeria</p> <p style="text-align: center;"><b>R. Kettab</b> Laboratory of Construction and Environment (LCE) National Polytechnic School of Algiers, Algeria</p> <p style="text-align: center;"><b>Abstract.</b></p> <p>This study has highlighted the possibility of valorization of sand dunes which represents 70% of south local materials Algerian and a waste product resulting from used tires in large amounts non-recoverable.</p> <p>We are interested in incorporating an acrylonitrile butadiene rubber (NBR) as rubber crumb in a by dunes of sand concrete, rather than the sake of improving the mechanical performance, but in order to compare their characteristics and behavior in relation to control concrete. This polymer which is not biodegradable is an industrial waste. It has been proposed to us by the elastomer Algerian society (SAEL) to find eventual use in buildings. This article is a contribution to the promotion of local materials and the use of industrial waste. He substituted intended to rubber crumb by sand dunes and see the features and behavior of sand dunes concrete modified with rubber crumb weight contents of this latter from 1 to 5 % (in steps of 1).</p> <p>The optimal percentage of incorporation of the rubber crumb is 3%. Moreover, the results obtained showed that the elastic modulus of the modified sand dunes concrete is lower, consequently it cannot used for structural elements but against it can be used for other elements such as curbs, foundation layer and burying of weakly radioactive materials, decorative elements and in the separation lanes for motorways.</p> <p><b>Keywords: Concrete of sand, Rubber crumb, Elastic modulus, Elastomeric, Polymer.</b></p>
<p><b>Roudane Mohamed ERCICSTR1808097</b></p>	<p style="text-align: center;"><b>Design And Dimensioning Of An Automotive Radiator</b></p> <p style="text-align: center;"><b>Roudane Mohamed</b> Department of Mechanical Engineering, University Ob Blida 1, Algeria</p> <p style="text-align: center;"><b>Salhi Merouane</b> Department of Mechanical Engineering, University Ob Blida 1, Algeria</p> <p style="text-align: center;"><b>Abstract</b></p> <p>The purpose of this work is the design and dimensioning of an automotive radiator from an original radiator, by determining the design parameters of a smaller radiator capable of dissipating the same heat quantity as the assembly of origin. The design based on the increase of contact surface (fins). To prove this hypothesis, we carried out tests on our current radiator, which measures (0.6 * 0.43 * 0.025)m, to determine the heat transfer performance in typical operating conditions. We found that our current radiator assembly was able to dissipate a heat flux of 70777 W.</p> <p>Then, using the <math>\varepsilon</math>-Ntu (efficiency-Ntu), we calculated the heat transfer performance of our new radiator, which has a radiator length of 30% less than the length of the current design (0.45 * 0.43 * 0.025) m. As expected, the heat transfer performance decreased. However, by increasing the metal-air surface area from 392 fins per row to a fixed number, we have increased the thermal transfer performance of our proposed design to the same level as the current design under the same operating conditions.</p>

	<p><b>Key words:</b> Radiators, Design, <math>\varepsilon</math>-Ntu method, Exchanger with two unmixed fluids, Heat flux, fins, Global heat transfer coefficient, heat capacity rate, Nusselt number, Convective heat transfer coefficient.</p>
<p><b>N.A. Laoufi</b> ERCICSTR1808055</p>	<p><b>Efficiency of solar radiations in the treatment of polluted water by persistent pharmaceutical compounds</b></p> <p><b>N.A. Laoufi</b> University of Science and Technology, Faculty of Mechanical Engineering and Process Engineering, Department of chemical Engineering, Laboratory of Transfer Phenomena, Bp 32, El Alia, 1611 Bab Ezzouar, Algiers, Algeria</p> <p><b>M. Ghrieb</b> University of Science and Technology, Faculty of Mechanical Engineering and Process Engineering, Department of chemical Engineering, Laboratory of Transfer Phenomena, Bp 32, El Alia, 1611 Bab Ezzouar, Algiers, Algeria</p> <p><b>A. Reggadi</b> University of Science and Technology, Faculty of Mechanical Engineering and Process Engineering, Department of chemical Engineering, Laboratory of Transfer Phenomena, Bp 32, El Alia, 1611 Bab Ezzouar, Algiers, Algeria</p> <p>Pollution of surface and ground waters by organic pollutants is caused by chemical discharges of industry, agriculture and daily activities. Some of them affect the nervous system, may be carcinogenic and other affect the hormonal system. Organic pollutants are resistant to biodegradation, which require a constant improvement of water treatment processes.</p> <p>Among the various pollutants found in groundwater and rivers, pharmaceuticals are rejected by water from hospitals, domestic waste and antibiotics given to farm animals. One of the best known antibiotics are spiramycin (Rovamycine), a macrolide used to treat various infections of soft tissue such as mouth infections and tylosin, a macrolide administered to livestock and poultry. In the present work, the study focused on the evaluation of solar radiations performances (a renewable, abundant, free and clean energy resource) on the degradation of aqueous solution of spiramycin in presence of tylosin at different molar ratios [spiramycin] / [tylosin] in a lab-scale tubular reactor where the TiO<sub>2</sub> catalyst (P25) is present as a suspension. The tubular reactor with a capacity of 0.3 liter is constructed in Pyrex, it consists of 26 tubes in series, placed on a rectangular plate, each one has a length of 0.6 m and an inner diameter of 6 mm. The reactor is positioned facing south in order to ensure maximum energy exchange between the solar source energy and the reaction mixture that flows out continuously. A peristaltic pump recirculates the treated mixture between the reactor and the reservoir in closed circuit. The aqueous suspension volume was equal to 0.5 liter. The spiramycin and tylosin concentrations are followed by an UV-visible spectrophotometer at wavelengths of 235 and 290.7 nm respectively on a spectrophotometer Perkin Elmer Lambda 25.</p> <p>The first part of this paper consists on the study of different parameters influencing the elimination of spiramycin in presence of UVC irradiations, the second one is focused on the performance evaluation of the solar photocatalytic of spiramycin in presence of tylosin at different molar ratios.</p> <p>Experimental results showed that disappearance rate of spiramycin increased significantly during photocatalysis compared to photolysis and adsorption. Thus, adsorption, which is a physical phenomenon, was less important than photolysis, after 1 hour of adsorption 38% of spiramycin was eliminated, moreover, for the same exposure time, the abatement of spiramycin during photolysis, reached 72% and during photocatalysis, spiramycin elimination reached 85%, an optimum flowrate was found equal to 467.7 mL/min and spiramycin elimination reached 84% after 3 hours of exposure to UV radiations. Similarly, an optimal concentration of catalyst 0.3 g/L led to a spiramycin abatement of 97% obtained</p>

	<p>after 2 hours of exposure to UV radiation. After 150 minutes of irradiation, the abatement of spiramycin reached 94% for concentrations between 3 and 5 mg / L.</p> <p>All photocatalytic degradation rates were described by pseudo-first order kinetic. The kinetics were described successfully by the Langmuir-Hinshelwood (L-H) kinetics model, which therefore has to assess the values of the kinetic constants and equilibrium kinetic adsorption.</p> <p>The solar photocatalysis of spiramycin showed that the highest efficiency of the process was observed for an inclination angle of 52°, where abatement of spiramycin reached 85% after 2 hours of solar exposure. A study on the influence of solar radiation power showed that during a cloudy day (W = 550 W.m2) the abatement rate of spiramycin was also important for a sunny day (W = 950 W.m2), thus, after 2 hour of photocatalysis process, 71% of spiramycin were oxidized during the cloudy day and 84% during the sunny day.</p> <p>The results of the second study showed that for different molar ratios 0.25, 0.5, 1, 0.75, and 2, the abatement of spiramycin was not affected by the presence of tylosin, likewise, tylosin was not affected too. In all cases, when both pollutants were gathered, oxidation rates have not changed.</p> <p><b>Keywords:</b> pharmaceuticals, solar radiation, antibiotics, spiramycin, tylosine, photocatalysis, titanium dioxide, suspension.</p>
<p><b>Prof. Dr. Kazuki Hiro</b> ERCICSTR1808059</p>	<p style="text-align: center;"><b>Negative pressures of detergents in the metal Berthelot tube</b></p> <p style="text-align: center;"><b>Prof. Dr. Kazuki Hiro</b> National Institute of Technology, Nara, College, Yamatokoriyama, Japan,</p> <p style="text-align: center;"><b>Dr. Hiroshi Fukuoka</b> National Institute of Technology, Nara, College, Yamatokoriyama, Japan,</p> <p style="text-align: center;"><b>Dr. Shigeto Nakamura</b> National Institute of Technology, Nara, College, Yamatokoriyama, Japan,</p> <p style="text-align: center;"><b>Prof. Dr. Tadahiro Wada</b> National Institute of Technology, Nara, College, Yamatokoriyama, Japan</p> <p style="text-align: center;"><b>Dr. Junsuke Fujiwara</b> Doshisha University, Kyotanabe, Japan</p> <p style="text-align: center;"><b>Abstract</b></p> <p>In order to investigate the possibility that negative pressures of liquids, which stretch liquids isotropically and have been difficult to be generated because of heterogeneous nucleation occurring under metastable states, were applied to cleaning systems, negative pressures of five kinds of commercial detergents were measured by the Berthelot method using a metal tube. Negative pressures for a detergent to remove oils on metal surfaces attained to ca. -20 MPa, which has been the highest of the method, within ca. 230 cycles without any de-gassing treatments to the detergent and metal surfaces contacting with it. Non-ionic surfactants which were selected from the result had abilities to generate such high negative pressures.</p> <p><b>Negative pressure, Berthelot method, Detergent</b></p>
	<p style="text-align: center;"><b>Study on the Non-linear partial differential equations and its applications</b></p> <p style="text-align: center;"><b>T R Singh</b> Applied mathematics and Humanities Department, Sardar Vallabhbbhai National Institute of Technology (SVNIT), Surat-Gujarat</p> <p style="text-align: center;"><b>R K Singh</b> Applied Science and Humanities Department, GIDC Degree Engineering College</p>



**Twinkle Singh**  
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**Abstract**

In this paper, Variational iteration method (VIM); Adomian decomposition method and its modification has been applied to solve nonlinear partial differential equation of imbibition phenomenon in oil recovery process. The solution of the phenomenon has been found by VIM, ADM and Laplace Adomian decomposition method (LADM). The effectiveness of our method is illustrated by different numerical.

**Keywords:** Variational Iteration method (VIM); Adomian decomposition method (ADM), Laplace Adomian decomposition method (LADM) , nonlinear partial differential equations

**Roshan Sara Philipose**  
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**Minimum Covering Gutman Energy of a Graph**

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**Abstract**

The concept of a new kind of graph energy, namely, minimum covering energy, denoted by  $E_c(G)$ , was introduced by Chandrashekar Adiga et.al in 2012. The Gutman energy is the sum of the absolute values of the eigenvalues obtained from the Gutman matrix. In this paper, we depict the minimum covering Gutman energy of a graph which can be defined as sum of the absolute values of the eigenvalues obtained from the minimum covering Gutman matrix of a graph

Graph,  $A_{c_s}(G) := g_{ij}$ , where  $g_{ij} = \begin{cases} 1, & \text{if } i = j \text{ \& } v_i \in C \\ 0, & \text{if } i = j \text{ \& } v_i \notin C \\ d_i d_j d_G(v_i, v_j), & \text{otherwise} \end{cases}$ . Here,

$d_i$  is the degree of the vertex  $v_i$ ,  $d_G(v_i, v_j)$  is the shortest distance between the vertices  $v_i$  &  $v_j$  and  $C$  is the minimum covering set. Further, we establish the upper and lower bounds for minimum covering Gutman energy.

**Keywords:** Lower bound; Minimum Covering Gutman Energy; Minimum Covering Gutman Matrix; Minimum Covering Set; Upper bound.



**Jagriti Saini**  
YRSICSTR1808051

**Performance Enhancement of Epilepsy Detection using Optimization Techniques**

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**Abstract**

Epilepsy is a neurological disorder that is identified by the presence of reoccurring seizures. Around 65 million people are suffering from this disease throughout the world, and like many other neurological disorders, the most

	<p>commonly used method for epilepsy detection is electroencephalogram (EEG). However, EEG signals are nonstationary and nonlinear in nature, so it becomes quite difficult for medical doctors to interpret details about the significant data. In this work, an Artificial Neural Network (ANN) based design is proposed for automatic detection of epileptic signals from an EEG data set obtained from the healthy and epileptic brain. Results of detection system are evaluated on the basis of four major parameters: classification accuracy (99.3%), sensitivity (99.02%), specificity (99.34%), and precision (99.3%). Further, Particle Swarm Optimization, Genetic Algorithm, and Simulated Annealing are used to reduce the Mean Square Error of the detection system so that performance of ANN based Expert System for Epilepsy Detection can be improved.</p> <p><b>Keywords:</b> Epilepsy, Electroencephalogram, Mean Square Error, Particle Swarm Optimization, Genetic Algorithm, Simulated Annealing.</p>
<p><b>Shazia Khanum Mirza</b> ERCICSTR1808098</p>	<p><b>Analytical Determination of Antioxidant, Acidity Regulator &amp; Preservatives as Additives in Fruit Juices Available in Indian Market</b></p> <p><b>Shazia Khanum Mirza</b> Dept of Chemistry, Maulana Azad college of Arts, sci &amp; com, Aurangabad (M.S) India</p> <p><b>Abstract</b></p> <p>The increasing demand for ready-to-drink juices has led to challenges for food distributors regarding the safety and quality of their foods hence Food additives are added to foods to keep them fresh ,control its pH &amp; improve the flavour, texture, colour or chemical preservatives, taste &amp; appearance. Artificial preservatives meet some of these challenges by preserving freshness for longer periods of time, but these preservatives can cause negative side-effects as well. The present work aimed at determining the ascorbic acid and citric acid contents in a variety of fruit juices available on the Aurangabad market using the classical titration method, in order to check whether current uses of these additives are in accordance with the Food Safety and Standard Authority of India. The additives has its side effects on human .The most common side effect of high vitamin C intake is digestive distress and kidney stones. Consuming too much amount of vitamin C may increase the amount of oxalate in your kidneys which has the potential to lead to kidney stone problem. The most common symptom of citric acid high intake includes stomach pain, diarrhoea, nausea or vomiting, loss of appetite, increased sweating and pain in the abdominal area, fast heart rate, restless feeling, vomiting &amp; slow breathing. In this study we have taken 14 different popular juice samples which are mostly consumed by the Indian children which were available in the supermarkets of Aurangabad, India. The objective of this research was to evaluate the physical and chemical parameters. Each sample was analyzed for organoleptic or physical test such as colour, texture , flavour, taste and the pH measurement. These findings indicated that the current use of ascorbic acid and citric acid in juices by the fruit juice industry is in below detection limit of Food Safety and Standard Authority of India and are safe for the consumption of children of India.</p> <p><b>Keywords:</b> Food , food additives, juices, consumption, flavour, acidity regulator and antioxidant</p>
<p><b>Prof. Younes Benarioua</b> ERCICSTR1808099</p>	<p><b>Nitriding Study Of Low Alloy Steel</b></p> <p><b>Prof. Younes Benarioua</b> Department of Mechanical Engineering, Faculty of Technology, University of M'sila, Bordj Bou Arréridj Road, 28000 M'sila, Algeria</p> <p><b>Abstract</b></p> <p>The nitriding process, first started in the early 1900s, continues to play an important role in many industrial applications. Along with the derivative nitrocarburizing process, nitriding often is used in the manufacture of</p>

workpieces as bearings, automotive component and textile machinery in order to increase the mechanical and chemical resistance of these parts against wear and corrosion. Nitriding remains the simplest of the case hardening techniques. The steel in this case stills in the initial state and it doesn't require a phase change from ferrite to austenite or martensite. Nitriding is a thermochemical method of diffusing nascent nitrogen into the surface of steels and forming of solid solution by the solubility of nitrogen in iron. The purpose of this work is to study the microstructure and mechanical properties of thin iron nitride layers obtained on low alloy steel by plasma ion nitriding. The produced layers present two zones of combination and diffusion. In this study, a low-alloy steel was nitride by plasma, the structure, the morphology of nitriding layers were investigated by using optical microscopy, scanning electron microscopy, X-rays diffraction analysis, Finally the hardness of layers was measured by a Vickers microhardness tester with different loads.  
**Keywords : Nitriding, steel, nitrogen, diffusion**

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