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**ABSTRACT BOOK**

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Science**

**EJMTCS**

## **European Journal of Mathematics, Technology and Computer Science**

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**Title:**



### A STUDY OF PERIODIC AND STOCHASTIC MODELING OF MONTHLY RAINFALL FROM PURAJAYA STATION

**Authors: A. Zakaria**

**Paper ID: ATE-70104028**

**Abstract:** A study was done using monthly rainfall data with long data 25 years (1977-2001) of Purajaya station. The goal of this research is to study periodic and stochastic models of data series of the monthly cumulative rainfall. Based on daily rainfall data, monthly cumulative rainfall data series was calculated. The series of rainfall is assumed to be free of trend. Periodicities of rainfall data were presented using 125 periodic components. Stochastic series of rainfall data are assumed as residues between rainfall data with periodic rainfall model. Stochastic components were calculated using the approach of autoregressive model. Stochastic Model presented in this research is using the fourth orders autoregressive model. Validation between data and the model is done by calculating the correlation coefficient. For this study, the correlation coefficient between the data and the model of the cumulative monthly rainfall is 0.9992. From the results of this study can be inferred that the model of the

monthly rainfall from Purajaya station gives highly accurate approach.

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**Title:**

**WIRELESS SENSOR NETWORKS AND NODES  
INFORMATION COLLECTING ABILITY**

**Authors: Elma Zanaj, Indrit Enesi**

**Paper ID: ATE-60129037**

**Abstract:** The efficient use of energy in Wireless Sensor Networks represents one of the most important constrains for the management of long term communications. In this paper, we propose a new definition that of node information collecting ability. Numerical simulations will show how this parameter will influence in the network lifetime, reliability and in the quantity of information that the network collects.

**Title:**

**STRATEGY TO ENGINEER LACTOBACILLUS  
PENTOSUS TOWARD DEVELOPMENT OF  
MICROBIOENERGY IN INDONESIA**

**Authors: Budi Saksono<sup>1</sup> and Muhammad Kismurtono**

**Paper ID: ATE-80101039**

**Abstract:** Technologies for the production of biofuels have increased attention due to the rising cost of petrol and global warming. One such technology under development is the use of *Lactobacillus pentosus* for biofuels production. *Lactobacillus pentosus* is lactic acid bacteria which able to metabolize both of pentose and hexose, and to grow on media containing hydrolyzed biomass. Thus it has many advantages as host for multiple purposes such as micro bioenergy development. To develop the strain, we already cloned gene *pdc* and *adh2* from *Zymobacter palmae* and *Lactobacillus plantarum*, respectively. In this paper, we will report

our strategy to develop those microbioenergy and our recent research progress.

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**Title:**

**UNPROCESSED OTA KAOLIN AS A WEIGHTING ADDITIVE  
IN DRILLING FLUID**

**Authors: Adebayo, Thomas A. and Ajayi, Olusola**

**Paper ID: ATE-20106033**

**Abstract:** Drilling fluid cost and effectiveness are two key factors in drilling fluid selection. Kaolinitic clay is of the family of bentonite and investigation was carried out to check the effect of partial replacement of expensive bentonite in drilling mud with cheap Nigerian kaolin. Two types of kaolin, kaolin1 and kaolin2, were sources in deep wells at Ota, Ogun state, Nigeria at depths between 100ft and 120feet. The two types of kaolin were used naturally in unprocessed state. It was discovered that the apparent and actual

viscosities of the mud reduces significantly with increasing kaolin1 and kaolin2 content. Replacement of bentonite with kaolin1 resulted in 85.7% reduction in the mud viscosity while that of kaolin2 gave a corresponding 83.33% reduction. This is an indication that bentonite is more effective than the two kaolin as a viscosifier.

The density of the mud slurry increased significantly with more kaolin1 and kaolin2 addition with a 25% and 27.25% increase respectively at 100% kaolin. The volume of each of the kaolin was doubled at total replacement of bentonite and an increase in weight was observed. This is an indication that the two types of kaolin are good weight additives. A replacement of 50% of the bentonite with any of the kaolin resulted into zero gel strength for the mud.

The research indicated that the unprocessed kaolin serves as both colloidal and weighting additive but there will be need for a secondary viscosifier to be added if any of the kaolin is to be used for total replacement of bentonite in the mud. Moreover, a gelling additive must be added to the mud when the kaolin is to be used. Since the two types of kaolin tend to partially replace the bentonite and barite components of the water-based mud, their application in

drilling mud is expected to reduce the cost of the mud as the additives are far cheaper than either bentonite or barite.

This research is expected to extend to the second part which will involve the processing of the kaolin types and their application on the drilling mud properties and also investigate the possibility of enhanced gelling properties of the kaolin.

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**Title:**

### LAMINAR FLOW HEAT TRANSFER OF A DILUTE VISCOELASTIC SOLUTION IN FLATTENED TUBE HEAT EXCHANGERS

**Authors: Ismail, Z., Karim, R**

**Paper ID: ATE-50107036**

**Abstract:** Results of studies on heat transfer of viscoelastic solution in flattened tube exchangers were presented. Effect of aspect ratio on the heat transfer performance in exchangers with 0.635 cm and 1.27 cm original diameters and 50 cm to 76 cm lengths were carried out. Five flattened-tube heat exchangers with four thermocouples soldered at regular intervals on the outside wall were placed in turn in the experimental circuit to determine the heat transfer coefficients. Hot water was used as the heating medium; and dilute solution of polyacrylamide in water was used as the viscoelastic solution. Heat transfer increase as a result of flattening the tubes could be as high as 101% while the effect due to secondary flow had a maximum increase of about 86% at an aspect ratio of 1.6.

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**Title:**

**INSTREAM FLOW REQUIREMENT OF DUDHKUMAR  
RIVER IN BANGLADESH**

**Authors: M.M. Hossain and M.J. Hosasin**

**Paper ID: ATE-80109039**

**Abstract:** Dudhkumar is an international river shared by Bhutan, India and Bangladesh. Bangladesh being the lowermost riparian country, the water of the river is very vital for the sustenance of livelihood of the people, planning of new water resources projects including evaluation of existing projects and her natural resources at desired level. In-stream flow requirement of Dudhkumar river using three methods of hydrological approaches viz., the Mean Annual Flow, Flow Duration Curve and Constant Yield method have been conducted. All available data on water level and discharge for the period from 1965 to 2008 were utilized in this respect. The study showed that for most of the months during low flow season given due consideration to various demands, there were a deficit or shortage of



water in the river, while during flood season most of the demands could be met and duration of deficit period was shorter.

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**Title:**

**ENGINE PERFORMANCE AND OIL ANALYSIS OF  
BIODIESEL FROM BULK OIL**

**Authors:** Annisa Bhikuning

**Paper ID:** ATE-70122038

**Abstract:** Biodiesel is one of the alternative fuel made from vegetable oil, friendly for environment and has no effect on health and can reduce the emission compared with diesel fuel. To obtain Biodiesel, the vegetable oil or animal fat is subjected to a chemical reaction termed transesterification. In that reaction, the vegetable oil or animal fat is reacted by catalyst with an alcohol (usually methanol) to give the corresponding methyl esters. In this study, Biodiesel are made from bulk oil, and used two catalyst; KOH and NaOH. And then, Biodiesel Bulk Oil blended 20% (B20) with petrodiesel. In oil

analysis showed that cetane number for B20 using catalyst KOH (B20KOH) is higher 3.71 % than using B20 catalyst NaOH (B20NaOH). Experiment was conducted in one hour engine running test. Test fuels are petrodiesel as a datum, B20KOH, B20NaOH, pure bulk oil with catalyst KOH (B100KOH) and pure bulk oil with catalyst NaOH (B100NaOH). The results, in minimum load to 60% load, B20KOH and B20NaOH are more efficient up to 11.6% than petrodiesel. In contrary, for maximum load (80%), Petrodiesel is more efficient 0.5 % than B20KOH. And B100KOH is the most inefficient compared with other fuels.

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**Title:**

### REMOTE OPERATION OF OIL AND GAS PRODUCTION

### INSTALLATIONS IN THE NIGER DELTA

**Authors: Francis .E Idachaba**

**Paper ID: ATE-70105038**

**Abstract:** The current security challenges posed by the militancy in the Niger Delta region of Nigeria and the need by the International Oil and Gas Companies (IOC) operating in these areas to deploy both local and expatriates personnel for mandatory site visits both for operations, maintenance and upgrades make it necessary for the evolution of more effective operation strategies. The IOCs have resorted to the use of armed military escorts for staff to and from the sites and this has yielded some reduction in the risks but has still not totally eliminated it. This paper presents a robust communication configuration which is designed to enable remote operations, control, maintenance and upgrades by experts from a secure location away from the site. The system is implemented using appropriate sensors, communication links, topologies and plant operators. The advantages of this system include the reduction of staff exposure to the risks currently associated with traveling to these remote locations in the

Niger delta region. It also ensures significant OPEX cost savings for the IOCs in terms of logistics costs and also allows for an increased effectiveness of the experts in terms of deployment time and the number of sites the can handle.

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**Title:**

**ANALYSIS OF TRAFFIC ENGINEERING PARAMETERS  
WHILE USING MULTI-PROTOCOL LABEL SWITCHING  
(MPLS) AND TRADITIONAL IP NETWORKS**

**Authors: Faiz Ahmed and Dr. Irfan Zafar**

**Paper ID:** ATE-80115039

**Abstract:** Traffic Engineering is a subject which ensures the utilization of your resources at their optimum level. In order to uplift the traffic engineering in our today networks, Multiprotocol Label Switching (MPLS) is being used which is very helpful for reliable packets delivery in recent internet services. It ensures high transmission speed, efficient utilization of bandwidth and lower

delays during delivery of packets from one location to another. The purpose of MPLS in traffic engineering is to employ the networks as well as network resources efficiently. Based on lower network delay, capable forwarding means, scalability and expected performance of the services given by MPLS technology indicates its significance for implementing real-time applications i.e Voice & video. The salient of the thesis is to indicate the shortcomings of traditional IP networks vis-à-vis benefits of MPLS networks. The comparison analysis is based on the traffic engineering parameters such as delay variation, effective utilization of bandwidth, Jitter, Quality of Service (QoS), data loss and congestion etc. The results of the comparison revealed that traffic engineering through MPLS networks has enhanced reliability, scalability and other parameters as compared to traditional IP networks. In this thesis, Graphic Network Simulator (GNS3) has been used for simulation purpose to ascertain the results of both networks.

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**Title:**

**STRATIGRAPHIC SETTING, FACIES TYPES AND  
DEPOSITIONAL ENVIRONMENTS OF HADDAT ASH SHAM  
IRONSTONES, WESTERN ARABIAN SHIELD, SAUDI  
ARABIA**

**Authors: Rushdi J. Taj**

**Paper ID: ATBAS-40110025**

**Abstract:** The ironstone-bearing Tertiary succession in Haddat Ash Sham area consists of conglomerates, sandstones, siltstones, mudstones and ironstones arranged in upward coarsening-and fining cycles of intermittent depositional environments ranging from fluvial coastal plain to shallow marine. The studied ironstones are enclosed within the middle shallow marine member of this succession. This middle ironstones-bearing member consists of repeated coarsening and shallowing-upward cycles representing deposition during general upward increasing in the current and wave activities as a result of the gradual progradation of linear tidal sand/oid bars on basal shelf muds. The ironstones are classified according to their stratigraphic setting, depositional environments and lithology into the following types: chamositic, silty chamositic, lean oolitic, true oolitic, silty,

chamositic silty and sandy ironstones. Most of these ironstones are recorded within the middle and upper parts of small-scale shallowing and coarsening-upward cycles reflecting intermittent short-lived periods of sea regression and transgression. The chamositic ironstones are recorded in the middle parts of the cycles while the oolitic and sandy ironstones are recorded in the middle and upper parts of the cycles. The mineralogical compositions and textural parameters of these ironstones vary according their stratigraphic positions and depositional environments. The different ironstone are composed mainly from: a) extra-basinal components i.e. quartz, intermixed with amorphous clays and Fe-oxyhydroxides, b) intra-basinal components i.e. chamosite and Fe-oxyhydroxides flasers, ooids and peloids, and c) diagenetic components formed by the hematitization of the precursor amorphous Fe-oxyhydroxides as well as the green chamositic clays and the formation of goethite and hematite mineral phases of different morphological forms (cements, coating, ooids and peloids).

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**Title:**

**TRANSITION RULE MINING OF CELLULAR GEOGRAPHY  
MODEL USING MAP SEQUENCE AND SPATIOTEMPORAL  
SERIES ANALYSIS APPROACH**

**Authors: Ahmad Zuhdi, Aniati Murni Arymurthy, Heru Suhartanto, Maruli H. Manurung**

**Paper ID: ATC-40117025**

**Abstract:** Transition rules elicitation is an important issue in modeling of spatiotemporal dynamics of the Cellular Geography model, because the transition rule is an engine of the system dynamics. The rule calculates the value of current cell, based on cell value and the value of its neighboring cells at the previous time. We propose the transition rules of the model, using multiple linear regression analysis, by performing adjustment of model parameters and input data. Data in this research is a collection of JPEG images of maps that present the results of observations of drought code variable in Fire Danger Rating System for 30 successive days. In order to process the data in the model Continuous Cellular Geography, the qualitative input data was transformed into continuous data using



random number generator based on certain probability distribution. The research observed the effect of the selection of neighborhood scheme and its radius, to the quality of transition rules. Experimental results show, continues uniform distribution is better than normal distribution and uniform discrete distribution. Whilst in the scheme of Cellular Automata model, von Neumann neighborhood with radius 2, is the optimal scheme. Manipulation of map resolution, by up grading or down grading it's scale, can be decreasing the quality of transition rules. Unfortunately, this research hasn't found the parameter setting, which has no significance of external variation, except of 2 cases.

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**Title:**

### VERNACULAR HOUSES TYPOLOGY AND ITS RESPOND TO THE EARTHQUAKE

**Authors: Sugeng Triyadi, Iwan Sudradjat, Andi Harapan**

**Paper ID: ATE-40103025**

**Abstract:** Desa Duku Ulu, one of the oldest village in Rejang Lebong Region, Bengkulu Province, Indonesia, is the earthquake area. Some of earthquakes made several damages especially for buildings. Interestingly, many of vernacular houses are survived and got only light damages while there are many modern building got great damages. Unfortunately, the potential of vernacular houses are not optimized by the local people. As time pass by, many house has been constructed with different ways. This paper will elaborate 5 vernacular houses typologies and their respond to the earthquake . The study methods used are field study, semi-structured interview and forum group discussion with local community and documentation by field measuring and building redrawing. Field study and semi-structured interview focus on two aspects of observations, which are: 1) traditional building and 2) skill & local resource use. Observations to vernacular building include 4 aspects:

1) house form & design, 2) structural system, 3) material used, 4) joinery & other details (construction system). Observation to skills and local resource include: 1) building skill, and 2) culture (such as solidarity).

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**Title:**

**RISK FORECAST OF GAS TRANSMISSION PIPELINE  
MAINTENANCE USING RANDOM NUMBER GENERATION  
SIMULATION**

**Authors: Andy Noorsaman Sommeng, Heri Hermansyah,  
Anondho Wijanarko**

**Paper ID: ATE-80113029**

**Abstract:** Risk forecast gas distribution pipeline using random generation is developed. The tool is based on a simulation software. The tool has been applied to find the dominant risk in distribution pipeline to support the activity of pipeline integrity management of the company. The main strength of this method is that it has a high

probability of obtaining better solution with significantly fewer simulation runs than other methods. Also, by changing step size, it is possible to influence the results. This method is general and can be applied to other process modelled or activities. The result of this study can be applied in maintaining the activity of asset management integrity of the gas pipeline company.

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**Title:**

**COMPARATIVE STUDY BETWEEN MEL-LP AND LP-MEL  
BASED FRONT-ENDS FOR NOISY SPEECH RECOGNITION  
USING HMM**

**Authors: M. Shohidul Islam, M. Babul Islam, M. Mojahidul Islam, M. Shamim Hossain, M. Muntasir Rahman**

**Paper ID: ATC-30116024**

**Abstract:** Since the parameterization in the perceptually relevant aspects of short-term speech spectra in ASR front-end is advantageous for speech recognition, such as Mel-LPC, LPC-Mel, MFCC etc., in this paper, Mel-LP and LP-Mel based front-ends have been designed for automatic speech recognition (ASR). The speech classifier of the developed ASR is based on Hidden Markov Model (HMM) as it can successfully cope with acoustic variation and lack of word boundaries of speech signal. The performance of the developed system has been evaluated on test set A of Aurora-2 database both for Mel-LP and LP-Mel based front-ends. It has been found that the Mel-LP based front-end is more effective for noise

type subway, babble and exhibition; on the other hand, LP-Mel based front-end is suitable for car noise. The average word accuracy for Mel-LPC has been found to be 59.05%, while for LPC-Mel, it has been 54.45%.

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**Title:**

**DESIGN OF THIN-FILM-TRANSISTOR (TFT) ARRAYS  
USING CURRENT MIRROR CIRCUITS**

**Authors: N. S Salahuddin, E.P. Wibowo, A.B. Mutiara, M. Paindavoine**

**Paper ID: ATE-80115029**

**Abstract:** The heart of the flat panel digital detector consists of a two-dimensional array of amorphous silicon photodiodes and thin-film transistors (TFTs), all deposited on a single substrate. We designed 4x4 matrix TFTs arrays using current mirror amplifiers. Advantages of current mirror amplifiers are they need less requiring switches and the conversion time is short. The TFT arrays 4x4

matrixes using current mirror circuits have been fabricated and tested with success. The TFT array directly can process signals coming from 16 pixels in the same node. This enables us to make the summation of the light intensities of close pixels during a reading.

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**Title:**

**COMPARISON OF THE RATE OF EXTRACTION OF  
SYNTHETIC CRUDE FROM NIGERIAN OILSANDS USING  
VARIOUS SOLVENTS**

**Authors: Thomas A. Adebayo and D. A. Kazim**

**Paper ID:** ATE-80106029

**Abstract:** This research compares the extractive strength of four different organic solvents for the production of synthetic crude from Nigerian oilsands. Benzene, Toluene, Xylene and Carbon tetrachloride were used in a Soxhlet extractor. The most popular surface mining method uses hot water and caustic soda for the extraction of the crude from the oilsands but this research considered

the use of hydrocarbon solvents. The change in the colouration of the black oilsand to dirty-white in the course of this research is an indication of high extraction efficiency. The results also showed that Carbon Tetrachloride gave the highest rate of extraction followed by Benzene while Xylene gave the minimum rate of extraction. It was discovered that the rate of reaction is inversely proportional to the boiling point of the solvents used. Considering the flammability and health hazards, Carbon Tetrachloride is recommended as the best solvent extractor among the four since it has low flammability and health risks. Alternative to the carbon Tetrachloride is Xylene because of its very low health risk and flammability when compared to the remaining two solvents, which tends to have higher rate of extraction than the Xylene.

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**Title:**



## STUDY OF STRUCTURAL AND OPTICAL PROPERTIES OF QUATERNARY CUXAG1-XALS2 THIN FILMS

**Author(s):** Sabeeha M. Ahmad

**Paper ID:** ATST-15060591

**Abstract:** Abstract  $Cu_xAg_{1-x}AlS_2$  thin films with  $0 \leq x \leq 1$  were successfully deposited on glass slides using chemical spray pyrolysis technique at 633k. Polycrystalline structure of the films was confirmed using X-ray diffraction (XRD) analysis also XRD was utilized to compute the grain size , strain and dislocation . Surface morphology was characterized by using atomic force microscopy (AFM) .From optical study, the film showed direct transition with nonlinear change of energy gap as concentration change from (x = 0-1) (2.8) eV for  $AgAlS_2$  - (3.4) eV for  $CuAlS_2$  respectively . The optical constant such as extinction coefficient (k), refractive index (n), real and imaginary dielectric ( $\epsilon_1$  , $\epsilon_2$ ) were discussed.

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**Title:**

### **GEOTECHNICAL IMPLICATIONS OF USING SHALE AS SUBGRADE MATERIALS**

**Author(s): N. E. Ekeocha**

**Paper ID: ATST-80311050**

**Abstract:** Shales by definition are fine-grained rocks that contain between 50% and 100% clay sized particles with clay mineral constituting at least 25% of the total rock volume. Shales when highly indurated may be used as construction materials because of their intermediate hardness. They also possess a degree of intactness, continuity and strength. This assertion greatly is flawed by the nature of deterioration such shales are prone to when exposed to the variation in moisture content. This behaviour is responsible for the failure recorded by the roads within the study area. This is attributed to the manner of cation exchange that the clay minerals undergo, which gives rise to increased water adsorption and subsequent reduced strength properties of the clays. CBR test was conducted on samples from nine (9) locations between Umuahia and Awgu, where road failures are much worse than other sections of the Enugu - Port Harcourt expressway at the time of the study, and it is thought that

these failures may have been caused by the underlying shale subgrades. The overall averaged CBR results ranged between 5.5% and 10.9% after being soaked for 24 hours at optimum moisture content (OMC), which ranged between 11.2 and 14.4% at the various locations that were studied. On the other hand, the overall unsoaked CBR values ranged between 9.4 and 15.2%. Though the results of the CBR conformed to the specifications of the Federal Government standard pavement design specification, the liquid limit and plasticity index values of the samples far exceed those specified by the Federal Government, thereby justifying the failure trend observed within the area.

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**Title:**

### **EFFECT OF THE FACEBOOK USAGE ON THE HEALTHY LIFESTYLE OF STUDENTS**

**Author(s): Layla Abas**

**Paper ID: ATST-50301068**

**Abstract:** The objective of this study was to investigate how students lifestyle affected by the usage of facebook. Non-probability sampling a convenience sample of (205) students of technical institute was selected for the purpose of the study. It was comprised of two parts; (1) includes the students' demographic attributes and (2) assessment the effects of facebook usage on the lifestyle of students with (20) true or false questions. Data were analyzed through the application of descriptive statistical data analysis approach (frequency and percentage), and inferential data analysis approach (chi-square).

**Methodology:** A descriptive study was used for the assessment approach and applied on institute students from 1/2/2013-11/7/2013. Non-probability sampling a convenience sample of (205) students was selected for the purpose of the study. It was comprised of two parts; the first part includes the students' demographic attributes and

the second part assessed the knowledge of institute students with (20) true or false questions. A pilot study was carried out for the period of February 15th to 25th, 2013 to determine the questionnaire reliability through the use of (Test - Retest). A panel of (8) experts was involved in the determination of the questionnaire content validity. Data were analyzed through the application of descriptive statistical data analysis approach (frequency and percentage), and inferential data analysis approach (chi-square).

Results: Study findings revealed that more than half (52.2%) of students were female, more than two-third (81.0%) of students belong to (19-21) years of age group.(47.3%) were illiterate mothers, also (42.4%) fathers had completed elementary school. More than two-third (92.2%) of parents were moderate status. (77.6%) of the student mother were occupied by government. While only 13.2 %) fathers have government status. According to the levels of effect of facebook usage (100%) of students answered correctly all questions about facebook usage effect, and there was a highly significant relationship between levels of effect of facebook usage with mother's occupational level.

Recommendations: The study findings highlight the need for excessive health education about effect of facebook usage and advice the students to comply with recommended healthy lifestyle of students.

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**Title:**

**EVALUATING SAUDI MUNICIPAL PORTAL  
SOPHISTICATION**

**Authors: Arwa Y. Al-Aama**

**Paper ID: ATST-20128053**

**Abstract:** Portals today serve as the key source of information and are gateways which customers conduct their businesses with organizations through anytime from anywhere. Several evaluation tools exist to describe and evaluate e-government portal maturity. This paper introduces the term portal ‘sophistication’, in which lower levels of sophistication imply that a portal provides static information and higher ends imply that the portal not only enables clients to

conduct all their businesses through it, but they can even use it to participate in the organization's strategic planning and to transform the way it operates.

A 5-level sophistication evaluation scheme is proposed. The scheme is an evolution of existing models, where citizen participation and transformation enablement were added as the highest level of sophistication. The scheme is then used to evaluate Saudi municipal portals and to provide insight as to what needs to be done to take them to higher levels of sophistication.

### LESSON LEARNT FROM VERNACULAR HOUSES OF RURUKAN AND TONSEALAMA AT MINAHASA TO COPE THE EARTHQUAKE

**Authors: Sugeng Triyadi, Andi Harapan**

**Paper ID: ATST-60130057**

**Abstract:** Vernacular houses are specific houses, which customarily built to meet the specific needs, values and ways of living of the local people, within a specific environmental context and resources. They are unique compared to other kind of housings currently in use by the society because they are non-engineered construction and transferred by the ancient tradition so that it could withstand its physical environment and easily accepted by the local people. The uniqueness is called indigenous knowledge or local wisdom. Indonesia is a country which consists of traditional-vernacular houses in various places. Rurukan and Tonselama are two village which located in Minahasa at North Sulawesi. Its two villages are located at endangered area (earthquake attached). Nevertheless, they keep stand with it. This paper will elaborate one of the vernacular houses in Indonesia, which are vernacular houses in



Rurukan and Tonselama in Minahasa. The purposes are to elaborate and documentation the indigenous knowledge of the vernacular houses in Minahasa to apply for construction today. These paper based on research which is purely field research and semi-structured interview with various stakeholders of the vernacular houses and local community in its two villages. Field research and semi-structured interview focus on two aspects of observations, which are: 1) vernacular building, and 2) skill & local resource use. Observation to vernacularbuilding include: 1) house form & design, 2) structure system, 3) material used, 4) joinery & other details. Observation to skills and local resource use include: 1) building skill, and 2) culture (such as solidarity).

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**Title:**

### **BARRIERS TO THE EFFECTIVE USE OF TECHNOLOGY IN EDUCATION: CASE STUDY OF UAE UNIVERSITY**

**Authors: Hebatalla El Semaary**

**Paper ID: ATST-50127056**

**Abstract:** While the number of computers in the classroom continues to increase and tremendous support for technology integration exists in academia, a major discrepancy exists between the level of technology use expected of educators and the actual use and integration of technology in the classroom. This article examines barriers that impede the effective use of technology in education.

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**Title:**

### PERFORMANCE OF HIDDEN MARKOV MODEL STRUCTURE ON DEOXYRIBO NUCLEIC ACID CODING SEQUENCE OF PLASMODIUM FALCIPARUM

**Authors: Suhartati Agoes, Alfred Pakpahan, and Binti Solihah**

**Paper ID: ATST-60132057**

**Abstract:** The Hidden Markov Model (HMM) structure application on coding sequence (CDS) used for exon controlling of DNA Plasmodium falciparum. HMM performance parameters are Correlation Coefficient (CC), Sensitivity (Sn), Specificity (Sp) and Approximate Correlation (AC). A CDS of DNA Plasmodium falciparum contains exon in many regions at least two exon regions. The properties of HMM such as Markov chain, transition state, emission state, HMM training and HMM testing algorithms. Random values of transition state used for HMM training makes many differences in the performance of the model. Furthermore, the transition state value is very important to find the optimum performance of the models. The improvement of the models of HMM structure is using the increasing number of states on CDS with HMM method. The simulation result predicted that the performance

parameters values are depends on the value of transition state and the number of states on the model.

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**Title:**

**STUDY ON FEM AND THEORETICALLY PREDICTED  
HYSTERISIS LOOPS**

**Authors: Nimali T. Medagedara, P.D. Sarath Chandra**

**Paper ID: ATST-50107046**

**Abstract:** Fatigue failure often initiates from a point of stress concentration, where the local deformation is inelastic. Therefore the components with complex geometries are frequently subjected to alternating loads, which produce multi-axial stresses. In most cases, the loading is non-proportional. These alternating loads tend to initiate fatigue cracks at notches and at other regions of high stresses. Some typical situations in which fatigue can occur are the repeated expansions and contractions of a pressurised aircraft, a car suspension unit absorbing the undulations of a normal road surface and the

rhythmic crashing of waves against hull of a ship. However, occurrence of fatigue is a common phenomenon in many engineering components and their failures are also attributed to fatigue. For fatigue analysis of industrial components, the knowledge of cyclic deformation behaviour is essential. However, such knowledge is difficult to obtain for non-proportional loading situations. Although notch deformation can be analysed by methods such as Neuber, this paper the finite element method was used to analyze a notched bar and was validated using a Neuber method for different loading conditions is presented.

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**Title:**

**PRESENTING ORGANIZATION'S BUSINESS PROCESSES  
ON THE BASIS OF TEXT MINING TECHNOLOGY**

**Author: Abed Saif Alghawli**

**Paper ID: ATST-30117064**

**Abstract:** Because organizations create many different and irrelevant documents, which are under elaboration and intended for regulating the particular organization's business processes (OBP) with the aim of efficient and effective management implementation over this organization, the issues of business processes construction are studied on the basis of intellectual analysis of texts of documents that describe the processes taking place within the organization such as job descriptions, agreements, specifications and standards, regulations and time limits of works, etc.

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**Title:**

### ELECTRICAL AND OPTICAL PROPERTIES OF PVA/LiI

#### POLYMER ELECTROLYTE FILMS

**Authors: Hamed M. Ahmad, Sabah H. Sabeeh, Sarkawt A. Hussien**

**Paper ID: ATST-40116065**

**Abstract:** PVA has been doped by different percentage of Lithium Iodide (LiI), electrical and optical properties of polymer electrolytes have been investigated. At low frequency, the variation of dielectric constant and dielectric loss with frequency shows the presence of material electrode inter-face polarization processes. The exponent factor(s) found is between 0.98 and 0.442 and obeys the universal power law. The absorption of pure and doped films have been studied in the visible and ultra-violet wavelength regions. It has been observed that the new absorption peaks at 290 and 375 nm are due to the formation of charge transfer complex. From direct allowed transition the optical energy gap decreases from 5.56 eV (for pure PVA) to 4.95 eV (for PVA+20%LiI).

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**Title:**

**A STUDY ON THE EFFECTIVENESS OF A PLANNED  
TEACHING PROGRAMME TO IMPROVE THE  
KNOWLEDGE REGARDING “ERGONOMICS FOR  
COMPUTER USE” AMONG SELECTED STAFF OF MAJAN  
COLLEGE – MUSCAT – SULTANATE OF OMAN**

**Authors: Sonal Devesh, Nisreen Al-Bimani**

**Paper ID: ATST-10129062**

**Abstract:** This paper describes a study conducted to evaluate the effectiveness of a teaching programme on “Ergonomics for Computer use” among the staff of Majan College.

A pre experimental research design was used to conduct the study. Thirty samples who met the study criteria were selected using convenience sampling technique. The knowledge level of the staff was assessed using a pretest questionnaire. The subjects were then exposed to a planned teaching programme. The teaching programme included power point presentation with multimedia clippings, demonstration of exercises regarding ergonomics of computer use.



The post test questionnaire was administered to the staff, to determine whether there is a gain in knowledge due to the exposure of the subjects to the teaching programme. The results of the experiment showed that there was an increase in the pretest ( $m=9.36$ ,  $s=3.91$ ) and the post test mean ( $m=15.99$ ,  $s=3.09$ ) scores. Paired “t” test, proved that there was a significant difference in the pre and the post test scores ( $t_{29} = 11.466$ ) at 5% level of significance. This difference was due to the intervention in the knowledge of the subjects. The practical application of this intervention would create health awareness to all computer users, thus improving quality of work environment.

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**Title:**

## **BANGLA AUTOMATIC NUMBER PLATE RECOGNITION**

### **SYSTEM USING ARTIFICIAL NEURAL NETWORK**

**Authors: Md. Mahbul Alam Joarder, Khaled Mahmud, Tasnuva Ahmed, Mohsina Kawser, and Bulbul Ahamed**

**Paper ID: ATST-30224014**

**Abstract:** Bangla automatic number plate recognition (ANPR) system using artificial neural network for number plate inscribing in Bangla is presented in this paper. This system splits into three major parts- number plate detection, plate character segmentation and Bangla character recognition. In number plate detection there arises many problems such as vehicle motion, complex background, distance changes etc., for this reason edge analysis method is applied. As Bangla number plate consists of two words and seven characters, detected number plates are segmented into individual words and characters by using horizontal and vertical projection analysis. After that a robust feature extraction method is employed to extract the information from each Bangla words and characters which is non-sensitive to the rotation, scaling and size variations. Finally character recognition system takes this information as an input to recognize

Bangla characters and words. The Bangla character recognition is implemented using multilayer feed-forward network. According to the experimental result, (The abstract needs some exact figures of findings (like success rates of recognition) and how much the performance is better than previous one.) the performance of the proposed system on different vehicle images is better in case of severe image conditions.

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**Title:**

**PREDICTION OF UPPER CITARUM RIVER BASIN  
DISCHARGE BASED ON ANFIS**

**Authors:** **Ruminta**

**Paper ID:** ATST-20214013

**Abstract:** Water resources availability for meeting reservoir storages, water supply diversion and environmental in stream flow requirements must be assessed on various premises regarding future water used as well as climatic and hydrologic conditions. Reliable

discharge predictions are particularly important for warning against dangerous flood and inundation. This study, therefore, investigates temporal dynamical model and predicts discharge in the Upper Citarum River Basin, West Java, Indonesia. The investigations and predictions based on pentad observations data of the rainfall, rainday, evapotranspiration, and discharge from January 1994 to December 2001. Modeling and prediction of the river discharge based on Adaptive Neuro-Fuzzy Inference System (ANFIS). A hybrid learning algorithm, which combines the least square method and the back propagation algorithm, is used to identify the parameters of the ANFIS. The rainfall, rainday, evapotranspiration, and discharge at time  $t-1$  (one pentad before) should be included in the ANFIS input variables are determined by statistical methods, i.e. correlation coefficient between the that input variables and output variable or discharge at time  $t$ . Prediction of discharge was done for 1-pentad until 72-pentad ahead in orders to compare the models generalization at higher horizons. The results shows that temporal dynamical model of the discharge based on ANFIS can simulate the observations data successfully and provide high accuracy and reliability for river discharge prediction. The model is capable to minimize the bias and

root mean squared error (RMSE=21.817 m<sup>3</sup>/sec.) and mean absolute percentage error (MAPE=2.05%). The model exhibits satisfactory agreements between observed and prediction data ( $r = 0.975$ ). Prediction of river discharge has high precision (E=97.94%). The information gathered from the preliminary results provides useful information for flood early warning system design in which the magnitude and the timing of a potential extreme flood are indicated, for hydropower operation, and for improvement of an integrated water management in the Upper Citarum River Basin.

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**Title:**

**SPECTROSCOPIC STUDIES OF A NEW MIXED LIGAND  
COMPLEX OF FE(III) WITH N,N-DIMETHYL-  
1,4-PHENYLENEDIAMINE AND ANTHRANILIC ACID IN  
AQUEOUS MEDIA**

**Authors: Bakhtyar K. Aziz, Diary I. Tofiq, Dler M. Salih and  
Dastan K. Mahmood**

**Paper ID: ATST-50218016**

**Abstract:** Spectrophotometric studies of Fe(III) mixed ligand complex have been performed involving two different ligands namely N,N-dimethyl-1,4-phenylenediamine as primary ligand (A) and 2-amino-benzoic acid as secondary ligand (B). The blue colored oxidation product, characterized by an absorption maximum around 520 nm. The final product has an absorption maximum at 677nm. The formation ratio of the new complex is determined to be 1:1:2 of Fe(III):(A):(B). The molar absorptivity constant was determined to be 4655. Stepwise spectrum change is recorded of the complex formation by continuous flow system. The time stability of the complex, dependence of the complex absorbance on pH and the

influence of temperature were followed on the basis of spectrophotometric measurements.

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**Title:**

**STUDY OF ANNEALING EFFECTS OF TiO<sub>2</sub>/COO CORE-SHELL THIN FILMS GROWN BY CHEMICAL BATH DEPOSITION TECHNIQUE.**

**Authors: D.U. Onah, C.E. Okeke and F.I. Ezema1**

**Paper ID: ATST-80204019**

**Abstract:** Core-shell thin films of TiO<sub>2</sub>/CoO have been grown by chemical bath deposition [CBD] technique. The core-shell of the films were synthesized from TiCl<sub>3</sub> and NaOH with PVA as the complexing agent, while the shells were synthesized from CoCl<sub>2</sub>. 6H<sub>2</sub>O and NaOH with NH<sub>3</sub> as the complexing agent. Spectrophotometric analysis, X-ray diffraction, scanning electron microscopic [SEM] analysis, have been used to study the films' optical and solid state properties, crystal structures and morphology.

The effects of annealing at different temperatures were studied. The optical transition in the films is direct one. For the as-deposited sample, the band gap determined is 1.8eV. The band gap of the films increased with increase in annealing temperatures with the range of 1.9eV to 2.3eV, resulting to band gap shift of 0.13eV, for annealed samples. These films could be used as solar cells. The time stability of the complex, dependence of the complex absorbance on pH and the influence of temperature were followed on the basis of spectrophotometric measurements.

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**Title:**

**STRUCTURAL, OPTICAL, AND ELECTRICAL PROPERTIES  
OF NANOPARTICLE  $2(\text{CdS})_x(\text{CuInS}_2)_{1-x}$  THIN FILMS  
PREPARED BY CHEMICAL SPRAY PYROLYSIS**

**Authors: Hamid S. AL-Jumaili and Ahmed F. Awad**

**Paper ID: ATST-40222025**

**Abstract:**  $2(\text{CdS})_x(\text{CuInS}_2)_{1-x}$  (CCIS) thin films, with  $x=0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1$ , are potential absorber layers in thin-film heterojunction solar cells. This study is the first to deposit these films successfully on glass slides using the spray pyrolysis technique at 623K. The films were characterized using X-ray diffraction to find the polycrystalline series of the CCIS solid solution with many phases and a new phase of nanostructured CCIS as a mixture of chalcopyrite and zinc blend. The grain size ranges from 6 nm to 27 nm. The surface morphology was characterized using atomic force and scanning electron microscopy techniques. The optical properties of the prepared thin films were investigated using a UV-VIS spectrophotometer in the wavelength of 300 nm to 1100 nm. The films showed a direct transition with graded optical energy gap ( $E_g$ ) values varying

between 1.4 and 2.3 eV, depending on the x value. The optical constants, such as extinction coefficient (k), refractive index (n), and real and imaginary dielectric constants (.1 and .2), were also discussed. The CCIS thin films exhibit p-type conductivity at x . 0.7 and n-type conductivity at x . 0.9. The films appeared to have one or more activation energies depending on the x value.

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**Title:**

**TEMPORAL AND SPATIAL VARIABILITIES OF TOTAL  
OZONE COLUMN OVER IRAQ**

**Authors: Saadiyah Hasan Halos**

**Paper ID: ATST-70221028**

**Abstract:** The ozone data obtained from the Ozone Monitoring Instrument (OMI) on Aura satellite have been used to study the temporary and spatial variabilities of Total Ozone Column (TOC) over different cities in Iraq at Baghdad (Lat 33.5° N, Long 44.5° E), Basra (Lat 30.5 ° N, Long 47.5° E), and Mosul (Lat 36.5° N, Long

43.5° E) over a period from October 2004 to December 2011. The daily TOC shows a notable seasonal behaviour which found considered the spring and summer months higher diurnal TOC variations than autumn and winter months. The daily TOC spatial behavior is found to be higher over the northern part of Iraq (Mosul) than the central part (Baghdad) and southern part (Basra). The linear regression technique was applied to the Monthly TOC to study the trends at three Iraqi cities revealed the presence of strong seasonal cycles and resulted stable variations with low coefficient of determination ( $r^2=0.004$ ) for Baghdad, ( $r^2=0.001$ ) for Basra and ( $r^2=0.006$ ) for Mosul indicates that a small percentage of the variations in total ozone. An examination of the yearly mean values of TOC indicates a marked seasonal variation with a maximum around April and a minimum around October. A trend analysis performed on each individual months, October month shows TOC decline in three Iraqi cities with linear trend value, (-1.178) for Baghdad which is lower than for Mosul (-0.904) and Basra (-0.642), while in April month shows a statistically significant TOC ascend with a linear trend value (3.25) for Mosul higher than for Baghdad (2.071), and Basra (1.178).

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**Title:**

**A NEW NUMERICAL MULTISTEP METHOD FOR  
SOLUTION OF SECOND ORDER OF ORDINARY  
DIFFERENTIAL EQUATIONS**

**Authors: Mohammed S. Mechee, Norazak Senu**

**Paper ID: ATST-80134039**

**Abstract:** In this paper we study the numerical method for second order of ODE in which the depend variable  $y$  does not appear explicitly.

$$y = f(x, y') \quad a \leq x \leq b$$

$$y(a) = \alpha$$

$$y' = \beta$$

A new numerical multistep method has been derived which used to solve some of numerical examples during some comparison with analytic solutions. The stability of this method has been studied.

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**Title:**

**SOLAR POND AND ITS APPLICATION TO DESALINATION**

**Author(s): A.Z.A. Saifullah, A.M. Shahed Iqbal and Anirban Saha**

**Paper ID: ATST-50201035**

**Abstract:** This paper discusses the solar pond technology and how it is applied to desalination. A solar pond is a shallow body of water which acts as a solar collector with integral heat storage for supplying thermal energy. Solar ponds are mainly two types: convective solar ponds and non-convective solar ponds. The shallow solar pond and the deep saltless pond are the examples of convective type. There are three types of non-convective solar ponds: salinity gradient solar pond (SGSP), membrane solar pond and polymer gel layers solar pond. A SGSP is a pool of water about 1-5 m deep, which contains dissolved salts to establish a stable density gradient. There are three layers in a SGSP: upper convective zone (UCZ), lower convective zone (LCZ) and salinity gradient non-convective

zone (NCZ) in the middle. Incident solar energy is collected and stored which may be delivered at temperature near 100C. The SGSP is the most eco-friendly and environment-friendly among all the solar energy systems for electricity generation, desalination, hot water applications in agriculture, green house heating, domestic hot water production and space heating and cooling of buildings. Nevertheless, a SGSP is more cost-effective since its collection cost per square meter is only one-fifth of that of a liquid flat plate collector, and cost of 1KWh of electricity production by a SGSP is only one-fifth of that produced by photovoltaic cells. A solar pond multi-stage flash distillation system (SPMSF) is very promising for Bangladesh. MSF plants can produce 6-60 L/m<sup>2</sup>/day, whereas for typical solar stills it is 3-4 L/m<sup>2</sup>/day.

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**Title:**

### **THERMAL ANALYSIS OF THE MIX PREFAB&EARTHEN BUILDING IN DILEKKAYA, NORTH CYPRUS (JUNE 2012)**

**Author(s): Yasemin Mesda, and Dr. Bilge Isik**

**Paper ID: ATST-50219035**

**Abstract:** The aim of this study is to contribute to the sustainability of healthy living in Cyprus. Earthen architecture is known with thermal comfort. A new earthen construction technology has been applied using prefabricated wall in the indoors and earthen material for external walls. The heat transfer coefficient and total heat loss of the prefab&earthen building has been analyzed and calculated on ceiling, external walls, roof and windows according to the influence of the bio-climatic comfort conditions of Cyprus. This new mix prefab&earthen house building was constructed in the Dilekkaya village in North Cyprus. The aim of the construction of the new mix earthen house is to explain the technology and sustainability of the earth material at today. Earth is the main material of the exterior walls in which shotcrete machine is used to apply the earth. Light steel material is used in the construction of the interior walls which is suitable for the prefabricated technique. The contemporary

construction technology was used during the construction of this building. Exterior walls were finished in 3 days of this 6mx6m house. Interior walls were prepared in the workshop during the exterior walls' construction. General information about the Dilekkaya village, its location and history of the mix earthen buildings are mentioned in the scope of this study. Moreover, the architectural characteristics of this new house are analyzed according to the heat transfer coefficients and heat loss calculation. The importance, advantages, energy-saving opportunities and natural climate conditions of the earth material can be seen after these calculations. Furthermore, this study aims to show how country's total energy consumption will be reduced by using the earthen material.

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**Title:**



**PALYNOLOGICAL ANALYSIS OF LATE CRETACEOUS  
SEDIMENTS OF THE NKPORO FORMATION IN THE  
AFIKPO SUB-BASIN, SOUTHEASTERN NIGERIA**

**Author(s): A. U. Okoro, C. N. Nwojiji, F.N.Osegbo, V.O. Ndubueze**

**Paper ID: ATST-50228034**

**Abstract:** The Late Cretaceous Afikpo Sub-basin was installed following the Santonian "squeeze". The Nkporo Formation which comprises of interbedded sandstones, dark grey shales, siltstones and limestone lenses is the basal unit of this Sub-basin. Palynological analysis of shale samples from surface outcrops of the Formation yielded sixty-seven (67) palynomorphs species, made up of thirty-eight (38) pollen species, sixteen (16) spores species, thirteen (13) dinoflagellate cyst species and microforaminiferal wall-linings. The palynological assemblage consists of abundant Monocolpates, Tricolporates, Laevigates, triletes, Monolete spores and Dynocyst species. The presence of Dynocyst species of *Andallussiella polymorpha*, *Coronifera tubulosa* and *Senegalinium bivacatum* suggest that the shales outcropping in Afikpo and Asaga Amangwu

areas (lower-middle part of the Formation) were deposited during the late Campanian. The upper part of the Formation outcropping on the scarp-slope of the Enugu-Okigwe Cuesta near Amayi and Nguzu Edda villages were dated early - mid Maastrichtian using Palynomorph species *Longapertites marginatus*, *Monocolpites marginatus*, *Proxapertites cursus*, *Mauritidites crassibaculatus*, *Constructipollinities ineffectus*, *Proxapertites operculatus* and *Syncolporites marginatus*; and dinoflagellate species of *Dinogymnium undulosum* and *D. acummunatum*. The environment of deposition has been interpreted as marginal to open marine. The recovered palynoflora fall within the *Proxapertites* Assemblage Zone and displays characteristics of the Senonian *Palmae* Province of Campanian - Maastrichtian elements recorded from tropical - sub tropical regions of South America, Africa and India.

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**Title:**

### THE CONTINUITY AND DIFFERENTIATION OF COMPLEX FUZZY FUNCTIONS FOR NEW FUZZY QUANTITIES

**Author(s): Pishtiwan O. Sabir, Adil K. Jabbar, Munir A. Al-Khafagi**

**Paper ID:** ATST-10204046

**Abstract:** In this paper, the continuity of complex fuzzy functions mapping generalized rectangular valued bounded closed complex complement normalized fuzzy numbers into itself are studied. Some important theorems of fuzzy derivatives of bounded closed complex complement normalized fuzzy number valued functions are proved.

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**Title:**

### ON FUZZY COMPLEX INTEGRALS

**Author(s):** Pishtiwan O. Sabir, Adil K. Jabbar, Munir A. Al-Khafagi

**Paper ID:** ATST-30217041

**Abstract:** In this paper, we define and study the basic properties of a fuzzy integral for fuzzy complex functions which map a rectifiable in the complex plane into bounded closed complex complement normalized fuzzy numbers. Some important theorems of fuzzy integrals of regular complex functions over fuzzy domains are proved. All this may be a foundation for researching fuzzy complex analysis.

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**Title:**

### **PALU TRADITIONAL HOUSE'S RESPONSES TO EARTHQUAKE**

**Author(s): Sugeng Triyadi, Andi Harapan, St. Aisyah**

**Paper ID: ATST-50206044**

**Abstract:** Theoretically, traditional houses are earthquake resistant. Thus, many hypothesis state that traditional house are the most suitable house that fit to be developed in earthquake-prone areas. Palu as an earthquake-prone area should have local knowlegdes that respond to earthquake and be applied in its traditional house. This paper will discuss the traditional house in Palu, known as Banua Mbaso, and signify its local knowledges that respond to earthquake well. Field observation and building measurements are conducted to obtain primary datas. Then analysis based on two main aspects, 1) building configuration and 2) building structural system, is performed.

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**Title:**

### **SHOCK WAVES IN DUSTY PLASMA WITH NON-THERMAL ION DISTRIBUTION AND CHARGE FLUCTUATING NEGATIVE DUST**

**Author(s): Sanjit Kumar Paul**

**Paper ID: ATST-60203043**

**Abstract:** A dusty plasma system containing Boltzmann-distributed electrons, non-thermal ions, and mobile charge fluctuating negative dust has been considered. The nonlinear propagation of the dust-acoustic (DA) waves in such a dusty plasma has been investigated by employing the reductive perturbation method. It has been found that the dust charge fluctuation is a source of dissipation, and is responsible for the formation of DA shock waves in such a dusty plasma. The basic features of the DA shock waves have been identified in this investigation which could be useful in understanding the properties of localized space dusty plasmas. It has been proposed to design a new laboratory experiment, which will be able to identify the basic features of the dust-acoustic shock waves predicted in this theoretical investigation.

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**Title:**

**ESTIMATION OF POLONIUM-210 CONCENTRATION IN  
SMOKERS AND NONSMOKERS' TEETH IN EAST JAVA,  
INDONESIA**

**Author(s): Yully Endang Hernani Murtiwardhani, Vivien Dwi  
Indriyani, and Johan Andoyo Effendi Noor**

**Paper ID: ATST-30209056**

**Abstract:** Indonesia is one of countries with biggest smoker population in the world. In addition to tar and nicotine, tobacco also contains radioactive Polonium-210 (Po-210) which is very dangerous for the health of smokers. Po-210 in cigarettes comes from the air and phosphate fertilizer often used by tobacco farmers to cultivate tobacco plants. The danger of Po-210 is from emission of alpha particles as it decays into a stable lead (Pb-206). Analysis of the concentration and activity of Po-210 was carried out by taking the crust teeth and expose them to nuclear trace detector CR-39. The measurement results show that the Po-210 activity in the smokers'

teeth ranged from  $1.54 \times 10^{-3}$  Bq to  $13.85 \times 10^{-3}$  Bq with an average activity of  $6.09 \times 10^{-3}$  Bq. Calculation of Po-210 activity gave a value equals to  $1.29 \times 10^{-3}$  Bq per cigarette per day.

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**Title:**

**SCREENING OF POTENTIAL PHOTOSYNTHETIC  
MICROALGAE FROM WASTEWATER TREATMENT PLANT  
FOR CARBON DIOXIDE CAPTURE AND STORAGE (CCS)**

**Author(s): Astri Rinanti, Edwan Kardena, Dea Indriani Astuti,  
Kania Dewi**

**Paper ID:** ATST-60302013

**Abstract:** The work has been carried out to obtain the potential microalgae which have capability of photosynthesis. The algae can be used as a Microbial Carbon Capture and Storage (MCCS) agent in the form of constructed consortium. Screening for obtaining constructed consortium divided into two stages. The first stage was finding out dominant microalgae with highest cell density. The



second stage was selecting for each genus based on their capability to grow together in the same artificial medium, the specific growth rate, CO<sub>2</sub> removal ability and also similarity of physiological requirements. The results demonstrated that *Chlorella* sp. genus, *Scenedesmus* sp. and *Ankistrodemus* sp., have a potential capability as MCCS agents. Those three genus could grew well together in a static culture using an artificial growth medium Provasoli for *Haematococcus* Media (PHM), at room temperature of (26±1)°C, pH (7.34±0.23), aeration rate of 80 ml/minute, 2500 lux light intensity, and light/dark photo periodic (24 hours/0). The highest specific growth rate of *Chlorella* sp., *Scenedesmus* sp. and *Ankistrodemus* sp. respectively were 1.0788 cells.d<sup>-1</sup>; 0.7601 cells.d<sup>-1</sup>; 0.9113 cells.d<sup>-1</sup>. While the fastest generation time (g) for each isolates were 6.7 hours; 9.5 hours, and 7.93 hours, respectively. Constructed consortium cultivation showed specific growth rate of 1.35 cells day<sup>-1</sup>. At 1 Lm<sup>-1</sup> supply rate of 2% CO<sub>2</sub>, the constructed consortium showed 27.4% CO<sub>2</sub> removal efficiency.

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**Title:**

### **MOBILE MONEY TECHNOLOGY AND THE QUEST FOR A CASHLESS NIGERIA**

**Author(s): Orji Chima Egbuta**

**Paper ID: ATST-60303028**

**Abstract:** In this paper we examined the mobile money banking model adopted by Nigeria in her quest for a cashless economy. A comparison was made between the Nigerian model and some of the models adopted in some African countries. The effort was to compare user and operator experiences in Kenya, Uganda and Tanzania with the mobile money regulatory framework of the Central Bank of Nigeria.

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**Title:**

### ANALYSIS OF THE CORPORATE GOVERNANCE

### STRUCTURE FROM THE PERSPECTIVE OF ENTROPY

**Author(s): Ruosen Yan**

**Paper ID:** ATST-70310028

**Abstract:** To characterize the scale-free characteristics of corporate governance structure quantitatively, the concept of corporate governance structure entropy is proposed and defined. The explanations on "manager control" and "shared governance" in terms of the corporate governance structure entropy are given. An example is provided to validate the method in terms of such entropy. It is shown that the corporate governance structure entropy can serve as the index of scale-free characteristics of corporate governance structure. It is indicated that the corporate governance structure entropy will be an important tool to analyze and explain the corporate governance structure in depth.

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**Title:**

### **COST EFFECTIVE MULTI-NODE POLLUTION DATA**

### **MONITORING**

**Author(s): Mohammed A. Hussein and Yahya M. Saeed**

**Paper ID: ATST-50313027**

**Abstract:** Cost effectiveness is major factor in implementing a lot of systems and pollution measurement and detection systems is not an exception. A multi node pollution measurement system that can measure pollution values at different sites based on easy to use and available components is the main aim of this work. In this work a visual studio based program has been designed to monitor carbon monoxide and oxygen gases values at different sites. The work is an add on the authors previous works on designing simple systems for gas pollution measurement systems and the low cost nature of the system make is a good choice for a budget limited implementation. It will be a valuable tool for developing countries were budget is a major obstacles in implementing a lot of systems. The current program version enables data acquisition from four sites and displays the gathered data in a graphical way.

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**Title:**

**ANALYSIS OF VESSEL CAPACITY AT BIRA - SIKELI  
CROSSING**

**Author(s): Petrus Pattiasina**

**Paper ID: ATST-60307036**

**Abstract:** Demand will often not the same fleet capacity of the stocks (supply), as well as capacity Sikeli Bira Ferry owned by PT. ASDP Indonesia factor passenger load increased by 20-30% and 80-100%, transport vehicles each rountrip, so the company often make the replacement of the fleet and sea routes. In case these conditions caused the vessel capacity does not match demand. Purpose of this activity is to analyze the optimal capacity-operated ferry in the port of Bira-Sikeli years 2009-2013. Analysis method of research is the load current demand forecasting will be used multiple linear regression, the determination of capacity based on current demand for passenger and cargo transportation vehicles, and determining the size of the ship with the method of trial and error. Results showed that in

2010-2013 the number of fleet 2 units, 888,74 GT, 300 passenger load, cargo vehicles II-III 10 units, grade IV-V 7 units, class VI and VII 14 units. LBP vessel size : 49,0 m, B : 14 m, H : 3,60 m, T : 2.60 m and  $C_b$  : 0,61 feasibility study recommended the investment and operation of vessels on the route is appropriate ( Bira-Sikeli ) and to anticipate the services of cargo ships are still operated with a set number of frequencies within on week of shipment.

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