

Analysis of Windows Element for Energy Saving in a Tropical Residential Buildings in Order to Reduce the Negative Environmental Impacts

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Abstract: In the contemporary milieu of today, sustainability and environmental concerns have become a great subject of debate. Matters related to sustainability are often linked to other crucial concerns like energy consumption. Energy is a key factor in ensuring continuous economic growth and development. One of the highest energy consuming systems in buildings – specifically residential homes in tropical regions – is the air conditioning system. Windows have been identified as the weakest link in the fabric of a building as they serve as thermal holes. Thus, the selection of proper window materials is crucial to reduce energy usage by minimizing the cooling and heating requirements of the building. The aims of this paper are analysis of energy performance for diverse types of window's glazing with different frames in order to find the most optimized window materials for the tropical residential buildings. The selected case study in this paper is modeled and then simulated by Building Information Modeling (BIM) application, which is appropriate for energy analysis. For simulation, some factors of the window materials were taken into consideration including, four physical properties of the U-factor, solar heat gain coefficient, visible transmittance, and emissivity. The result was shown windows types 02 and 03 were the most optimized of window materials and led to 10% energy saving into the base model and the windows type 05 was high U-factor, results in a greater transfer in internal zones and led to high energy consumption.

Keywords: Sustainability, Energy, Tropical countries, Residential buildings, Windows, BIM application

An Overview on Major Design Constraints, Impact and Challenges for a Conventional Wastewater Treatment Design

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Abstract: The conventional wastewater (WW) treatment plant includes physical, chemical, and biological treatment processes that can protect the receiving water bodies from water pollution. The common design constraints, challenges as well as environmental impact would make the wastewater treatment plant's (WWTP) construction and operation more complex and demanding tasks. Major project constraints for WW plant design are economic, accessibility, fulfilling technical requirements, institutional set-up, health and environment, personnel capacity, and political commitment etc. Design methodology adopted in the current study included project location, unit selections, the design capacity, design period as well as proximity to the population and layout plan. The present manuscript discussed briefly about effluent quality requirements, design issues, environmental impacts, details, and safety concerns. It also highlighted the necessary flexibility to carry out satisfactorily within the desired range of influent WW characteristics and flows. In the present study, every step of the design was verified with Environmental Regulations and suggested to overcome all constraints while designing WWTPs so that standard operational code for the specific region could be implemented to achieve the best treatment performance. The results obtained from analytical calculation were optimized to achieve the best design parameters for field application. The optimized values also reduce the construction and operation cost during the field application.

Keywords: Wastewater (WW), Challenges, Constraints, Design, Impact, Treatment, Plant

Estimation of Metal Ions in Various Soil Samples in Relation to Crop Production (wheat, mustard, barley) at Different Region of Dehradun India

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Abstract: Metals in the form of salts or as such have a profound effect on development and growth of crops. Various soil samples at different regions of Dehradun (India) have been analysed analytically for the concentration of various metal ions in relation to the growth and development of wheat, mustard and barley. The various metal ions have been found in a good concentration range at which the concerned crops could show maximum growth and development. The concentration of various salts like phosphate ion as determined spectrophotometrically was found to be in between 0.732 to 1.610, for NO_3^- the concentration was found in between 0.210 to 0.998 mg/kg, and the concentration of NO_2^{2-} was found to be 0.138 to 0.475 mg/kg. The metal ions were determined analytically and the concentration of various metals like Pb^{2+} was found in the range of 0.101 - 0.265 mg/kg, Zn in the range of 0.047 – 0.175 mg/kg, Cu in the range of 0.015 – 0.101 mg/kg and the concentration of Fe was found in the range of 0.120 – 0.462 mg/kg. Na, K, Li and Ba were analysed by flame-photometry and the concentration of Na was found in the range 0.10- 0.47 ppm, K in the range of 0.70 – 2.4 ppm, Li 0.00 – 0.01 ppm and the Ba in the range of 0.00 – 0.03 ppm. Also the data reveals the distributions of heavy metals in the agricultural land of the concerned region and can be used to estimate the risks associated with the consumption of crops grown on such soils. So the soil samples which have been examined can be opted for the production of various crops as the soil samples show a good quality and quantity of various mineral ions. The Dehradun in total bears a good range of forests and soil is rich of various types of mineral salts so could be used for the growth of multiple crops.

Keywords: Metal Ions, Wheat, Mustard, Barley, Flame-photometry, Analytical

Evalouation of Styrene Acrylo Nitrile (SAN), Butadiene Rubber (BR), Nano-silica (Nano SiO_2) Blend and Nanocomposite in the Presence of Oxoperoxidant Study

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Abstract: Polymer-nanosilica composite was prepared using Silica nanoparticles as reinforcing fillers in Styrene Acrylo Nitrile (SAN). Copolymer Styrene Acrylo Nitrile (SAN) is such warm, soft, clear resins that because of having suitable Physical and mechanical properties, have good resistance against chemical also low solvent and cost toward another copolymer styrene that caused to be in a category of much used of them. The effect of increasing nano-silica loadings on the mechanical properties of BR nanocomposites was also studied. Its defect is its fragility that, with its alloying with Butadiene Rubber, prevents its fragility. Basically, with adding inorganic Nano bits, changed strength and modulus of elasticity of plastics while increasing Nano bits decrease the strength of the hit. In this study, copolymer Styrene Acrylo Nitrile considered as a matrix and for increasing mechanical qualities used Nano bits silica diacid. Results of automated tests (XRD), (TGA), (HDT), and (SEM) were a sign of improvement of mechanical and thermal qualities. Nowadays, due to using lots of plastics in various industries, this probability exists that destroyed whit being exposed to direct solar radiation. So light destroyed plastics are very important. In this project whit using Oxoperoxidant blend prepared with the ability of light destruction, so that after one and three months, results show to destroy its lights.

Keyword: Permeability, Oxoperoxidant, Styrene Acrylo Nitrile, Degradation

Analysing the Influence of Perceived Scarcity, Negative Feelings, and Status Consumption on Food Waste Among Consumers

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Abstract: The purpose of this study is to examine the effect of perceived scarcity, negative feelings, and status consumption on food waste among consumers in Malaysia. A total of 258 questionnaires were collected via convenience sampling from customers who purchased food. The findings suggest that negative feelings and status consumption are significant and positively related to food waste. However, perceived scarcity shows no relationship to food waste. This study indicates that consumer's behaviors and motivations in buying food can lead to food waste. This study provides empirical and managerial contributions to the underlying factors that influence food waste among consumers. Due to the alarming level of food waste and limited research on consumer food waste behavior in the medium to a high-income group of countries such as Malaysia, there is an urgent call to conduct this study.

Keywords: Food Waste, Negative Feelings, Perceived Scarcity, Status Consumption

Application of Principal Component Analysis on English Proficiency among Technical University Students

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Abstract: The purpose of this study was to explore the level of English proficiency among students from Universiti Kuala Lumpur, Malaysian Institute of Information Technology (UniKL MIIT). This study also observed the relationship between the level of four main skills: Reading, Writing, Listening and Speaking by distributing an online questionnaire to 116 students from bachelor programme. The data was then analysed using the Principal Component Analysis (PCA) to reduce the dimensionality of the dataset. The research findings revealed that the students' level of Reading, Writing, Listening and Speaking proficiency are intermediate. The findings also showed that there is a significant relationship between each Reading, Writing, Listening and Speaking proficiency of the students. On the other hand, the finding also reflects that students acquired the lowest in writing skill. Finally, the research draws conclusion and recommendations based on the level of students' English Proficiency and the ways to improve students' achievement in English.

Keywords: Data analysis, Principal Component, Eigenvector, English proficiency

Assessing Customer Selection Criteria of Islamic Banking in Malaysia

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Abstract: Before the existence of Islamic banking in Malaysia, the financial services activities were dominated by conventional way of lending which is interest-based lending. Since the establishment of Islamic financial services in 1962, there has been enormous growth in the Islamic products in the banking sector and expected to account for 40 per cent of total financing in Malaysia. However, Islamic banking sector is experiencing stiff competition from its counterpart, the conventional banking sectors every turn. Bank's ability to fulfil the customer requirements is claimed to be one of the essential factors to overcome this stiff competition. This study reviews the literature on the factors affecting customers' selection criteria adopting Islamic banks. The study focusses on analysing three factors that play role on customer selection for Islamic banking namely religion, social influence, and bank image. Conclusion of the literature are drawn that among the important selection criteria are religion, social influence, and bank image. This study will be useful for Islamic banks to gain more insight and maintain their existence customer, and policymakers, regulators, and the relevant stakeholders a strategize a method towards the development and growth of Malaysia Islamic banking and finance industry.

Keywords: Islamic banking, customer selection criteria, religion, Malaysia

Collecting Fees for Safekeeping of Collateral: Rules and Applications in the Contemporary Islamic Financial Institutions

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Abstract: The study aims to examine the Shari'ah legality of whether pledgor or pledgee should take care of collateral (marhun) during the period of the loan. Moreover, the study seeks to provide possible applications for the pledge (rahn) and clarify Shari'ah rules for each application. Malaysian Islamic banks apply pledge products by offering loans (qardh hasan) to the customers and requesting gold assets as collateral against a loan. The banks charge safekeeping fees to keep the gold until the maturity date of the loan. This practice combines loan and sale contracts in a single transaction. Accordingly, the study seeks to evaluate this practice from an Islamic point of view. Islamic law categorizes loans under charity contracts while the sale is categorized under contracts of exchange (mu'awadhat). The nature of the two contracts is different. Therefore, the study examines categories that combine loans and contracts of exchange in one transaction. The results reveal that it is not permissible for the pledgee to charge fees higher than market fees for the keeping of collateral. Charging fees that are higher than the market price is considered riba. According to Shari'ah rules, any kind of benefit derived from a loan is riba and thus it is prohibited. However, charging fees that are comparable to the market price and cover the actual cost for safekeeping of collateral is permissible. According to Islamic Fiqh Academy resolutions and AAOIFI standards, Islamic banks may charge fees for safekeeping of gold collateral considering that fees should be to the market fees and should only cover actual expenses.

Keywords: Charitable Contracts, Contracts of Exchange, Pledgor, Pledgee, Rahn, Safekeeping Fees, Salaf wa Bai'

Determinants of Whistleblowing Intention in Organization

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Abstract: Whistleblowers have been applauded for their heroic acts for disclosing unethical practices in organization worldwide such as Enron, Worldcom and Cambridge Analytica to name a few. Whistleblowing has been regarded as one of the internal control mechanisms to prevent organizational wrongdoings. Despite establishment and enhancement of law, policies and regulations enacted to whistleblowing, potential whistleblowers remain silent and reluctant to blow the whistle. It is therefore important to examine the factors that encourage individual to come forward to disclose the wrongdoing. This conceptual article reviews prior literature that examined determinants of whistleblowing intentions. Building from the theory and following the prior literature, the article expanded the review by looking into the interaction of determinants such as ethical leadership, emotional intelligence and whistleblowing intention. Hence, it is expected that study of such interaction would create new avenues for future research.

Keywords: Whistleblowing intention, ethical leadership, emotional intelligence, organizational misconduct

Social Capital in Marketing and Its Implication to the Social Outcome

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Abstract: Social capital refers to economic resource involving elements such as norms, trust and social network that facilitate society's action. From marketing perspective, social capital mediates the experience of the individual, organization and the entire society via enabling shared values to spread through social connections, hence generating social outcome. Nonetheless, conceptualization of social capital within marketing paradigm has been inadequate despite some empirical works. Consequently, elements of norms, trust and social network which signify long term establishment of a business, has often been neglected. In this study, analyses are performed on existing scholarly published papers to gauge the conceptual and empirical findings from existing studies pertaining social capital in marketing as well as its implication towards the society's outcome. In this regards, we identify the contributions of social capital which mediates the relationship between marketing strategies and its performance. Subsequently, we characterize how social capital in marketing affects the social outcome in the contemporary world. The study proposes that social capital is a useful and appropriate resource to enhance marketing performance that would engender benefits at the societal level. However, social capital could also hinder the performance should it is not being properly acknowledged and assessed. Ultimately, the study will stimulate more efforts to emphasize on social capital among marketers and the community as a means to further enhance the desired social outcome. Additionally, this study will also serve as guidance for future researchers to extend the finding into more profound studies in the area of social capital in marketing.

Keywords: Social capital, marketing, social outcome

The Effect of Retailer's Perceived Service Innovation and Value Co-Creation Behavior on SME's Brand Equity

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Abstract: The purpose of this study is to examine the predictive effect of value-co creation, and service innovation on SME's brand equity in Malaysia. 529 questionnaires were collected via judgemental sampling from customers who patronizing SMEs involved in Food and Beverages (F & B) services. The findings show that the impact of value co-creation on SME's brand equity is positive. Moreover, the retailer's perceived service innovation is positively related to SME's brand equity. This study provides theoretical, empirical and managerial contributions to the field of brand and service management from consumers' perspective. The outcome of the study will benefit SME retailers' particular to F & B operators to manage their customers in a more excellent manner.

Keywords: Value CoCreation, Service Innovation, SMEs Brand Equity, F&B Services

Using Activity Theory to Review Internet Technology Engagement by Real Estate Negotiator in Malaysia towards Agency Best Practice

Azir Rezha bin Norizan, Ahmad Naim Che Pee

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Abstract: Real estate is a revelatory industry for the study of ICT uses because it is information-intensive and realtors are information intermediaries between buyers and sellers. As agents, buyers and sellers increase their uses of ICT, they also change how they approach their daily work. Information intensive industries, by their nature, show the greatest impacts due to ICTs that enable information sharing and the bypassing of traditional information intermediaries. However, while the effects and uses of ICT are often associated with organizations (and industries), their use occurs at the individual level. In other words, it is changes to individual work related to the use of ICTs that reshape both organization and industry structures, and vice-versa. In this study, we use activity theory to provide an analytic perspective within the setting in Malaysia. Data reveal historical structures of this industry guiding the day-to-day work of agents, buyers, sellers and the role of agency. Many of these structures are embodied in a set of explicit contracts that reify existing structures and legitimize realtors' actions. While looking from the agencies practices, we explain possible improvement in the real estate industry following the advancement of internet & mobile technology, viewing the possibilities towards the use of IOT in real estate industry.

Keywords: ICT, Real Estate, IOT, agency, digital media

Adsorption of Chromium from Aqueous Solution by Lignocellulosic Biomass (*Pinus palustris*): Studies on Equilibrium Isotherm, and Kinetics

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Abstract: Different methods to convert biomass into useful materials and products without generating pollutants will be useful for global environmental protection. The present study deals with the preparation of adsorbent from a suitable lignocellulosic biomass, *Pinus palustris* seeds. The adsorbent thus prepared will be used for the removal of heavy metals from aqueous solutions. Factors influencing the adsorption characteristics under batch conditions were studied for chromium concentrations in range of 30 – 150 ppm. The studies were conducted to optimize the size of the adsorbent, temperature and contact time. The maximum adsorption is attained at a pH of 6.5 and a dosage of 3g. The effective temperature for the reaction was at 37°C. The removal percentage increase when the optimized condition of different parameters such as size, temperature, contact time, concentration, pH and dosage. The adsorption isotherms showed that the Freundlich Isotherm is a better adsorption model and the characteristic parameters were determined. The results of the kinetic models showed that the pseudo second order kinetics was found to correlate with the experimental data. The present analysis, the absorbent that is produced from *Pinus palustris* seed has an efficient adsorption for chromium.

Keywords: Lignocellulose, adsorption, isotherms, kinetics

Mg-Cr Layered Double Hydroxide with Intercalated Oxalic Anion for Removal Cationic Dyes Rhodamine B and Methylene Blue

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Abstract: A MgCr-based layered double hydroxide (LDH) was synthesized by a coprecipitation method, followed by an intercalation process using an oxalic anion. The materials were characterized using X-ray diffraction analysis, FT-IR spectroscopy, and pH pzc measurement. The materials were then applied as adsorbents for removal of methylene blue (MB) and rhodamine B (RhB) from aqueous solution. Pristine Mg/Cr LDH exhibited RhB adsorption capacity of 32.154 mg g⁻¹, whereas the use of intercalated Mg/Cr LDH caused an increase in the capacity (139.526 mg g⁻¹). Kinetic studies indicated that the dye adsorption using both LDHs followed a pseudo-second-order kinetic model; the K_2 values of pristine and modified Mg/Cr LDH for RhB and MB were 6.970, 0.001, 0.426, and 2.056 g mg⁻¹ min⁻¹, respectively. The thermodynamic study identified that the adsorption of both dyes onto the LDHs was a spontaneous process and can be classified as physical adsorption with adsorption energies of <40 kJ/mol. Moreover, the desorption and regeneration experiments indicated the high economic feasibility and reusability of the LDHs. By using HCl as the optimal solvent, the LDHs could desorb as much as 98% of the dye and could be used as adsorbents with high adsorption capacity over three cycles.

Keywords: Layered double hydroxide, MgCr, rhodamine B, methylene blue, intercalation

Surface Modification of Powdered Maize Husk with Sodium Hydroxide for Enhanced Adsorption of Pb(II) Ions from Aqueous Solution

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Abstract: The impact of sodium hydroxide pretreatment of maize husk on its lead ion removal efficiency was investigated. Pretreatment of maize husk with this alkali increased its surface area and porosity from 528.74 m²/g and 0.477 cm³/g to 721.54 m²/g and 0.642 cm³/g, respectively. Batch adsorption studies were carried out to evaluate the effects of initial pH, adsorbent dose, initial lead ion concentration, initial solution temperature, and contact time on the adsorption process. The maximum removal efficiency of maize husk at pH 5 and adsorbent dose 2 g/L was 62.85 %, which increased to 82.84 % after pretreatment and was attained in 15 min. The adsorption data for the natural and pretreated maize husk were best fitted in the Freundlich isotherm model, with their adsorption intensity (n) having values >1, which indicated that lead ion adsorption onto the adsorbent types was a favorable physical process. The adsorption of lead ions onto the adsorbents followed the pseudo-first-order kinetic model. The experimental adsorption capacities of maize husk (31.43 mg/g) and its modified form (41.22 mg/g) were very close to those obtained from this model (31.03 mg/g and 40.65 mg/g respectively). The ΔH and ΔG values of the adsorption process showed that the adsorption of lead ions by both adsorbents was an endothermic process and occurred spontaneously. Alkali pretreated maize husk can therefore be used as a cheap adsorbent to remove lead ions from aqueous solution.

Keywords: Lead, maize husk, adsorbent, pretreatment, isotherm

The Implementation of E-Court in Administrative Court to Develop Access to Justice in Indonesia

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Abstract: Administrative Court has an absolute competence to settle administrative disputes. Sustainable Development Goals is a program conducted by United Nations with seventeen goals and the aims is no one left behind. The difficulty to get access to justice is one issue of SDG's. This is normative legal research and research data used are secondary data, and data will be analyzed using descriptive analysis. Research questions are how the role of administrative court in e-court is, and how access to justice from is administrative court perspectives. Development of technology gives benefits also in litigation process, and judiciary systems in Indonesia have implement the use of technology into regulations. Judiciary system developed the e-court with aims to increase the public service of judiciary system. Implementation of e-court for Administrative Court cannot fully electronically, since there are two processes which cannot implement using the technologies. The absolute competence of Administrative Court become broaden, after Law Number 30 Year 2014 of Governance Administration stipulated, which gives access to justice become easier for people to protect their rights. The novelty is Administrative Court using hybrid system between the conventional and modern system, since dismissal process and preparatory examination should be done before enters the court room. The shifting paradigm of administrative law gives more access to justice for justice seeker, because it gives more competence to Administrative Court.

Keywords: Administrative Court, E-court, Access to Justice

The Reconstruction of Public Information Dispute Resolution as the Effort in Realizing Substantive Justice in Indonesia

Kadek Cahya Susila Wibawa, Aju Putrijanti

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Abstract: The right to information is a human right as derogable right. Fulfilment of the right to information often leads to information disputes with Information and Documentation Management Officer (IDMO) as administrative officials who are given the task of managing information and documentation. Information dispute resolution becomes important to be resolved immediately because it is related to fulfilling a sense of justice and fulfilling the right to information for the community. The Establishment of the Government Administration Act (GA Act) causes the dualism of information dispute resolution. Article 53 of the GA Act will be the basis for resolving information disputes in the administrative court domain, while the Public Information Officer/PIO Act is the basis for resolving information disputes within the Information Commission domain. This dualism needs to be resolved to ensure legal certainty for the government and society as Justicia Belen. The development of dispute resolution reconstruction of information is conducted by strengthening information dispute resolution in non-litigation. Ideal information dispute resolution should be resolved first through administrative remedies (objections and administrative appeals) and through the Information Commission. The court becomes the ultimum remedium in resolving a dispute. Therefore, strengthening the Information Commission in terms of development, finance and authority is one way to strengthen the resolution of information disputes outside the court.

Keywords: Information Commission; Public Information Dispute; Information Openness

Sustainability Management and Planning of Coastal Areas and Small Islands to Ensure Environmental Justice for Fishermen Communities

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Abstract: As the largest archipelagic state in the world, most provinces in Indonesia have coastal areas with different physical characteristics. In addition, Indonesia has small islands located on the outer side of the country. So far, there are unclear regulations and management to protect the ecological environment in these areas, as well as legal protection for residents. This study seeks to analyze the sustainability management in coastal waters and development planning of small islands to ensure environmental justice for fishermen communities with special reference to Law No. 1 of 2014 regarding the Management of Coastal Areas and Small Islands. This study also wants to analyze the obstacles in the implementation of Law No. 1 of 2014 regarding Management of Coastal Areas and Small Islands. The results showed that the coastal waters management scheme according to the law is carried out through the mechanism of location permits and management permits and requires that the permits granted must not violate the decision of the Constitutional Court. In addition, in this law, the government grants the community the right to propose the preparation of Strategic Zoning Plan for the Management of Coastal Areas and Small Islands.

Keywords: Sustainable Development, Spatial Planning, Marine Environment, Small Island, Environmental Justice, Indigenous Rights

Adsorption of High Chromium Concentrations from Industrial Wastewater Using Different Agricultural Residuals

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Abstract: Hexavalent chromium Cr (VI) is a toxic material used in many industries such as tanneries and electroplating industries. Most of the previous researches studied the removal of chromium at lower concentrations up to 600 mg/L but did not tackle the behavior at higher concentrations, which resemble the real concentration of studied tanneries effluents. The present research is a comparative study of different agricultural low cost adsorbents in the removal of high Chromium concentration from industrial wastewater up to 1000 mg/L, compared to a commercial activated carbon. The tested adsorbents are (Banana Waste (BW), Sawdust (SD), Phragmites Australis (PA), Sugarcane Bagasse (SCB), Pea pod peels (PPP) and Rice straw (RS)). The materials were chemically pretreated with acid-alkali except BW was treated with acid only, to improve adsorbent metal binding capacity. Batch experiments were conducted to study the effect of pH, adsorbent dosage, contact time, initial Chromium concentration and temperature on the removal efficiency of Chromium from wastewater. The experiments were conducted in two sets, one for lower concentration (25-50-100-200-400) mg/L and the other for higher concentration (600-800-1000) to simulate the concentration of Chromium in tannery industry effluents. At 1000 mg/L initial concentration, BW achieved the optimum removal efficiency of 73.28% at pH = 3, adsorbent dosage = 25 g/L and contact time of 3 hours with the adsorption capacity was 39 mg/g. For SD at pH=2, 3 hours contact time, 10 g/L dosage, and 30°C the removal ratio was 64.83% and the adsorption capacity was 86.30 mg/g. The equilibrium data for various agricultural adsorbents was being tested with various adsorption isotherm models such as Langmuir, Freundlich and Temkin. At low concentrations, AC, BW, PA and SCB follows Freundlich isotherm model while SD follows Langmuir isotherm model. At higher concentrations, BW, SD, PA follows Langmuir isotherm while SCB follows Temkin isotherm model. To evaluate the mechanism of Cr adsorption on different adsorbents, Pseudo-first-order and Pseudo-second-order equations were used. The adsorption process follows Pseudo-second-order for all adsorbents, which confirms the chemisorption of Cr (VI) on different adsorbents.

Keywords: Chromium; adsorption; low cost adsorbents; Industrial wastewater; isotherms; kinetics; high concentrations.

The Research on Food Waste Pre-Treatment Technology for Incineration in Malaysia

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Abstract: Food waste and food loss are used to describe materials that are actually produced for consumption, but are discarded, lost, degraded or contaminated. Food waste (FW) is one of the main parts of municipal solid waste. Landfill is not preferable when compared with other types of waste handling method. It has been reported that the impact of landfill on climate change can be ten times higher than other waste handling methods. However, most FW end up in landfills. This paper reviewed the performance of several food waste pre-treatment technologies to convert FW into feedstock for incinerators/boilers in terms of electrical power generation purposes. The performance of food waste pre-treatment methods and their products were extensively discussed and compared in this paper in terms of calorific value, energy density, and compound reduction, which later directly corresponded with the energy, environmental, and economic factors for the sustainability of future renewable power generation.

Keywords: Alternative fuel; bioenergy; deep drying; fuel pre-treatment; alternative fuel; waste to energy; energy densification; thermochemical process

A Review: Plastics Waste Biodegradation Using Plastics-Degrading Bacteria

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Abstract: Plastic is a synthetic polymer that is widely used in almost every field of life. The massive use of this synthetic polymer has led to the accumulation of this polymer in the environment thus polluting the environment. The general techniques in preventing plastic waste as landfill, incineration, recycling are considered less effective as they release some hazardous materials to the environment. Thus, the appropriate technique is needed to overcome this problem. Biodegradation is an enzymatic degradation involving some microorganisms including bacteria. This technique can be used to prevent the plastic waste problem. Plastic waste biodegradation occurred through several steps, including biodeterioration, depolymerization, and assimilation. Within this process, bacteria will secrete many enzymes that will degrade and convert plastic polymers into microbial biomass and gases. Thus, this process has fewer even no side effect.

Keywords: Bacteria, Biodegradation, Enzymes, Plastics Waste

Treatment of Wastewater from Pulp and Paper Mill using Coagulation and Flocculation

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Abstract: In this work, an effluent sample from a local medium-scale paper mill has been treated using alum as a coagulant and chitosan (natural polymer) as a flocculant. Initially, the dose of alum has been optimized by adjusting the zeta potential to near zero for best coagulation results. The dose of 0.04 g/L was able to merely coagulate and unable to cause sweep flocculation of impurities. Then, at the optimised dose of 0.04 g/L various concentrations of chitosan in the range of 0.1-0.5 g/L were investigated for obtaining maximum flocculation of the suspended impurities. The physico-chemical parameters like pH, total suspended solids (TSS), chemical oxygen demand (COD), absorbance, and zeta potential were studied for comprehending the flocculation behavior. The observed results exhibited that the maximum flocculation was achieved at the chitosan concentration of 0.3 g/L. At the flocculant concentration of 0.3 g/L, 81% TSS removal and maximum 78% COD were reduced. Moreover, zeta potential value of the collected supernatant was close to zero (−1.49 mV) which showed larger floc formation and easy settleability of the impurities. In all, it can be said that the utilization of chitosan along with alum may be a better option for the treatment of pulp and paper wastewater as well as other similar types of wastewater.

Keywords: Pulp and paper mill waste water; coagulation-flocculation; chitosan; zeta potential; COD

Effect of Temperature and Pyrolysis Time in Liquid Smoke Production from Dried Water Hyacinth

Rita Dwi Ratnani, Hadiyanto and Widiyanto

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Abstract: This study aimed to investigate the use of water hyacinth to produce liquid smoke. The study observes the temperature and time variables of yield, pH, density, and refractive index in the production of liquid smoke from water hyacinth. The sequence of the work is as follows: first, water hyacinth was cut into 5 cm sections and then sun-dried for 2–3 d, depending on the weather. Next, 550 g of dried water hyacinth was added to the pyrolysis reactor. The temperature variations were 200°C, 400°C, and 600°C, and the time variations were 1, 4, and 7 h. As a result, liquid smoke was produced with varying yield, pH, densities, and refractive indices. The best results in this research are liquid smoke pyrolysis at a temperature of 400°C and 4 h with the acquisition of a yield of 93 mL, pH 2–4, a density of 1.080,8 gr/mL, and a refractive index of 1.339,6, with chemical component 41.45% total acid, 2.44% phenol and 56.10% carbonyl.

Keywords: Influence of temperature and time, liquid smoke, pyrolysis, water hyacinth

Verification of the effect of Raw Materials Mill Dust on soil stabilization: An experimental study

Fatima Alsaleh, Feras Al Adday, Ahmed Al-Abu Hussein

Volume 9 | Issue 1 | Pages: 172-177 | [PDF](#) | [HTML](#)

Abstract: Cement plants produce large quantities of dust, which is an important source of pollution. Among these pollutants is raw materials mill dust (RMMD), it is a dust produced during the grinding of raw materials. RMMD differs in chemical composition from cement kiln dust (CKD), where CKD is a by-product that collects in the electrostatic filters of a cement kiln. A lot of studies have been done around the world to find effective ways to recycle CKD and use it again in soil stabilization to avoid the failure of the entire pavement in the future as well as an economical and environmental solution, while there is a dearth of research done on RMMD. In this study, the performance of a weak subgrade for one of the sites in Aleppo city was examined, where its physical and mechanical properties (plasticity index, maximum dry density, optimum water content, and California bearing ratio (CBR)), were determined. Then RMMD was added to the subgrade samples according to five ratios 0, 5, 10, 15, and 20% of the dry weight of the soil. The research concluded that adding the RMMD to the weak subgrade by 20% of its dry weight is the optimal ratio, improved its performance, as the plasticity index decreased by 13%, and the CBR increased up to 63 %. Thus, the bearing capacity increases, it saves costs and reduces future pavement maintenance.

Keywords: Desertification, Deforestation, Hazard, Drought, Wind erosion

Monitoring of the Environmental Contamination and Exposure Risk of COVID-19 in the Medical Staff of Coronavirus referral hospitals in Qom, Iran

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Abstract: COVID-19 is a new infection that first occurred in China and now is spreading worldwide. The disease is considered to be a serious respiratory disease in humans. This study has been designed to assess surface contamination of SARS-CoV-2 and exposure risk of the disease in the medical staff of two coronavirus referral hospitals of Qom province, which were dedicated to the admission and treatment of COVID -19 patients.. This study was carried in two steps including analysis of environmental samples and exposure risk assessment of COVID-19. In this study 50 environmental samples were collected from different sites of the hospitals. After extracting RNA, RT-PCR was done for the detection of SARS-CoV-2. The results showed that 18% of environmental sites, including elevator buttons (8%), doorknobs (6%) and bed rails (4%) were positive. In the risk assessment process based on according to wear of personal protective equipment, exposed to high touch surfaces, performing hand hygiene, any accident with biological fluid/respiratory secretions, the results indicate that 60.4 %, 68.3%, 28.6% and 20.6% health care personal including medical doctors, nurses and assistant nurses have high risk, respectively. In general, implement a plan for monitoring health personnel exposed to confirmed COVID-19 cases for respiratory illness including environmental surveillance engineering controls and personal protective equipment recommended.

Keywords: COVID-19; Environment; Risk; Exposure; Hospitals

Efficient Removal of Nitrogen based Industrial Pollutants by Graphene Oxide Coupled Nanotitania Composite under Visible Light Illumination

Ryali Somasekhar, Paul Douglas Sanasi

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Abstract: N-based industrial pollutants like Nitrobenzene (NB) and 4-nitrophenol (4-NP) were identified as hazardous among the group of industrial chemicals by United States environmental protection agency (USPEA). Their removal from the effluents has become inevitable for the industries as a part of wastewater treatment methodology. Thus, the selected organics have been successfully removed from their aqueous solutions with nanotitania (anatase) composites incorporated with an optimum wt% of graphene oxide (GO) through photocatalytic degradation. Kubelka-Munk function was applied for the composites in the UV-Vis diffuse reflectance spectral (UV-Vis DRS) studies and the band gap has appreciably decreased with increase in wt % of GO in the composites. Compared to band gap in Degussa P25 (3.2 eV), the same was observed as 2.60 eV in the nanotitania composite with 10 % GO. These studies were correlated with Photoluminescence (PL) spectral analysis. The photodegradation and mineralization of Nitrogen containing industrial pollutants like nitrobenzene (NB) (95.7 % COD loss) and 4- nitrophenol (4-NP) (97.2 % COD loss) were successfully achieved with the nanocomposite under visible light irradiation.

Keywords: Photocatalysis, Graphene oxide, Nanotitania, Nitrobenzene, 4-nitrophenol

Synchrotron based X-ray fluorescence for trace elemental analysis of industrial sludge

Vijay Kumar Garg, Arun Lal Srivastav, Manoj Kumar Tiwari, Ajay Sharma, Varinder Singh Kanwar

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Abstract: This research article presents the application of the synchrotron-based X-ray fluorescence (XRF) technique for the resolution of trace elemental accumulation in industrial sludge/waste. The X-ray fluorescence using synchrotron radiation presents an expeditious exposition of a wide scale of elements (Sodium to Uranium) together with an ingenious sample preparation procedure. The present X-ray fluorescence studies carried out for the paper and toothpaste industry sludge at synchrotron source (Beam Line -16), Indus-2, Raja Ramanna Centre for Advanced Technology, Indore, India. The XRF results show very low traces of heavy metals present in paper and toothpaste industry sludge and therefore recommend for safe and efficient reuse.

Keywords: Elemental analysis; synchrotron radiation; industrial sludge and X-ray fluorescence

The Anti-Cancer Property of Mumie as Natural Product on Human Cervical Cancer Cell Line (HeLa)

Azin Tavassoli, Malihezaman Monsefi

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Abstract: Mumie is a natural component found in some mountains, such as the Himalayas, as well as in some mountainous of Iran. It contains of humic and phenolic compounds that have antioxidant and anti-cancer properties. Therefore, in this study, anti-cancer and antioxidant properties of mumie were examined on Human Cervical Cancer Cell Line (HeLa). HeLa cells and normal fibroblasts (NIH) were cultured in DMEM/F12 with mumie at concentrations of 0, 100, 200, 300, 400, 500 and 1000 µg/ml for 24 and 48 h. The bioviability of these cells were evaluated using MTT assay. Chromatin condensation and apoptosis of these cells were examined using acridine orange and aniline blue staining respectively. Antioxidant property of mumie on NIH cells was evaluated by 10 mM H₂O₂ and neutral red test. MTT assay revealed bioviability of HeLa cells decreased but chromatin condensation increased in concentration of 100 µg/ml mumie treated culture. Apoptosis of the HeLa cells were observed in 100 µg/ml mumie treated culture. Mumie did not affect the bioviability, chromatin condensation and apoptosis of NIH cells but 500 and 1000 µg/ml concentrations were toxic and induced cell death. The cell cultures in different concentrations of mumie after 24 and 48 h showed the similar results. NIH cells bioviability increased in 500 and 1000 µg/ml concentrations of co-culture of H₂O₂ and mumie that confirmed the antioxidant property. It concluded that even low concentrations of mumie could destroy HeLa cells without any side effect on normal cells. Therefore, it can be used for cervical cancer treatment but further research is needed.

Keywords: Apoptosis, Cervical cancer, Mumie

Eco-Friendly Approach to Control Mosquitos (*A. stephensi*, *C. quinquefasciatus*, and *A. aegypti*) Using Silver Nanoparticle

Jimmandiyur Madhappan Murugan, Mathiyazhagan Narayanan, Muthugoundar Subramanian Shivakumar, Govindaraju Ramkumar

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Abstract: The available controlling agents for mosquito vectors are chemical insecticides and the frequent usage of these insecticides creating resistance among mosquito vectors and environmental pollutions. Thus, the study was designed to synthesize and characterize the Ag nanoparticles (AgNPs) through a methanol leaf extract of *Ocimum canum* and find the larvicidal prospective of the AgNPs on the 4th instar larvae of *Anopheles stephensi*, *Culex quinquefasciatus*, and *Aedes aegypti*. The obtained outcomes show that the methanol leaf extract of *O. canum* was effectively reduced the silver ions and produce constant silver nanoparticles. It was characterized and confirmed by various scientific techniques such as UV-vis spectrum, XRD, SEM, FT-IR and EDaX. Various concentrations (10, 50, 150, 200, and 250 ppm) of characterized nanoparticles were tested for larvicidal activity. The premier larval death was observed at 24 h of treatment on *A. aegypti* with LC₅₀= 17.03 ppm, followed by *C. quinquefasciatus* with LC₅₀= 14.89 ppm of methanol extract of *O. canum* and no death was noticed on *A. stephensi*. The LD₉₀ value for *A. aegypti* and *C. quinquefasciatus* were 24.18 & 20.65 ppm respectively. Hence, the Ag nanoparticles produced from methanol leaf extract of *O. canum* retains efficiency to control *A. aegypti* and *C. quinquefasciatus*. Thus, it might support partially to replace the chemical insecticide which used against these vectors and might contribute to reduce environmental pollution.

Keywords: *O. canum*, methanol extract, Biodegradable AgNPs, larvicidal activity, mosquito vectors

Comparative Biodrying Performance of Municipal Solid Waste in the Reactor under Greenhouse and Non-greenhouse Conditions

Katitap Ngamket, Komsilp Wangyao, Sirintornthep Towprayoon

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Abstract: The high moisture content of municipal solid waste yields a lower energy content of solid fuel that affects the thermal conversion efficiency. Biodrying is an alternative drying method using bio-heat generated by microbial metabolism to reduce the moisture content of municipal solid waste. This research was conducted in three pilot-scale biodrying reactors, two under greenhouse conditions compared with one conventional non-greenhouse condition. Two bunkers with greenhouse cladding were connected with aerators, and airflow rates were set at 0.4 and 0.6 m³/(kg_{waste}·day), respectively. Meanwhile, a passive aeration method was applied to the non-greenhouse bunker. This study aims to investigate the effect of the greenhouse condition on the biodrying process and assess the performance of the drying process through different operating conditions. The result shows that the greenhouse mainly affects the air temperature rise in the reactor. The aeration rate is positively correlated with weight reduction ($r = 0.93$). At 0.6 m³/(kg_{waste}·day) airflow rate, the treatment can reach a moisture content less than 30% on average within ten days, while at 0.4 m³/(kg_{waste}·day) airflow rate, it takes 15 days to reduce the moisture content to less than 30%. Biodrying under the greenhouse condition with active aeration potentially achieves desirable moisture content reduction and heating value increase more efficiently than the common biodrying. However, the airflow rate is a crucial factor in determining the suitable drying time in biodrying under the greenhouse condition.

Keywords: Biodrying, Greenhouse, Municipal Solid Waste, Refuse Derived-Fuel, Solar Radiation

Adsorptive Removal of Dyes onto cost effective Biomaterials – A Review

Mary Jency I, Gowrisankar L, Krishnaveni J, Renugadevi. N

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Abstract: A higher percentage of dyes from the industrial waste water are being released into aquatic ecosystems and polluted the natural ecosystem. An abundance of technologies available for removal of dyes from the industrial waste water are expensive and ineffective. Many of these processes are economically not viable for small and medium scale industries due to large scale applications. Recent Investigational researches have proved that the successful elimination of dyes is obtained using numerous economically available non-conventional adsorbents also. Several experimental investigations on adsorption proved that tremendous treatment for dye removal and can be obtained using cheaply available non-conventional adsorbent. This review is mainly focused to the systematic study on utilizing low cost adsorbent of dye removal from the effluents discharged from the industries. The data on economically cheap adsorbents and its properties for removing dyes resulted from the recent literature survey are summarized. Therefore, this review provides the various methods to treat the wastewater using low-price natural sources of adsorption materials, non-viable biomaterials.

Keywords: Classification of dye, Dye removal method, Adsorption, Industrial effluents, Biomass

Graphene-Carbon Nanotube Hybrids: Synthesis and Application

Khadije Yousefi

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Abstract: Graphene and CNTs have gained considerable concern and research attention. In addition to preventing the aggregation of these carbon compounds, graphene CNT hybridization would also make full use of the synergistic relationship between graphene and CNT. This chapter discusses the different carbon nanomaterials and their special properties, and a thorough analysis of the graphene-CNT derivatives is observed. It would also discuss in detail the methods and their properties used to create graphene-CNT hybrids. Their applications are also described particularly in device sensing, energy/supercapacitors, and material science.

Keywords: Carbon nanotubes, graphene, CNT-graphene hybrid

Bio-Degradation Study of ABS Protein Filled Nano Composite

M. Khaj, N. Goudarzian, Kh. Yousefi

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Abstract: In this work we report the particular preparing as well as properties of nano blend according to acrylonitrile/butadiene/styrene terpolymer using improved nano silica, and also casein, in particular, most of us studied the effects of filler injections concentration on morphology, as well as hardware overall performance, paying attention our consideration on the consequence with the biodegradation phenomena with the casein modifiers. ABS/nano Si and casein blends are assumed to be biodegradable since both components are bio-degradable in a variety of microbial circumstances. The particular processing and mechanical properties involving casein and also ABS/nano Si blends have been well investigated and submitted to degradation by dirt interment tests in perforated boxes for 6 months and later analyzed. After destruction, blends along with casein displayed FTIR signals of minimal intensity in comparison to the original blends. These results exposed that ABS/nano Si's biodegradability may be improved until casein is added to it. as to the actual mechanical properties, the effect of casein content on the strain at break of the nano composites, it is seen that the strain at break and impact strength of the nano composites get worse with the addition of casein where it decreases with increasing casein content while Young's modulus is higher than that of pure ABS.

Keywords: Nano composites; Acrylonitrile/butadiene/styrene terpolymer; Bio-degradation; Nano Silica

Low Carbon Development through Measuring and Monitoring Carbon Emission in Johor Bahru, Malaysia

Isiaka Adeyemi Abdul-Azeez

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Abstract: Reducing carbon dioxide emissions through low carbon development is an appropriate solution to combating climate change. This research aims to identify ways of reducing carbon dioxide emissions in Johor Bahru towards promoting low carbon development. The research investigated the low carbon initiatives in Malaysia. The study was based on purposive case study and restricted to Johor Bahru, Malaysia. It reviewed existing practice of low carbon development in the study area. Stakeholders and organizations related to low carbon development and low carbon initiatives were interviewed. The study also observed that the initiative is relatively in the early stage with few projects accomplished. However, emphasis was placed on other themes of low carbon concept rather than direct measurement of Carbon dioxide (CO₂) emission. Since majority carbon emissions are from electricity and transport sectors, the Malaysian University Carbon Emission Tool (MUCET) was modified and suggested for measuring and monitoring emissions in Johor Bahru. This study facilitates the formulation of policies that target emission reduction and ensure steady movement into clean energy future.

Keywords: Low Carbon Development, Energy Use, Carbon Emission Tool

Prevalence of Heat-Related Illnesses among Outdoor Workplaces Workers in Hot and Dry Areas of Iran

Milad Derakhshanjafari, Ali Jangjou, Roohollah Bagherzadeh, Mohammad Reza Monazzam, Zahra Zamanian

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Abstract: The risk of heat-related illnesses (HRI) is very high in outdoor workers. Given that there are a large number of outdoor workers in areas of Iran and there is no comprehensive information on HRI among these workers in the risky workplace. Aim of the study is prevalence of HRI among outdoor workplaces workers in hot and dry areas of Iran. This cross-sectional study carried out among 1800 that randomly selected from outdoor workplaces workers in hot and dry cities of Iran in 2019. Data was collected by researcher-made questionnaire containing questions about information about the participants' demography and lifestyle; behavior modification during heat; knowledge about HRI; health status of the workplace; type of HRI symptoms in the Summer 2019; job properties; and individual factors. Then, data analysis was performed using SPSS software version 19. 76.2 % of the participants reported experiencing one or more HRI symptoms that 36% of them were related to headache. HRI is highest prevalence in agricultural workers (37%). HRI symptom are significantly associated with age, work experience, type of working clothes, and ratio of rest/work ($p < 0.001$). Results showed that reducing rest time and water consumption increased the prevalence of HRI ($p < 0.001$). Prevalence of HRI is very high in among outdoor workplace workers in hot and dry areas of Iran, especially agriculture workers. Headache is most prevalence in the workers. Finally, consideration of working clothes, water consumption, and ratio of rest/work have an important role in reducing of HRI.

Keywords: Heat-related illnesses, Outdoor, Workers, Hot and dry

Long-Term Combined Effects of Crude Oil and Dispersant on Sediment Bacterial Community

Mohammed Al-Jawasim

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Abstract: To better understand long-term combined effects of crude oil and dispersant on bacterial community, sediments microcosms were set up in triplicates and treated with dispersant (Corexit 9500A), crude oil, and Corexit 9500A plus crude oil. After 60 days exposure, there was a significant change in the bacterial community structure in all treatments. The shift in the bacterial community structure in Corexit 9500A plus crude oil treatment was considerably different from those by either Corexit 9500A or crude oil. DNA sequence analysis showed that *Hydrocarboniphaga effuse*, *Parvibaculum lavamentivorans*, and *Alicyclobacillus ferrooxydans* were the major bacterial species in crude oil treatment. *Pandoraea thiooxydans*, *Janthinobacterium* sp. and *Hyphomicrobium nitrativorans* were the most dominant species in Corexit 9500A treatment. The species *Janthinobacterium* sp., *Parvibaculum lavamentivorans*, and *Dyella* sp. were enriched in Corexit 9500A plus crude oil treatment. The majority of the detected species were hydrocarbons degraders. The study showed that Corexit 9500A addition enhanced the biodegradation rate by increasing the diversity and richness of hydrocarbons degrading species. Corexit A9500 application should be considered during crude oil spills to evaluate environmental impacts.

Keywords: Corexit A9500, crude oil, combined effects, bacterial community structure, hydrocarbons

Effects of Social Distancing in Reducing the Spread of COVID-19 Pandemic: A Perspective of Bayelsan Residents in Nigeria

Ebibodere K. Baulch, Godwin P. Angaye, Edmund D. Patani

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Abstract: This research work essentially explored the efficacy of social distancing in reducing the spread of corona virus disease (COVID-19) in Yenagoa metropolis. The objectives of this study were to examine the level of coronavirus disease and investigate whether social distancing have help reduce the spread of COVID-19 in Bayelsa State, Nigeria. The research design used for this study is survey, the population targeted for this study consists of residents of Yenagoa. Four hundred (400) residents were used as sample size and cluster sampling technique was applied. Instrument used for this study is the questionnaire. Results showed that the level of coronavirus disease in Yenagoa metropolis was below average, and around 70% of respondents strongly agreed that social distancing can help reduce the spread of COVID-19. Following these findings, it is recommended that social distancing and other aseptic measures should be ensured. The study concludes that social distancing can help reduce the spread of COVID-19.

Keywords: COVID-19, Social distancing, Coronavirus, Pandemic, Bayelsa State, Nigeria

Design and Analysis a Low-Cost Cementitious Waterproofing Mixture Based on the Solution of a Mathematical Model

Fatima Alsaleh, Feras Al Adday, Mohamed Bassam Hamami

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Abstract: Most of the investigation results of engineering studies depend on the principle of trial and error in decision-making, which requires a lot of time and effort and does not guarantee to reach the optimum solution. Whereas, mathematical models provide mathematically proven optimum solutions to problems. This research aims to exploit the huge quantities of fine recycled aggregates (FRA) from the destroyed buildings and infrastructure of the city of Aleppo to design a cement-based waterproofing concrete mixes, by developing a mathematical model. The optimum proportions of the materials included in the composition of cement-based waterproofing concrete mixes have been founded by this model which is derived and solved by a simulated annealing method. Experimental results showed the efficiency and accuracy of the proposed model in determining the optimal quantities of the mixture content with a minimum cost according to the required engineering conditions.

Keywords: Fine Recycled Aggregates, Cement-Based Waterproofing Mixture, Linear and Nonlinear Constrains, Simulated Annealing Method

The Impact of Moringa Leaves, Katuk Leaves and Oxytocin Massage on Quantity and Quality of Mother's Milk as Patients Health Center in Bali

Ni Putu Mastiningsih

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Abstract: The problem of breastfeeding is part of the problem of discomfort in postpartum mothers for 2 hours after giving birth. This problem often causes trauma to postpartum mothers during breastfeeding, psychological disturbances, and increases morbidity in the mother and baby due to inadequate breast milk. The practice of Oxytocin massage, Moringa leaves and *Katuk* leaves at the same time can improve the quantity and quality of breast milk in maternal patients with 36-40 weeks' gestation. This type of research is quantitative research. Respondents numbered 30 were selected by determining purposive sampling in each group consisting of 10 mothers. Data were analyzed using a Paired t-test and Independent sample t-test with an α level of 0.05. The results showed that there was an increase in the quantity of breastfeeding. On the 3rd day, the quantity of breast milk with volume of 45 cc. In the week I with a volume of 10.50 cc, week II 86.50 cc, week III 168.50 cc and week IV as much as 275 cc. It shows that there are differences in quality on days 3 to week IV. The results of data analysis also showed that the 3rd day the quality of breast milk is rather yellow and rather thick, then the first week to the third week rather yellow and thin. At week IV, the quality of breast milk is white and runny. There is an increase in the quality and quantity of breast milk in all three groups.

Keywords: Breast Milk; Postpartum; Patients Health Center

A Review on Oleaginous Microorganisms for Biological Wastewater Treatment: Current and Future Prospect

Mohammed B. Al Raya'an and, Ibrahim A. Alshayqi

Volume 9 | Issue 1 | Pages: 280-288 | [PDF](#) | [HTML](#)

Abstract: The water scarcity issue is becoming a critical issue to the climate change, industrialization and urbanization. Prompt to the advances in biotechnology, Oleaginous microorganisms have been discovered and successfully applied in biological wastewater treatments, which are highly effective for wastewater clean-up and energy efficient lipid conversion to value-added products. This paper aims to review the recent advances of the application of different types of Oleaginous microorganisms (e.g. yeasts, microalgae, and fungi) as well as the advantages, limitations and application fields (food industry, municipal waste and chemical plant). The future prospect and challenges of Oleaginous microorganism that warrant in environmental settings or engineered systems are also highlighted in the review. In order to improve the Technology Readiness Level (TRL), the future research direction should be more focussed on the economic and environmental studies.

Keywords: Oleaginous microorganisms; Biological wastewater treatment; Microalgae; Industrial application

Removal of TDS and TSS from Industrial Wastewater using Fly Ash

Nehal M. Ashour, Mohamed Bassyouni, Mamdouh Y. Saleh

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Abstract: Fly ash is one of the most abundant waste materials; its major components make it a potential agent for the adsorption of pollutants contaminants in water and wastewaters. In this study, fly ash obtained from burning of mazut was dried and sieved into different fractions (600, 300, 150, 75 μ m). A pilot plant with an industrial discharge flow of 200L/hr was designed for reducing total Dissolved Solids (TDS), total suspended solids (TSS), conductivity and pH from industrial wastewater. The concentrations of (TDS), (TSS), conductivity and pH in industrial discharge flow had an average range of 80000, 750, 120000 mg/L and 13 respectively. The optimization of the treatment process using 5, 8, 12, 15 g/L fly ash dosage had succeeded in improving the removal efficiency of (TDS), (TSS), conductivity and pH to 90%, 92.3%, 90% and 93.5% respectively.

Keywords: Adsorbent; Wastewater; Fly ash, Low cost

Sustainable Management Modeling Of Mangrove Ecosystem to Support the Local Economy in Small Islands, South Sulawesi Indonesia

Amal ARFAN, Wahidah SANUSII, Muhammad RAKIB, Nur Anny Suryaningsih TUUFIEQ, Nur Fatimah BASRAM

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Abstract: The model starts with the formation of groups of fishermen/farmers /mangroves/women. The group produces something from mangrove forest that comes from creativity and ability to create something new as well as utilizing their members based on their abilities. After the formation of productive, creative and innovative groups of fishermen/ farmers / mangroves, the values are assessed and provided some benefits. Before going to the next stage, reflection on the groups formed is under the goals and objectives of the group formation. After reflection, it conducts a study of the suitability of the business sector that is carried out in the mangrove forest area. The suitability of the business sector must be based on environmentally friendly systems and mangrove conservation. It is called cultivation with the silvofishery system (integrating shrimp/fish cultivation with mangroves) and the use of environmentally friendly fishing tools. The next step is to formulate academic methods, then lay down the urgency and management paradigm of putting something important and the main patterns and models in the management of mangrove forests. After that phase, fixing management problems of mangrove forest. Mangrove forest management involves local communities and other stakeholders meanwhile the government, in this case, acting as a motivator and facilitator because of its understanding of the *A. formosa* growth and dynamics in the tropical coral reef ecosystems.

Keywords: Community; Mangrove ecosystem; Modelling; Small islands; Sustainable management

Nexus of Political Connections with Green Finance and Financial Performance

Rabia Najaf, Khakan Najaf

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Abstract: One of the most crucial aspects of the business environment is interaction with the government. Government entities have more chances to gain their gratifying targets for secular growth, monumental work, and sustainable development. We are trying to determine whether political connections are valuable for green corporate finance and corporate performance. Based on the prior literature, political ties have better sustainable development priorities and financial performance than non-politically connected firms. It is because they have sufficient resources to protect the natural environment, which eventually enhances financial performance. Our findings corroborate with the stewardship theory that states the empowered board is a better decision-maker. Our study has considerable implications for the research as it will enhance the knowledge about political ties.

Keywords: Government entities, Accusations, Gratifying targets

Equilibrium and Kinetics Studies of Hexavalent Chromium Biosorption by *Luffa Cylindrica* using Optimised 1,5-Diphenylcarbazine Method

Imane Nouacer, Mokhtar Benalia, Ghania Henini, Mebrouk Djedid, Ykhlef Laidani, Chifaa Ad

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Abstract: The *Luffa Cylindrica* fibers plant have been used as a new biological adsorbent for removal of hexavalent chromium from artificially contaminated aqueous solutions. The experiments took place in the batch mode. The influence of certain parameters on the adsorption of chromium on the biosorbent, namely the adsorbent-adsorbate contact time, the pH of the solution and adsorbent dose of hexavalent chromium was determined. The kinetic study has shown that the process of adsorption of chromium on *Luffa cylindrica* is a physical process characterized by its reversibility, by the speed of the establishment of equilibrium. The exploitation of adsorption isotherms using different classical models of Langmuir, Freundlich and Temkin has shown that adsorption can be governed by the Langmuir model. The maximum monolayer biosorption capacity of *Luffa cylindrica* was found to be 5.91 mg of chromium /g of LC. The thermodynamic parameters for the adsorption system were determined at 283, 298 and 313°K. The obtained values showed that the chromium adsorption is a spontaneous and exothermic process. Finally, the *Luffa cylindrica* has been evaluated by FTIR, SEM and x-ray diffraction in order to determine if the biosorption process modifies its chemical structure.

Keywords: Chromium; Biosorption; Isotherms; Thermodynamic; *Luffa cylindrica*