Paper No: PU-SOE- Civil - 01

A Survey on Sewage and Bore well Water Quality of Vrishabhavathi River Basin

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Abstract

The present work aims to study the contamination status of the Vrishabhavathi sewage water and also the deterioration of surrounding groundwater quality. An erstwhile freshwater stream, now carrying huge amounts of industrial, agricultural and domestic effluents from the western part of Bangalore metropolis. There are three sewage water and the same number of groundwater samples of three different locations were collected from the Vrishabhavathi basin during post-monsoon season 2018. All the six samples were analysed for around 16 physico- chemical parameters. Both the categories of samples exhibit slightly alkaline pH with high dissolved solids and turbidity. The high level of chloride, phosphate, BOD, COD concentration in sewage water clearly indicating the extensive influx of water pollutants from both point and non-point sources leading to further deterioration of sewage water. The total hardness, total alkalinity, turbidity and phosphate concentration of borewell samples were exceeding the standard limits of BIS, revealing that the leaching of sewage into groundwater aquifers is at an alarming rate in Vrishabhavathi basin. The dissolved solids concentration and alkaline state of the borewell water may become unfit for irrigation in Vrishabhavathi river stretch, since it may lead agricultural soil to be saline and toxic over a period of time.

Keywords:
Physico-chemical, Vrishabhavathi, Sewage, Borewell, Concentration

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Indian. J Environmental Protection	40 (7)	July, 2020	769-774	Kalpana Corporation	Q4

Paper No: PU-SOE- Civil - 02

Environmental Impact Assessment of Anthropogenic Activities and Conceptual Restoration Strategy for Kham River in Aurangabad, India

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Abstract

In present study, the environmental impact assessment of the anthropogenic activities on the Kham River is carried out. 8Km stretch of the Kham River from downstream of Harsul Lake to the upstream of Chavani Bridge in the Aurangabad city has been selected as the study area for the assessment with regards to water quality, flooding risk, ecological and aesthetical aspects using Battelle environmental evaluation system. For the water quality monitoring eight sampling stations along the length of the river were selected and samples were taken in each season for laboratory analysis of Dissolved oxygen, Biochemical oxygen demand, pH, Total dissolved solids and total suspended solids. The results of the water quality analysis shows that the water quality in the upstream stretch of 3kms upto Himayat Baug is considerably good in comparison to the remaining 5kms stretch from Himayat Baug to Chavani Bridge. The cross sectional survey of the river basin is carried out to measure the extent of the enchorachment along the basin. The results of the cross sectional survey shows that the river basin has mean width of 36.16 meters. The ecological assessment was carried out along the vicinity of the river basin and the species of flora, birds and fishes were listed. The result of the ecological survey shows that the river has variety of species of flora and birds and fishes are found in the upstream reach of the river. The survey of recreational and historically important monuments along the basin was carried out and those places were listed for study of aesthetical aspects. The results of aesthetical survey shows that there are many places of that importance along the vicinity of the basin namely Harsul Lake, Himayat Baug, Bibi-ka-Maqbara, Panchakki, Makai Gate, Barapulla Gate, Mehmood Gate and Siddarth garden. The Battelle environmental evaluation system result shows a negative impact of –375 units and the conceptual strategies for the restoration of Kham River are also recommended.

Keywords:

Aesthetics; Ecology; Environmental Impact Assessment; Flooding; India; Kham River; Pollution; Urban River Restoration; Water Quality

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
An International Research Journal of Environmental Science (Current World Environment)	15 (3)	Nov, 2020	663-682	Enviro Research Publishers	Q2

Paper No: PU-SOE- Civil - 03

Assessment of Groundwater Potential Zones Using GIS Based AHP in Bangalore Region, India

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Abstract

Groundwater resources can be expected to be increasingly relied upon shortly due to rapidly growing population and global environmental and climatic changes. Groundwater is a vital resource contributing significantly in the annual supply of water for domestic, industrial, and irrigation sectors. This paper aims to groundwater prospect zones and their spatial distribution and couples this information with pollution parameters for groundwater prioritization. The study is carried out in the Bangalore region of Karnataka state, which is geographically located between 12.40° N to 13.20° N latitudes and 77.30° E to 78.00° E longitudes and covers an area of 1617.12 sq. km. Groundwater prioritization is one of the most important aspects of watershed management. Groundwater potential zones are optimized in the study by using the GIS based Analytical Hierarchy Process (AHP). Five groundwater prospect zones have been identified in the present study, ranging from a very good prospect zone to a very low prospect zone. The study area has only 7% of very good zones, about 19% of good prospect zones, and 36% moderate zones. This cautions the decision - makers and concerned departments to promote the scientific and sustainable use of groundwater for future needs and initiate the appropriate measures to develop groundwater resources

Keywords:
Remote Sensing, GIS, Groundwater Potential Zone, Analytical hierarchical process.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Modern Agriculture	10 (2)	2021	3476-3487	Institute of Agricultural Management	Q3

Paper No: PU-SOE- Civil - 04

Assessment of groundwater vulnerability to pollution in the urbanized environment in Hoskote Taluk of Bengaluru district.

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2. BMS College of Engineering, Department of Civil Engineering, Bengaluru - 560 019, Karnataka, India

Abstract

The main objective of this study was to assess aquifer vulnerability usinga modified DRASTIC model (DRASTICA) to develop vulnerability mapping in Hoskote taluk, Bengaluru. Here, ERDAS IMAGINE software and ArcGIS software are used. The DRASTIC parameters, such as depth of water level (D), recharge (R), aquifer media (A), soil media (S), topography (T), impact of vadose zone (I), hydraulic conductivity (C) were all referred. In 'DRASTICA' 'A' refers to a new parameter called impact of anthropogenic activities (A) to access the human impact on the groundwater resources in the study area. Step by step basic data was collected, that is satellite data, population density, water level, recharge, borehole data, soil data and digital elevation model (DEM). The original 'DRASTIC' model was altered by including anthropogenic impact (A) using analytical hierarchy process (AHP) which is used for determining the ratings of each parameter in the modified-DRASTIC method and was processed in GIS to generate groundwater vulnerable zones. As GIS enables the visual interpretation of data, this has given specific maps for specific analysis and as a result, 80% of the study lies under very high vulnerable zone while in other areas, the potential for pollution is comparatively less. Spatial analysis indicated that anthropogenic impact influenced pollution, thereby human activities has to be addressed. It was observed that the modified 'DRASTICA' model is more suitable and precise for the present study.

Keywords:
Groundwater vulnerability, DRASTICA model, ARC GIS, Hoskote taluk

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Indian Journal of Environmental Protection	41 (5)	May, 2021	575-583	Kalpana Corporation	Q4

Paper No: PU-SOE- Civil - 05

Evaluation of Nagavara lake water quality

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Abstract

Ever increasing population, urbanization and modernization are posing problems of sewage disposal and contamination of surface waters like lakes. Natural water gets contaminated due to weathering of rocks, leaching of soils and mining processing, etc. Various types of problems in lake which cause nutrient enrichment in lake have been reviewed. Land use change and longer growing seasons could increase the use of fertilizers with subsequent leaching to watercourses, rivers and lakes, increasing the risk of eutrophication and loss of biodiversity. Water quality can be assessed by various parameters such as BOD, Electrical Conductivity, Nitrate, Phosphate, Potassium, Dissolved Oxygen, etc. Heavy metals such as Nickel, Lead, chromium are of special concern because they produce water or chronic poisoning in aquatic animals. Harmful algal blooms are becoming increasingly common in freshwater ecosystems globally. Pollution by plastic debris is an increasing environmental concern in water bodies, where it affects open-water and benthic environments. Surface water densities of plastics are as high as those reported for areas of litter accumulated. It is recommended that pollution prevention and water re-use should be adopted in combination with the recycling of nutrients in controlled urban agriculture.

Keywords:
Contaminated, eutrophication, debris

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Economic Growth and Environmental Issues	9	June, 2021	NA	EPRA Trust Publishing	NA

Paper No: PU-SOE- Civil - 06

Evaluation of Sankey tank lake water quality

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Abstract

Lake are water bodies with a minimum depth of 3 m which spread over more than 10 hectares having very little or no aquatic vegetation. The quality of water is described depending on the physical, chemical and biological characteristics of water. This work was done to study the physiochemical parameters on the lake water. Sankey Tank Lake is situated in Bangalore in the state of Karnataka. To find out the water quality, a total of 19 parameters have been considered to be tested: pH value, Color, Electrical Conductivity, Total Hardness, Total Dissolved Solids, Total Alkalinity, Magnesium, Chloride, Nitrate, Phosphate, Sodium, Potassium, Turbidity, Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Dissolved Oxygen (DO), Nickel, Lead and Chromium. The analysis revealed that some of the parameters such as Electrical Conductivity, Turbidity, Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) exceed the limits in Sankey Tank Lake. Therefore it is required that this lake is treated before drinking.

Keywords:
Physiochemical, Biological, Chemical.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International journal of Modernization in Engineering Technology and Science	9	June, 2021	NA	IRJMETS	NA

Paper No: PU-SOE- Civil - 07

Evaluation of Ulsoor tank lake water quality

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Abstract

Ever increasing population, urbanization and modernization are posing problems of sewage disposal and contamination of surface waters like lakes. Natural water gets contaminated due to weathering of rocks, leaching of soils and mining processing, etc. Various types of problems in lake which cause nutrient enrichment in lake have been reviewed. Land use change and longer growing seasons could increase the use of fertilizers with subsequent leaching to watercourses, rivers and lakes, increasing the risk of eutrophication and loss of biodiversity. Water quality can be assessed by various parameters such as BOD, Electrical Conductivity, Nitrate, Phosphate, Potassium, Dissolved Oxygen, etc. Heavy metals such as Nickel, Lead, chromium are of special concern because they produce water or chronic poisoning in aquatic animals. Harmful algal blooms are becoming increasingly common in freshwater ecosystems globally. Pollution by plastic debris is an increasing environmental concern in water bodies, where it affects openwater and benthic environments. Surface water densities of plastics are as high as those reported for areas of litter accumulated. Different methods have been used to analyse the water quality of lake such as Hyperion, water quality index and hazard quotient. It is recommended that pollution prevention and water re-use should be adopted in combination with the recycling of nutrients in controlled urban agriculture.

Keywords:
Contaminated, eutrophication, debris

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal for Scientific Reasearch and Development	9	Apr, 2021	NA	IJSRD, India	NA

Paper No: PU-SOE- Civil - 08

A Literature Review on Flexural and Shear Behavior of Geopolymer concrete Beam with Carbon Fiber

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Abstract

In 1979 Davidovits introduced the Geopolymer concrete to reduce the use of ordinary Portland cement. The depletion of the ozone layer and global warming issue has increased more awareness of the construction industries to use eco-friendlier materials. The use of Geopolymer technology could reduce the CO2 emission in to the atmosphere, caused by cement industries by about 80%. The use of Geopolymer concrete has started to gain attention in the field of research and construction practices, due to its numerous advantages in using the by-product waste to replace cement and also to reduce the greenhouse gas emission at the time of its production. Fly ash and GGBS which is one of the source materials for Geopolymer binders and also available abundantly in India, but the utilization till date is limited. The recent research about Geopolymer concrete states, that it has the potential to replace the conventional cement based concrete by locally available resources. This paper focuses on presenting a brief historyand also a review of Geopolymer Concrete technology with the aim of introducing the technology and the vast categories of materials that may besynthesizedby alkali activation of alumino silicates.

Keywords:
FlyAsh, GGBS, Carbondioxide, Fibres in concrete, Geopolymer Concrete, NaoH, Strength, Durability and Applications.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Internation Journal for Research in Applied Science & Engineering Technology	9 (6)	June, 2021	1813-1815	NA	NA

Paper No: PU-SOE- CSE - 01

A Novel SIFT-SVM Approach for Prostate Cancer Detection

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Abstract

Prostate cancer is a major cause of concern in male population as it is said to affect 1 in every 7 men in their lifetime. The number of cases being registered for prostate cancer and its mortality rates are increasing yearly at an alarming rate. Due to the high resolution and multi-dimensionality of the Magnetic Resonance Imaging (MRI) images, proper diagnostic system and tools are required. In this study, multiclass Support Vector Machines (SVM) classifier has been used, which is a well-known machine learning technique to classify the prostate images into 3 categories namely normal, benign and malign. This study has also made use of the Scale Invariant Feature Transform (SIFT) feature extraction method which is well known for its high rotation invariant nature. A SIFT-SVM approach has been introduced for the first time in prostate cancer detection. The performance of the system is computed in terms of sensitivity, specificity and accuracy. Our approach achieved high performance with an accuracy rate of about 99.95% when 40% of the training data was considered for obtaining our result.

Keywords:

Prostate, Magnetic Resonance Imaging, Support Vector Machines, Scale Invariant Feature Transform

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Computer Science	16 (12)	Dec, 2020	1742-1752	Science Publications	Q4

Paper No: PU-SOE- CSE - 02

Integration of Data Mining as a Service on Cloud API via Cloud mining Algorithm

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Abstract

Currently, information technology (IT) emerged to satisfy needs of end users with high-end applications. Due to increase in IT applications, tons of data's are produced every day. The invention of cloud computing ease the job of IT field users to handle their business without even building an IT environment. But also, management of tons of data became a tough to IT field users. Therefore, integration of Data mining as cloud API will provide solution by dynamic information splitting and allocating properly, so that it can provide data efficiently whenever user needs [1]. This paper introduces a cloud mining lifecycle, which can be solution to store and handle data effectively on cloud computing. The proposed lifecycle focuses on privacy and security issues on cloud computing infrastructure as an added advantage. The implementation of the lifecycle in contradicting cloud mining field will satisfy both service providers as well as end users.

Keywords:

Cloud API, Data Mining, Cloud Mining, Data Science, Machine Learning.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xidian University	14(12)	Dec, 2020	439-442	Science Press	Q3

Paper No: PU-SOE- CSE - 03

A Hybrid Deep Learning Model for Long Term Sentiment Analysis

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Abstract

With the omnipresence of user feedbacks in social media, mining of relevant opinion and extracting the underlying sentiment to analyze synthetic emotion towards a specific product, person, topic or event has become a vast domain of research in recent times. A thorough survey of the early unimodal and multimodal sentiment classification approaches reveals that researchers mostly relied on either corpus based techniques or those based on machine learning algorithms. Lately, Deep learning models progressed profoundly in the area of image processing. This success has been efficiently directed towards enhancements in sentiment categorization. A hybrid deep learning model consisting of Convolutional Neural Network (CNN) and stacked bidirectional Long Short Term Memory (BiLSTM) over pre-trained word vectors is proposed in this paper to achieve long-term sentiment analysis. This work experiments with various hyperparameters and optimization techniques to make the model get rid of overfitting and to achieve optimal performance. It has been validated on two standard sentiment datasets, Stanford Large Movie Review (IMDB) and Stanford Sentiment Treebank2 Dataset (SST2). It achieves a competitive advantage over other models like CNN, LSTM and ensemble of CNN-LSTM by attaining better accuracy and also produces high F measure.

Keywords:

Sentiment Analysis, Deep Learning, Word2vec, CNN, BiLSTM, IMDB, SST2.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Webology	17 (2)	Dec, 2020	663-676	University of Tehran	Q3

Paper No: PU-SOE- CSE - 04

A Reinforcement Learning Integrated in Heuristic search method for self-driving vehicle using blockchain in supply chain management

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Abstract

Blockchain is a distributed open (Public) ledger that is used to record the transaction across many computers. Blockchain technology can be applied in any domain such as banking, healthcare, real estate, travel, food, and supply chain. In supply chain management to train the self-driving vehicle in blockchain technology also integrate the Artificial Intelligence (AI) and Machine Learning (ML) Algorithms. In this paper we have proposed Reinforcement learning integrated heuristic search method (RLIH) for self-driving vehicle using blockchain in supply chain management by combining the advantage of reinforcement learning and heuristic search method. RLIH is developed using Decentralized app and result shows that proposed method outperform the existing heuristic search method in term of service time and data traffic.

Keywords:

Blockchain, Artificial intelligence, Machine learning. Reinforcement learning, Public ledger, Self-driving

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Intelligent Networks	1	Sept, 2020	92-101	Elsevier	Q2

Paper No: PU-SOE- CSE - 05

An approach for securing organizational data using blockchain and cryptography

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Abstract

Confidential data protection and trust management both work hand in hand, the organization who is managing the data must make sure they take all the required steps to maintain the integrity of the data and to gain trust from their end-users. The major sector where the organization has to take care is to give the right access control, any wrong doing from the employee will directly impact the organization. The paper proposes 2 level security frame work which will keep the data handling within the organization crystal clear. The paper proposes a system in which super-party (the person who runs the organization), grants permission to its sup-parties (employees) to add, update the data and restrict from deleting the data. The sub-party should also add the crypto hash on the Ethereum Blockchain to finish the add / update of the data. Every sub-party will have its own account which will be the signature. The data in its whole will be stored on the cloud and its crypto hash will be generated and this crypto hash along with the signature will be stored on the root tier of the EthereumBlockchain. The signature along with the data hash stored on the blocks will help the organization track the person responsible for any tampering or mishandling the confidential data.

Keywords:

Blockchain data security, Cryptography, Smart contracts, Cryptocurrency, Privacy Database

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Solid State Technology	63 (2)	Oct, 2020	NA	Pennwell Corporation	Q4

Paper No: PU-SOE- CSE - 06

A real and accurate energy efficienct localization model in WSN using machine learning technique

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[2.] Associate Professor, Department of C.S.E, Raghu Engineering College, Dakamarri, Bheemunipatnam Mandal, Visakhapatnam, India.
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Abstract

The wireless sensor network is the key deciding element in communication, the 4G and 5G LTE communication models are offering many applications such as data accessing, and data rate controlling, multimedia and live streaming applications. Therefore, an advanced wireless sensor network designing and its development is compulsory to provide the above applications. The wireless sensor networks are dynamic in nature, so that they can change their behavior with little time. Due to time-variant action, internal and external factors cannot be predictable. WSN facing power constrains issue, node failure, and homogeneity node accessing and node scalability problems. Moreover WSN network challenging following key parameters such as the high bandwidth, high energy consumption, QOS, cross layer communication and physical channel. The lifespan of the sensor network, Maximum usage of resources and system are the main limitations of the earlier method. The existed architecture and optimization models cannot solve the above limitations and significant problems. In this research work addressing the machine learning-based WSN node localization technique, the node localization is a complex problem due to more number of elements to be estimated between sensor nodes. In this paper, node localization, objective function, mean-average error in localization, anchor node density and estimated position parameters are analyzed with various methodologies. At final proposed an advanced localization technique with machine learning model for future generations.

Keywords:

WSN, node localization, sensor nodes, machine learning.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Green Engineering	10 (12)	Dec, 2020	13195–13209	Alpha Publishers	Q3

Paper No: PU-SOE- CSE - 07

A Survey on Energy Efficiency in Mobility Management For 5G Heterogeneous cloud Radio Access Network

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2. Associate Professor, Department of CSE, Presidency University, Bangalore, India.

Abstract

Traditional architectures of cellular networks are facing tremendous challenges due to increase in high power consumption, mobile data traffic and limited spectrum availability. In light of this, industries as well as research communities are in constant search for fundamental achievements in developing novel network architectures for supporting the user demand, while reducing capital and operational expenditures for network operators. Cloud radio access network (C-RAN) architecture is such a paradigm shifting concept for cellular networks, which is also being actively considered as a major candidate for future 5G cellular systems. This proposal presents a comprehensive survey on the most recent advances in C-RAN research focusing on the analysis and enhancement of its various major aspects. In particular, after reviewing the works on C-RAN architectures, then focus on the papers published specifically on the energy efficiency of C-RAN based cellular networks

Keywords:

C-RAN, Energy efficiency, 5G cellular networks

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Kala Sarovar	23 (3)	Dec, 2020	102-108	Kala Evam Dharma Shodha Sansthan	UGC Care

Paper No: PU-SOE- CSE - 08

A Comprehensive survey on the importance and benefits of Artificial Intelligence on Ayurveda

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2. Associate Professor, Department of Computer Science and Engineering, Presidency University, Bangalore

Abstract

In the modern world, modern medicine and complementary systems dominate the healthcare worldwide. Many developing countries which suffer with resources can improvise the healthcare at their retention by leveraging the extent of traditional medicine. A traditional Indian Atharva Veda implemented system of medicine called the Ayurveda, has gigantic benefits to human kind. This way of medicine deals majorly with naturally available herbs and methodologies to treat human health and promotes healthy practices for a better lifestyle. Ayurveda works on the idea of balancing biological systems. Ayurveda is primarily accomplished in India and being recognized internationally due to the effectiveness and use of naturally available herbs and associated methodologies to cure the diseases. Ayurveda as a system is successful, yet not widely practiced, there are range of reasons that has limited Ayurveda to reach its potential, such as less importance is given to Ayurvedic education and its practices, very few or no advancement is seen, resources limitations due to funds, limited technical support, and unstructured database. Therefore, there is a constant need of improvising the field with technology and effectively creating knowledge-based systems to improvise the practice of Ayurveda and to optimize its benefits. In this paper, a survey on the benefits of Ayurveda for women hormonal imbalance, Ayurveda for Skin and Hair health is done along with the Artificial intelligence technology advancements in the field of Ayurveda. The intend of the paper is to layout the benefits this 5000 years old approach towards medicine has to offer and the use of Artificial Intelligence to promote and influence its growth.

Keywords:

Medicine; Ayurveda; Traditional Approaches; Knowledge Based System; Artificial Intelligence

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Huazhong University of Science and Technology	50 (4)	April, 2021	1-8	Huazhong University of Science and Technology	Q4

Paper No: PU-SOE- CSE - 09

Predicting the Stages of Chronic Kidney Disease Using Machine Learning Approach

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Abstract

A condition due to which the kidneys cannot perform its regular function of filtering blood refer to Chronic kidney disease; nowadays people belongingto different ages are suffering and coherently increasedthe deathrate of related patients,premature of diagnosis. Kidney Diseasehas become a majorproblemin the general publicall over the world, as it damages the kidney. Kidney failureis measured by GFR (Glomerular Filtration Rate). In this research work, various supervised machine learningalgorithms are used to predict and classify Chronic Kidney Diseaseand non-Chronic Kidney Disease. The dataused forthis work has been collected fromthe machine learningrepositoryand on these datasetSVM, Navie Bayes, Decision Trees and K-NN models hasbeen applied. The system has shown better resultsin classifying Chronic Kidney Diseaseand non-Chronic Kidney Disease.The results of classifiersare compared. The study concludes that among all the classifiers, the SVM and Decision Tree have performed better thanother classifiers. Stage detectionis also done by using different attributes of the dataset and proposeda system to detectand identify the different gradesof chronickidney Disease.

Keywords:
Chronic Kidney Disease, Classification, Machine Learning, SVM, Decision Tree, and Prediction

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Advanced Science and Technology	29 (4)	2020	7237-7245	SERSC	Q4

Paper No: PU-SOE- CSE - 10

Deep convolutional neural network for chronic kidney disease prediction using ultrasound imaging

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Abstract

Objectives: Chronic kidney disease (CKD) is a commondisease and it is related to a higher risk of cardiovasculardisease and end-stage renal disease that can be pre-vented by the earlier recognition and diagnosis of in-dividuals at risk. Even though risk factors for CKD havebeen recognized, the effectiveness of CKD risk classifi-cation via prediction models remains uncertain. Thispaper intends to introduce a new predictive model forCKD using US image.

Methods: The proposed model includes three main pha-ses"(1) preprocessing, (2) feature extraction, (3) and clas-sification."In the first phase, the input image is subjectedto preprocessing, which deploys image inpainting andmedian filtering processes. After preprocessing, featureextraction takes place under four cases; (a) texture analysisto detect the characteristics of texture, (b) proposed high-level feature enabled local binary pattern (LBP) extraction,(c) area based feature extraction, and (d) mean intensitybased feature extraction. These extracted features are thensubjected for classification, where"optimized deep con-volutional neural network (DCNN)"is used. In order tomake the prediction more accurate, the weight and theactivation function of DCNN are optimally chosen by a newhybrid model termed as diversity maintained hybrid whalemoth flame optimization (DM-HWM) model.

Results: The accuracy of adopted model at 40th trainingpercentagewas44.72,11.02,5.59,3.92,3.92,3.57,2.59,1.71,1.68, and 0.42% superior to traditional artificial neural net-works (ANN), support vector machine (SVM), NB, J48, NB-tree, LR, composite hypercube on iterated random projection CHIRP), CNN, moth flame optimization (MFO), and whaleoptimization algorithm (WOA) models.

Conclusions: Finally, the superiority of the adopted schemeis validated over other conventional models in terms ofvarious measures.

Keywords:

Chronic kidney disease; DCNN; DM-HWMalgorithm; LBP features; Moth flame optimization.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Bio-Algorithms and Med-Systems	17 (2)	April, 2021	137-164	Huazhong University of Science and Technology	Q4

Paper No: PU-SOE- CSE – 11

Security and channel noise management in cognitive radio networks

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Abstract

The Spectrum Channel Noise is a pseudorandom or random computational process in a manner that allows the security competence of the available spectrum management frameworks for cognitive radio networks. To mitigate the cognitive spectrum and its security issues, we recommend a central primary spectrum organization structure that is dynamically balanced, and that applies the Primary Key Cryptosystem (PKC). The node identity applicable in this PKC is utilized as the framework to produce the primary user identification structure. In that case, the authentication is rooted in the secondary user for necessary verification. The dynamic, secure key is provided based on the security aspect of the initial framework. Apart from that, the PKC-based McEliece secondary key provides an error correction capacity, which can remove the noise during secondary user allocation and enhance the effectiveness of the spectrum management, which collaborate effectively over the noise channel management.

Keywords:
Spectrum channel noise, Dynamic key management, secure group key, primary cryptosystem, pseudorandom noise, Spectrum management, Cognitive radio networks

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Computer and Electrical Engineering	87	Oct , 2020	106784	Elseevier	Q1

Paper No: PU-SOE- CSE– 12

An Optimal Approach to Enhance Context Aware Description Administration Service for Cloud Robots in a Deep Learning Environment

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Abstract

As the advancements in the field of artificial intelligence technologies continue to grow, robots are being built by the researchers as an attempt to render services to the people. In this regard, the robots can communicate effectively with the people and be able to complete all the tasks adequately given to them. These service robots while being developed requires the dialogue services to be developed to interact effectively with human beings providing far better user experience. Thus, the robot been built can provide domain-specific knowledge as well as able to provide consultations in various domains. We in this paper adopted a service-oriented approach for developing context-aware communication services for the cloud robot. The proposed work aims at training the context-aware model developed. The context-aware model is responsible for answering the questions put forward by the users and possess the ability to exploit the answers corresponding to the questions presented. An integrated framework is used to combine the contextual information and communication services. The performance of the proposed model can be evaluated based on Inverse Rank Mean (IRM). Evolutionary testing methods are used for testing the data in the proposed model. The results thus obtained shows the effectiveness of the proposed approach.

Keywords:
Air pollution · Big data · Canonical correlation analysis · Gaussian activation function · Hyper basis feedforward neural network · Pollutants features · Urban sustainability.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Wireless Personal Communications	117	Feb, 2021	NA	Spinger	Q3

Paper No: PU-SOE- CSE– 13

Exploring Big data Analytics in Healthcare

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Abstract

Health care Industries are facing lot of challenges in maintaining patient information across various databases due to storage issues. In order to extract patient information, preprocessing techniques can be applied in the process of data mining across databases. But as the data is growing enormously with rapid speed, data mining techniques are becoming obsolete due to issues such as Storage, Speed. So, cost optimization has become one of the major requirements in health industry as there is huge burden in maintaining large volumes of patient's information using traditional databases. Here Big Data plays a vital role in storing huge volumes of patient information using storage mechanisms such as HDFS, HBase. Many issues in health care are discussed in this paper such as prediction of diseases, getting patients information across databases as a single view.

Keywords:
Data mining, Cost optimization, Big data, Patient management, Knowledge management

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Intelligent Networks (IJIN)	1	Nov, 2020	135-140	Elsevier	NA

Paper No: PU-SOE- CSE– 14

Proposed Noval Blockchain modal for Cheque Clearance in banking system, Solid state Technology, Solid State Technology

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Abstract

The main idea of this research is to apply Blockchain technology for cheque Processing system to reduce time for clearance of cheque and settlement. The model is developed after analyzing existing system such as traditional cheque processing system and also various existing models for cheque processing using blockchain. We aim to propose new method for cheque processing with proper flow and saves memory in blockchain Network.The proposed model involves encoding and decoding techniques for distribution of cheque. The Cheque details are created using cryptography algorithms and stored in the form of transaction for further processing in a block of a Blockchain Network.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Solid State Technology	Vol. 63 No. 2s	(2020)	NA	NA	Scopus

Paper No: PU-SOE- CSE– 15

A comprehensive study on classification algorithms for remote sensing data

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Abstract

Remote sensing images are widely applied in data analytics field today, especially for classification and finding change detection in the geospatial data. With the labeled geographic information such as classification of water bodies, forest area, vegetation area, fauna, flora, built-up, etc., it is possible to solve societal based problems such as urban planning, water conservation management, crop rotation, forest monitory etc. But, Remote Sensing (RS) images are so complex and invariant to handle. Advancements in the domain of an Artificial Intelligence, these complex imagery data are handled in an easier manner and remote sensing data analysis can be done efficiently [3]. This paper mainly focuses on various Machine Learning (ML) and Deep Learning (DL) classification techniques for RS images. Before this, brief introduction to remote sensing images and its sources are explained here. Finally, we conclude our study with identifying most suitable techniques for remote sensing image classification.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Advance Science and Technology	29, No.10 S	2020	7033-7039	SERSC, Australia	Scopus

Paper No: PU-SOE- CSE– 16

A Comparative Study of Statistical Analysis on Big Mart using Data Mining Techniques

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2 Professor, Annamalai University, Tamil Nadu, India.

Abstract

In order to estimate sales revenue that is tangible and achievable, businesses involved in wholesales, manufacturing activities, marketing activities, retailing, logistics and supply chain activities need to use historical transaction data to forecast sales. In order to do this, there are several traditional data mining and statistical techniques that are used to identify trends, make predictive as well as descriptive analysis. The knowledge gained from such analysis is used in making business decisions. The data set in this study has been collected in the year 2013, and has 1559 products across 10 stores in different cities. First we conduct Exploratory Data Analysis to understand the nature of thAfter this, several traditional and novel data mining techniques have been applied on this data set, namely, linear regression, ridge regression, random forest regressor, decision tree regressor, XG Boost regressor and ARIMA. The cross-validation scores of all models are compared and inference as to which attributes and feature are given most weight during prediction of Item Outlet Sales attribute (target attribute) in the data set. Towards the end of the paper, the inferences and results are noted and discussed, hence completing the entire data analysis cycle.

Keywords:
Data Mining, Machine Learning, Gradient Descent, Gradient Boosting, Auto-regressive integrated moving average, Time-series data, Sales Prediction

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Advanced Trends in Computer Science and Engineering	**9**	Feb, 2021	NA	The World Academy of Research in Science and Engineering	Scopus

Paper No: PU-SOE- CSE– 17

Canonical Correlation Analysis Based Hyper Basis Feedforward Neural Network Classification for Urban Sustainability

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Abstract

People give more importance concerning the overall quality of the modernized ecosystem. The pollution of air is one of the significant problems to be resolved as it restricted the ecological transformation of the modernized ecosystem. Therefore, it is fundamental to evaluate the implication of these ecological issues to enhance the urban ecosystem. This vital purpose of this research is to propose a canonical correlation analysis based hyper basis feedforward neural network classification (CCA-HBFNNC) model for evaluating sustainable urban environmental quality. The CCA-HBFNNC model initially acquires a large size of U.S. air pollution dataset as input. Then, a canonical correlative analysis based feature selection algorithm is applied in the CCA-HBFNNC model to select the key pollutant features, which bear fundamental implications to the modernize air pollution to maintain the level of urban sustainability. After the feature selection process, the CCA-HBFNNC model applies the HYPER BASIS FEEDFORWARD NEURAL NETWORK CLASSIFICATION (HBFNNC) algorithm in order to classify input air data based on chosen pollutants features. During the classification process, the HBFNNC algorithm used three critical layers namely hidden, output and input layers for efficiently categorizing each input data as higher or lower pollution level with higher accuracy. If the level of air pollution on the urban environment is higher, finally CCA-HBFNNC model significantly reduces the pollution level. In this way, the CCA-HBFNNC model attains improved urban sustainability levels when compared to sophisticated operation. An experimental evaluation of the CCA-HBFNNC model is determined in terms of CCA-HBFNNC model, time complexity and false-positive rate in consideration of the diversified number of air data retrieved from the big data sets. An investigational result shows that the proposed CCA-HBFNNC model can increases the sustainability level and minimizes the time complexity of urban development when contrasted with contemporary works.

Keywords:
Air pollution, Big data, Canonical correlation analysis, Gaussian activation function, Urban sustainability

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Neural Processing Letters (Open access journal)	53	Aug, 2020	NA	Springer	Q2

Paper No: PU-SOE- CSE– 18

Novel holistic architecture for analytical operation on sensory data relayed as cloud services

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Abstract

With increasing adoption of the sensor-based application, there is an exponential rise of the sensory data that eventually take the shape of the big data. However, the practicality of executing high end analytical operation over the resource-constrained big data has never being studied closely. After reviewing existing approaches, it is explored that there is no cost-effective schemes of big data analytics over large scale sensory data processiing that can be directly used as a service. Therefore, the propsoed system introduces a holistic architecture where streamed data after performing extraction of knowedge can be offered in the form of services. Implemented in MATLAB, the proposed study uses a very simplistic approach considering energy constrained of the sensor nodes to find that proposed system offers better accuracy, reduced mining duration (i.e. faster response time), and reduced memory dependencies to prove that it offers cost effective analytical solution in contrast to existing system.

Keywords: Analytics, Big data, Energy, Resources, Sensors

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
IJECE	10, No.4	Aug, 2020	4322-4330	IAESc	Q2

Paper No: PU-SOE- CSE–19

FPGA Based Hardware Accelerator for Data Analytics: An Overview

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Abstract

The computation capability of the memory related operations which are used in database related procedure seems to be increasingly bound in the recent years. The memory related operations starting from hard disk drive based system to higher bandwidth memory technologies such as in-memory, non-volatile memory etc face consequences. The transition of such with higher bandwidth especially in memory is crucial. One of the solutions for such evolution is hardware acceleration. In general, many types of virtual hardware accelerator are accessible, one such trend is Field Programmable Gate Array (FPGA). FPGA is selected among other accelerator ranging from embedded device to cloud computing because of its higher performance, energy efficiency and adaptability. Hardware acceleration is found least nominal because of communication overhead. But the momentous opening on FPGA design chain connected with memory technology still provides attractive gain in the database field. Some of the areas of FPGA which are still left void in the scale of full deployment of FPGA virtualization are resource management, scalability, and development. To address the acceleration flexibility of FPGA, many of the FPGA virtualization techniques and hardware infrastructures have been proposed on academic as well as industrial side in the recent years. In this research work, an attempt is made to identify and classify the various FPGA database acceleration techniques and approaches. The current trends and developments of the existing literature are highlighted with the future directions to be addressed based on the data movement in database which improve the speed of the memory

Keywords:
FPGA, Hardware Acceleration, Database, In-Memory, Bandwidth

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Institutes of Scholars		Sept, 2020	1066-1073	SSRN eLibrary	NA

Paper No: PU-SOE- CSE– 20

Mathematical Approach of Q-Learning with Temporal Difference Method In Sensor Data Communication In Cloud Environment

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Dept.of Computer Science and Engineering, Presidency University, Bangalore, India

Abstract

The computation capability of the memory related operations which are used in database related procedure seems to be increasingly bound in the recent years. The memory related operations starting from hard disk drive based system to higher bandwidth memory technologies such as in-memory, non-volatile memory etc face consequences. The transition of such with higher bandwidth especially in memory is crucial. One of the solutions for such evolution is hardware acceleration. In general, many types of virtual hardware accelerator are accessible, one such trend is Field Programmable Gate Array (FPGA). FPGA is selected among other accelerator ranging from embedded device to cloud computing because of its higher performance, energy efficiency and adaptability. Hardware acceleration is found least nominal because of communication overhead. But the momentous opening on FPGA design chain connected with memory technology still provides attractive gain in the database field. Some of the areas of FPGA which are still left void in the scale of full deployment of FPGA virtualization are resource management, scalability, and development. To address the acceleration flexibility of FPGA, many of the FPGA virtualization techniques and hardware infrastructures have been proposed on academic as well as industrial side in the recent years. In this research work, an attempt is made to identify and classify the various FPGA database acceleration techniques and approaches. The current trends and developments of the existing literature are highlighted with the future directions to be addressed based on the data movement in database which improve the speed of the memory

Keywords:
FPGA, Hardware Acceleration, Database, In-Memory, Bandwidth

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Turkish Journal of Computer and Mathematics Education	12(9)	April, 2021	2398-2944	Karadeniz Technical University	Q3

Paper No: PU-SOE- ECE - 01

Review on power converters for Electric Vehicles

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2. Associate Professor, IEEE Member Centre for Research in Power Electronics Presidency University, Bengaluru, Karnataka, India

Abstract

The utmost protuberant concern in the Electric Vehicles (EVs) primarily is the process by which the charging of the batteries should be done and secondly the growing appeal of power required due to the quick demand of electric power necessitated by EVs, Hybrid Electric Vehicles (HEVs) and Plug-in Hybrid Electric Vehicles (PHEVs). There has been a detailed, critical evaluation of converters that are being used for the charging modules of electric vehicles. This paper has enlisted seventeen power converters that are being used within the charging modules of electric vehicles in terms of their features, performance parameters, advantages, disadvantages, circuit complexities and cost. Further it has been illustrated that owing to the simplicity of structure and operational mode, electric vehicles are much more efficient than HEV and PEV. Amongst these seventeen converters, the use of four converters namely Half Bridge LLC (HBLLC), Full Bridge LLC resonant converter (FBLLC), EF2 converter and Full Bridge (FB) converters are gaining popularity. This is due to the fact that these converters have an increased factor of efficiency and improved performance. Therefore a fair conclusion states that the use of FB LLC resonant converter best suited for the charging modules of electric vehicle applications.

Keywords:
Electric vehicle, Bridge converter, Bidirectional converter, Resonant Converter

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	12 (9)	Aug, 2020	82-105	Science Press	Q2

Paper No: PU-SOE- ECE - 02

Gesture Controlled Patient Assistance System

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Abstract

The purpose of the Scheme is to have an economical, dependable scheme to provide effective communication for paralytic patients and nurses. A motion detector, generally an accelerometer will be attached to any movable part of the body of the patient. A patient can direct information effectively to the medical attendant by changing the direction of the movement sensor. The tilt angle will be directed to the controller to which the sensor is being connected. Based on different tilt angles it will send different information through a wireless channel from a patient (transmitter) to a nurse (receiver). Each individual will have such devices mounted on their body and all the devices will be connected to the common point of the receiver at the nurse side. Alongside this there will be an RTC module connected with the system at the nurse side as a treatment notice and a beeper will simplify the work. The venture gives a helpful, dependable, and huge answer for elementary issues viewed by medical attendants while offering help to handicapped patients.

Keywords:
Accelerometer; arduino; gesture controlled; patient assisatant;RF module;wireless;cost effective.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	12 (12)	Dec, 2020	426-433	Science Press	Q2

Paper No: PU-SOE- ECE - 03

Contemporary PCA and NBA based Hybrid Cloud Intrusion Detection System

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3. Velalar College of Engineering and Technology, Erode, Tamilnadu.
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Abstract

INTRODUCTION: Cloud computing offers on-demand services, from which consumers can avail networked storage and computer resources. Due to the fact that cloud is accessed through internet, its data are prone to internal and external intrusions. Cloud Intrusion Detection System will now be able to classify each pattern of testing dataset as either normal or intrusive and in case of intrusion, it will identify the type of intrusion. By comparing each of these actual results with the expected results of testing dataset. It is strongly observing the inside-activities of a network. Hence, it is suitable for detecting intrusions in cloud environment. OBJECTIVES: Hybrid Cloud Intrusion Detection System can function well for a very huge dataset and it can also detect unknown attacks. To achieve the better performance in the cloud setting by utilizing this Cloud Intrusion Detection System. METHODS: To overcome performance issues, Principal Component Analysis and Network Behaviour Analysis are proposed. RESULTS: The experimental and performance assessment show that the proposed model is well planned, efficient and effective in finding cloud environment intrusions. An Intrusion Detection System (IDS) monitors all incoming and outgoing network activity to identifies any signs of intrusion in your system that could compromise your systems. CONCLUSION: Experiments are performed using a standard benchmark KDD-cup dataset and the findings are addressed. IDS helps the Network Administrator to track down bad guys on the Internet whose very purpose is to bring your network to a breach point and make it vulnerable to attacks.

Keywords:
Cloud computing, intrusion detection, principal component analysis, network behaviour analysis, genetic algorithm.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
EAI Endorsed Transactions on Energy Web		Feb, 2021		European Alliance for Innovation	Q4

Paper No: PU-SOE- ECE - 04

Solar System: A Historical Perspective and a Deeper Look

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Abstract

Almost every one of us has read the names of Solar System Planets in our school days. But we mostly stop there – we know them just as a series of names. In recent past, many space exploration agencies like the NASA, ESA, ISRO and others have sent numerous probes to study and understand our family of planets, and we are also looking for other galaxies, stars and exoplanets. In this review paper, I will concentrate on the planets in our solar system. We have big and small planets, Terrestrial planets, Ice Giants and Gas giants, the lost planets and the dwarf planets. Pluto, which was recently removed from our list of planets and demoted into being just a dwarf one, is one special case to be referred here. Giant Moons like the Ganymede are large enough to be called dwarf planets too. In this paper, we will try to understand the planets size, their atmosphere, the weather and seasons on various planets and the reason behind such variations, their Moons, and distances in our system. The paper will use images from NASA and other agencies which are in public domain for the sake of better understanding of what we are referring to. It aims at a little closer view into the members of the solar family of heavenly bodies.

Keywords:
The Solar System, The Astronomical Unit, Ice giants, Gas Giants, Failed planet, Failed star, Trojans.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Physical Education	36 (4)	Dec, 2020	1-11	IOP Publishing Ltd.	Q2

Paper No: PU-SOE- ECE - 05

Self-Assessment of Hearing System for Impaired People with Fast Audiometric Method

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Abstract

Ear is an important part of our body since it is one among the sense organs, without which it is difficult to lead a life as a normal human being. Audiometric system is a system where a person can examine themselves at their convenience. Audiometric system is efficient, less time consuming, accurate, involves multiple types of testing, has Standard sound recognition and pure tone frequencies. Experimental results show Frequency and Decibel range, simplified Audiometric graph and Pictorial representation.

Keywords:
Audiometric system, Hearing impaired, Hearing loss, Self-assessment, Standard sound recognition, Audiometric graph,

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	13 (7)	July, 2021	110-114	Science Press	Q2

Paper No: PU-SOE- ECE - 06

Artificial Intelligence in Smart Farms: Plant Phenotyping for Species Recognition and Health Condition Identification using Deep Learning

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Abstract

This paper analyses the contribution of residual network (ResNet) based convolutional neural network (CNN) architecture employed in two tasks related to plant phenotyping. Among the contemporary works for species recognition (SR) and infection detection of plants, the majority of them have performed experiments on balanced datasets and used accuracy as the evaluation parameter. However, this work used an imbalanced dataset having an unequal number of images, applied data augmentation to increase accuracy, organised data as multiple test cases and classes, and, most importantly, employed multiclass classifier evaluation parameters useful for asymmetric class distribution. Additionally, the work addresses typical issues faced such as selecting the size of the dataset, depth of classifiers, training time needed, and analysing the classifier's performance if various test cases are deployed. In this work, ResNet 20 (V2) architecture has performed significantly well in the tasks of Species Recognition (SR) and Identification of Healthy and Infected Leaves (IHIL) with a Precision of 91.84% and 84.00%, Recall of 91.67% and 83.14% and F1 Score of 91.49% and 83.19%, respectively.

Key words:
Species recognition; health identification; plant phenotyping; deep learning.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
AI	2 (2)	June, 2021	274-289	MDPI	NA

Paper No: PU-SOE- ECE - 07

Novel Hybrid Neutral Point Clamped Inverter for Single-Phase Grid-Tied Transformerless Inverter

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Center for Research in Power Electronics, Presidency University, Bangalore, Karnataka, India

Abstract

The grid-tied inverter is one of the fast-evolving technology in the present era that aims to support the centralized power generation system with a distributed power generation system. The use of renewable energy resources makes it popular due to its easy availability. The issues associated with grid-tied inverter are its size and cost. To reduce the size and cost of the inverter it is desirable to replace the conventional inverter with a transformerless inverter. The absence of an isolation transformer leads to leakage current flow between the grid and the photovoltaic cell. This paper presents a discussion on the neutral point clamped inverter used in the grid-tied inverter system that aims to reduce the leakage current with the help of a novel hybrid neutral point clamping that provides an additional freewheeling path. It is observed that the proposed topology ensures good common mode differential mode characteristics by keeping the leakage current down to 7.2 mA rms and clamping the commonmode voltage effectively to zero volts. A current THD of 0.19 % and a European efficiency of 96.52 % is achieved.

Key words:
Grid-tied, single-phase, neutral point clamp, leakage current.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Renewable Energy Research	2 (2)	June, 2021	732-736	International Journal of Renewable Energy Research	Q3

Paper No: PU-SOE- ECE - 08

Microfluidic viscometers for biochemical and biomedical applications: A review

Dr. Puneeth S B, Madhusudan B Kulkarni, **Sanket Goel**

Abstract

In recent times, microviscometers have been exploited for widespread and diverse detection applications such as sensing adulteration in various fluids used in day-to-day life, diagnostics in the biomedical domain involving human bodily fluids, pharmaceuticals, and biochemical analysis. The microviscometers have the proven capability for being employed as point-of-care devices, which can be achieved by automating them by integrating various microelectronic components, such as integrated circuits, and sensors, on printed circuit boards. In the past few decades, several fabrication techniques have been reported to measure relative viscosity in the microfluidic domain. Moreover, considerable innovation in this direction has observed a lot of improvements and advancements leading to the reduction of cost, and size. Also, the microfluidic viscometer provides simple and rapid detection which makes them more flexible and versatile in the biomedical domain. The microfluidic device unveils numerous features such as easy-to-use, portable, transparency in operation, and rapid detection with a marginal reaction volume. In this review, the development of various microfluidic-based viscometers and their applications, primarily in biomedical applications, have been discussed. Using the state-of-art approach, such microviscometers can be manufactured on a commercial scale for point-of-care diagnosis. This review summarizes the limitations in conventional viscometers and value-chain, comprising designs, fabrication techniques, and other related methodologies, to develop the microviscometers that have been presented. It has been observed that the interest in microfluidic-based viscometers has incredible applications for regular monitoring and personalized point-of-care devices in a controlled and selective manner.

Key words:
Grid-tied, single-phase, neutral point clamp, leakage current.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Engineering Research Express	3	May, 2021	1-30	IOP Publishing	NA

Paper No: PU-SOE- ECE - 09

Handheld and 'Turnkey'3D printed paper-microfluidic viscometer with on-board microcontroller for smartphone based biosensing applications

S.B.Puneeth & Sanket Goel

Abstract

Herein, Microfluidic Paper-based Analytical Devices (μPAD) strips, also called microstrips, have been fabricated using a fused-deposition modeling (FDM) based 3D printer. A polycaprolactone (PCL) filament on a chromatography paper was harnessed to create hydrophobic boundaries of a microchannel. A pair of screen-printed electrodes, with known separation, were integrated on the microchannel to measure the time taken for fluid automatically. A mini electronic sub-system, amenable to connect with an android smartphone, consists of an easily programmable microcontroller, Bluetooth module and voltage booster circuit. The pluggable-and-playable disposable microstrip was utilized to measure the viscosity of various biological samples with an accuracy of >92% with respect to a benchtop viscometer. In particular, the protein denaturation of Bovine Serum Albumin (BSA) and Lysozyme, and viscosity variation of human saliva have been observed. With a competency to measure the viscosity between 0.5 cP to 10 cP, platform cost of <US$ 8 and a cost-per-test of less than US$ 0.02, the present device has a strong potential to be employed as a personalized gadget for various viscosity dependent measurements.

Key words:
Microfluidic paper-based analytical devices (μPAD); 3D printing; Polycaprolactone; Microstrips; Microviscometer

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Analytica Chimica Acta	1153	Apr, 2021	NA	Elsevier	Q1

Paper No: PU-SOE- ECE - 10

Power Loss Calculation for IGBT and SiC MOSFET

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Abstract

The efficiency of any system is mainly depended on power loss incurred in the devices used in it. In power converter circuits the main contribution for power loss is by the power switches used for converting signal. In this paper an attempt is made to describe the method available to find the power losses in converter circuit due to IGBT and SiC MOSFET. It is observed in the literature that the conduction losses for IGBT is lesser than MOSFET with same voltage and current the rating whereas the switching losses are greater in IGBT compared to MOSFET. The calculations performed in the paper shows that SiC MOSFET supersedes performance of IGBT and MOSFET and hence best suitable for high power and high switching frequency application.

Key words:
Power switch, Power loss, Conduction loss, switching loss.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	12 (8)	Aug, 2020	378-382	Science Press	Q2

Paper No: PU-SOE- ECE - 11

Optical Character Recognition of Devanagari Script Using Machine Learning-A Survey

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Abstract

Optical character recognition(OCR) became the powerful tool when it comes to most of the digital world applications, there are wide variety of languages and script styles throughout the world when it comes to countries like America,Russia,Europe the script is almost identical or similar and the research has been started few decades ago and they developed efficient algorithms to any printed document or content on the image or the content on the handwritten document to editable text on a digital device. The beauty of India is it has one basic language that is Devanagari lipi (script), many languages like Hindi, Telugu,Malayalam,Tamil,Kannada from different parts of the county consisting of similar kind of characters which are from devanagari character set , due to this similarity of the character styles the existing algorithms which are efficient for foreign languages are identifying the wrong letter from the printed document or hand written document, to overcome this problem in this problems in this paper mainly we are concentrating to do survey of the work that has been done over few decades in Devanagari fonts identification using Neural Networks.

Key words:
Devanagari Character Recognition, Image Processing, Image Acquisition, Segmentation, feature extraction, Identification and Neural Networks.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	12 (8)	Aug, 2020	593-599	Science Press	Q2

Paper No: PU-SOE- ECE - 12

A Review on Range based and Range free Localization in Wireless Sensor Networks

Mrs. T. Swarna Latha, **Dr K Bhanu Rekha,** Dr. S. Sivakumar

Abstract

Wireless Sensor Networks are the networks that gather information and monitor about the environmental conditions, vibration, sound, motion of the vehicle, pollutants from one node to another node without any specified architecture using wireless networks. To transfer data from one node to another the network restricts to certain parameters like location of the node, efficiency, throughput of the network. Among this location of the node is the major parameter for building a network. In this localization there are two types of schemes namely range based and range free localization network. Hence, a study is conducted on different algorithms of the range based and range free localization algorithms and proposes a way to derive the best solution from them.

Key words:
Range based localization, Range free localization, Wireless sensor networks, nodes, efficiency and throughput.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Design Engineering	2021(6)	June, 2021	4440-4450	Rogers Media Publishing	Q4

Paper No: PU-SOE- ECE - 13

Traffic Sign Detection and Recognition Using image processing

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Abstract

Wireless Sensor Networks are the networks that gather information and monitor about the environmental conditions, vibration, sound, motion of the vehicle, pollutants from one node to another node without any specified architecture using wireless networks. To transfer data from one node to another the network restricts to certain parameters like location of the node, efficiency, throughput of the network. Among this location of the node is the major parameter for building a network. In this localization there are two types of schemes namely range based and range free localization network. Hence, a study is conducted on different algorithms of the range based and range free localization algorithms and proposes a way to derive the best solution from them.

Key words:
Region of Interest (ROI), Machine learning, Neural networks

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	12(7)	Aug, 2020	1145-1151	Science Press	Q2

Paper No: PU-SOE- ECE - 14

Comparison of Feature Selection Methods for Supervised Learning

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Abstract

The technology related to the transmission of wireless networks are enhanced and with that many devices are connected to the internet to work consistently among them. Then the utilization of networks multi-folded and unknown persons known as intruders begin to access data without any intimation to the user. To control them the IDS are designed, where the unknown access is detected and prevented from further access. In the pre-processing stage of IDS, the various irrelevant features are identified and eliminated by the process of feature selection of large data stored. The mutual information between features and class is evaluated in the feature selection process which is followed in all the previous proposed papers. But there is weak interaction between features and class which is a common drawback. To overcome this problem various methodologies based on mutual information like JMIM and NJMIM is proposed by Bennaser et.al with a classification accuracy of 90.77% with 8 features using Parkinson's dataset and NJMIM with 83% noted from the graph with sonar dataset which outperformed CMIM, DISR, mRMR, JMI, IG. In Redundant Penalty feature mutual information (RPFMI), the relationship between features and class is given much importance with a classification accuracy of 99.77% using the KDDCUP dataset and in MMIFS the classification accuracy is 94% with the same dataset. So, this study paves the way to develop more techniques in feature selection.

Key words:
Region of Interest (ROI), Machine learning, Neural networks

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Design Engineering	2021(6)	June, 2021	4440-4450	Rogers Media Publishing	not yet assigned

Paper No: PU-SOE- EEE - 01

Review on Power Converters for Electric Vehicles

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Abstract

The utmost protuberant concern in the Electric Vehicles (EVs) primarily is the process by which the charging of the batteries should be done and secondly the growing appeal of power required due to the quick demand of electric power necessitated by EVs, Hybrid Electric Vehicles (HEVs) and Plug-in Hybrid Electric Vehicles (PHEVs). There has been a detailed, critical evaluation of converters that are being used for the charging modules of electric vehicles. This paper has enlisted seventeen power converters that are being used within the charging modules of electric vehicles in terms of their features, performance parameters, advantages, disadvantages, circuit complexities and cost. Further it has been illustrated that owing to the simplicity of structure and operational mode, electric vehicles are much more efficient than HEV and PEV. Amongst these seventeen converters, the use of four converters namely Half Bridge LLC (HBLLC), Full Bridge LLC resonant converter (FBLLC), EF2 converter and Full Bridge (FB) converters are gaining popularity. This is due to the fact that these converters have an increased factor of efficiency and improved performance. Therefore a fair conclusion states that the use of FB LLC resonant converter best suited for the charging modules of electric vehicle applications.

Keywords:
Electric vehicle, Bridge converter, Bidirectional converter, Resonant Converter.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of XI'AN University of Architecture & Technology	12 (8)	Aug, 2020	82-105	Science Press	Q2

Paper No: PU-SOE- EEE - 02

Effect of Void in Epoxy Resin for Measurement of Partial Discharge

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Abstract

Dry type power and distribution transformers various sorts of protections are utilizing to create the long existence of the transformers. Heavy load on transformers constantly debilitates the protection of insulation in turns and creating tracking called partial discharge (PD). PD genuinely influences the dependability of intensity transformers and cause decimate transformer. Protecting materials plays a significant job in life span of transformer. In this paper to differentiate the diverse partial discharge esteems discovery for the distinctive epoxy resin proportions. Limitation Partial discharge value at, the underlying stage in transformer twisting and to explore which are the best proportion protecting materials (epoxy resin) to be utilized to delay the force transformers future. Restriction of PD is important to suggest restorative activities. The PD measurement done by different procedures like acoustic strategy, UHF recognition technique, electrical technique and optical strategies are used. This paper also introduce capacitive location strategy is used to get the different incomplete release esteems in epoxy resin of various thickness and proportions to identify PD. Other Partial Discharge recognition strategies used to identify against foundation commotion and other undesirable signals that can influence the estimation esteems, the gadgets utilizing now will decrease the structure multifaceted nature and lessen the plan cost and gives the exact area of PD source. It is observed that the epoxy resin of class F 1:1:2.2, 1:1:3and H class 1:0:3.5 best in this proportion for Dry transformers.

Keywords:
Capacitive technique Partial Discharge (PD) Detection, 10KVATransformer, epoxy resin.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Gedrag and Organisatie Review	33 (4)	Dec, 2020	17-25	Boom Lemma uitgevers	Q4

Paper No: PU-SOE- EEE - 03

Severity Prediction of Single Transmission Line Outage using Big Data and Machine Learning Technique

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Abstract

This article introduces the application of big data techniques to predict the severity condition of the system under Single Transmission Line Outage (STLO). The severity of the line is computed by using Line Voltage Stability Index (LVSI) under different load condition for ranking purpose. As a consequence, vast quantity of data is generated. The data obtained from the simulations for various scenarios is processed and applied to machine learning to predict severity condition of the line. The sever ity is predicted for various test systems to ascertain the suitability of the technique applied. The results of the study carried out on IEEE 30 Bus and UPSEB 75 Bus Indian System is presented with the necessary analysis. The MATLAB and the WEKA software are used for simulation purpose.

Keywords:
Contingency, Line Outage, Line Voltage Stability Index, Big Data, Data Analytics, Classification and Machine Learning

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Grid and Distributed Computing	13 (2)	Dec, 2020	1090-1108	Science and Engineering Research Support Society	Q4

Paper No: PU-SOE- EEE - 04

Highly Efficient Hybrid multi Axis Sun Tracking System for PV Power Stations

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Abstract

The light, which is an inexhaustible source of solar energy, radiates solar energy, which is also considered green energy. The efficient collection of renewable energy from the photovoltaic solar cells (PV cells). In real-time, the location of the sun in the sky is constantly varying from time to time. The production of PV cells is strongly dependent on the light intensity of the sun, a basic reason for a typical PV cell to become low. Various control processes such as static solar trackers, single-axis solar trackers and dual axis solar trackers are present in the literature. This paper presents the design and construction of a cost-effective active dual-axis solar tracking system for tracking the movement of the sun to get maximum power from the solar panels as they follow the sun. The code has been developed using C++ programming language and targeted to Arduino UNO microcontroller. The performance of the Single-axis tracker was analysed and compared with the Dual-axis tracker and the proposed method is validated with the experimental approach and better results were obtained in dual-axis solar tracking with 14% more power gain compared to single-axis solar tracking

Keywords:
Solar energy, Dual-axis solar tracker, Photovoltaic Panel, Light Dependent Resistor, Arduino Uno, Servo Motors.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Shanghai Jiaotong University	17 (3)	Mar, 2021	259-267	Shanghai Jiao Tong University	Q3

Paper No: PU-SOE- EEE - 05

Effects of sintering temperature on grain growth of NiTiCu shape memory alloy

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Abstract

Nickel-titanium based shape memory alloys (NiTi SMAs) are extensively used in the biomedical field due to its unique properties such as superelasticity and shape memory effect. The martensite transformation can be executed in SMAs using these unique properties. The martensite transformation can be mainly influenced by the size of the grains presented in the alloy. Therefore, the control of grain size as per the requirement is a crucial in smart materials development. In this work, the nickel-titanium-copper (NiTiCu) SMA has been developed using spark plasma sintering (SPS) process at different temperatures. The sintering temperature is a significant factor that influences the size of grains in the consolidated alloys. The formation of grains in the sintered alloys has been evaluated with respect to the temperature which led to the formation of precipitates such as Ni_3Ti, Ni_4Ti_3 and Ni_3Ti_2 in the SMA. The effects of sintering temperature on the grain size have been investigated using computational thermokinetics at different temperatures such as 700 °C, 800 °C and 900 °C. Moreover, the same has been carried out in experimentally and evaluated using transmission electron microscope (TEM) analysis. The results of the simulation and experiment exhibited the trend of the growth of grain with an increase of sintering temperature. In addition to these, the dislocation density, sub-grain size and recrystallized fractions were investigated on the sintered alloy.

Keywords:
NiTi, Shape memory alloy, Spark plasma sintering, Grains, Precipitates

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal-Materials Today Proceedings	39(4)	2021	1570-1574	Elsevier	not yet assigned

Paper No: PU-SOE- EEE - 06

Effects of sintering temperature on dihedral angle of NiTiCu SMA fabricated using spark plasma sintering

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Abstract

Applications of shape memory alloys can be designated based on the transformation temperatures which could be dominated by the chemical composition of nickel, processing temperature and secondary phase precipitates. The existence of secondary phase precipitates can be mainly affected by the grain surface and boundary energy which could be calculated by the dihedral angle. In this work, nickel-titanium-copper shape memory alloy has been fabricated using spark plasma sintering technique at various temperatures such as 700 °C, 800 °C and 900 °C. The influence of sintering temperature has been investigated on the occurrence of dihedral angle. Grain boundary and surface energy have been suppressed while energy of triple junctions has been improved with the sintering temperature. The reason behind this was observed by the enhancement of fraction of triple junctions with dihedral angle. Results suggest that the dihedral angle can be improved with the sintering temperature which led to enhance the density of the NiTiCu SMA.

Keywords:
Spark plasma sintering, NiTiCu, Shape memory alloy, Dihedral angle

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal-Materials Today Proceedings	43(1)	2021	520-523	Elsevier	not yet assigned

Paper No: PU-SOE- Mech - 01

Transverse dynamic analysis of semi-active quarter car model controlled with an optimal conventional controller

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Abstract

In the present work, a monotube magneto-rheological damper is fabricated and its dynamic characteristics are evaluated at different input currents. The non-parametric approach is used to model the damper from experimental results. A quarter car semi-active vehicle is considered and the passive damper is replaced with a magneto-rheological damper using nonparametric model. Controlling of system is achieved by adopting the proportional integral derivative (PID) controller. The parameters of the PID controller are identified by coupling the PID with an optimisation algorithm by considering three optimal criteria. After obtaining the desirable optimal parameters of the PID controller, the dynamic response of the vehicle subjected to random road excitation is estimated and compared with the vehicle with passive damper. The results show that there is a reduction in the acceleration and vertical displacement of sprung mass in all classes of the road under optimal parameters conditions and thus leads to improved performance.

Keywords:
Semi-active suspension; quarter car; PID controller; MR damper; genetic algorithm; optimisation; monotube damper.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Vehicle Performance	6 (3)	Aug, 2020	310-326	InderScience	Q4

Paper No: PU-SOE – Mech- 02

Conceptual Design and Development of Portable Solar Multi Crop Cutter

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Abstract

Agriculture is one of the most important sector of Indian economy since decades. It is the most vital source of employment for majority of human resource in the country. In our country approximately about 60 percent of the total labor force is engaged in agriculture. Solar energy abundantly available from sun can be utilized and resourceful farming can be done by designing the equipment's for agricultural purpose, mainly in India to focus in certain situations such as how to increase the production and revenue, how to reduce the cost and labor. To excel these problems, the work aims to conceptually design, select and develop the machine which runs with the help of solar power which targets the small scale farmers to cut the multi-crops at a time who have land area of less than two acres for farming. The machine is designed for its low cost, rough use and high compatibility. The machine utilizes solar power, which is directed to the rotary blades via solar panel, DC motor and battery arrangement. Thus providing a portable, cost effective, and pollution free machine to farmer.

Keywords:
Agro Waste, Shredding Machine, Multi Crop Cutter, Spur Gear, DC Motor,

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Innovative Research in Science, Engineering and Technology	9 (8)	Aug, 2020	7859-7864	S&S Publishers	NA

Paper No: PU-SOE- Mech - 03

Theoretical Study of Energy Saving Through Redesign of Water Distribution Arrangement in a Medium-Rise Residential Building

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Abstract

The development of medium-rise buildings for the residence is the basic necessity to accommodate the growing population of countries like India where the residential land per capita is very small. Moreover, because of the energy shortage, energy-efficient development is the primary objective in the present scenario. With the efforts of reducing energy consumption in the medium-rise buildings, redesign of the water distribution system has been proposed in this study. In this proposed arrangement, two water pumps are placed at two different elevations, namely, ground and middle levels of the building. The first one at the ground level supplies water first to the middle floor flats and the second one at the intermediate level does for the middle to the top floor flats. Various building heights and pumps are studied theoretically and the analysis of the results shows that about 20% of the total pump energy can be saved by changing the way of water distribution in the residential buildings. Yet further energy-saving potential is available through the selection of better efficiency pumps. Moreover, reduction in pressure of the water at the lower floor flats is an additional advantage of the proposed arrangement.

Keywords:
energy saving, medium-rise residential building, water distribution, water pump

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
ASME Journal of Engineering for Sustainable Buildings and Cities	1 (3)	Aug, 2020	NA	ASME	Q2

Paper No: PU-SOE- Mech - 04

Evaluation of Minimum, Maximum and Optimum Source Temperature for Solar-Powered Adsorption Refrigeration System

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Abstract

Due to the utilization of solar thermal energy and environmentally friendly nature, globally there is a huge thrust toward the development of vapor adsorption refrigeration systems. Indeed, it is necessary to identify the minimum, maximum and optimum temperatures of heat source for solar-powered adsorption systems. With this objective, the presented paper focuses on the evaluation of lower, upper and optimum temperatures of the heat source to run the adsorption refrigeration system. Performance parameters, cooling capacity and coefficient of performance (COP), have been utilized to derive the limits of source (desorption) temperatures and applied to two different adsorbent–adsorbate pairs, namely Maxsorb III–ethanol and Maxsorb III– R134a. The adsorption and evaporator temperatures considered for the analysis are 25–40 °C and − 10–10 °C, respectively.

Keywords:
Adsorption refrigeration system, Cooling capacity, COP, Desorption temperature

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Arabian Journal for Science and Engineering	45	Sept, 2020	9735–9745	Springer	Q2

Paper No: PU-SOE- Mech - 05

A Study on Particle Weight Fraction and Extrusion on the Mechanical Properties and Microstructural Evaluation of Al-Cu/Fly Ash Composite.

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Abstract

Fly ash is the waste product coming out from thermal power plant is an increasingly urgent problem due to its storage and disposal. At the same time Metal Matrix composites (MMCs) reinforced with ceramic particles such as SiC, Al_2O_3 and B_4C has their partial use in engineering application due to higher cost. The study focuses on the Al-Cu alloy reinforced fly ash particles produced by stir casting followed by hot extrusion. The composites produced by incorporation of fly ash reinforcements by varying 2%, 4%, 6%, 8% and 10wt% is hot extruded with an extrusion temperature of 400°C, extrusion rate of 5mm/s and extrusion ratio of 1.77:1. The extrusion composites have been evaluated based on the investigation of mechanical properties and microstructure. The results showed that, the amount of porosity increased with increasing the percentage of fly ash reinforcements in stir cast and the extruded composites is almost gratis from porosity. Hardness and tensile strength of composites increases with increases in percentage of reinforcement by stir and extruded composites. But extruded composites show better mechanical properties than stir cast composites. Wear test under different loads and for 45 minutes duration have been conducted on both cast and extruded composites. The worn surfaces have been observed under Scanning electron microscope (SEM) to understand the mechanism of wear. Extruded composites possess lower wear rates under all studied loads with constant sliding velocities when compared with cast composites. Microstructural study using SEM shows that the fly ash particulates in the molten matrix forms strong matrix reinforcement interface and their distribution might have led to the increase in mechanical properties of the composites due to fine grain structure during extrusion and dislocation density in the matrix.

Keywords:

Stir Casting, fly ash, extrusion, mechanical properties.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Advanced Materials Research	1159	Sept, 2020	100-111	Trans Tech Publications Ltd, Switzerland	not yet assigned

Paper No: PU-SOE- Mech - 06

Investigation of heat transfer enhancement effect on Normal and Nano coated wick structure heat pipes- A comparative assessment

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Abstract

Removal of heat generation is an important characteristic needs to be considered in electromechanical and electronic devices which improve the stability and feasibility of system. Despite numerous cooling methods, heat pipes are recent updating in research line. Heat pipes are one of the super conducting medium of heat energy and it is being used as an equipment to absorb more heat through phase change process of cooling medium circulated in it. It ensures the direct enhancement in heat transfer capacity and characteristics. Nowadays, improvement of the thermal performance in heat pipes getting up with various technologies, especially combination of heat pipe and Nano fluids. It has been experimentally practiced and various results are observed by previous researches that wick structure also a part of reason in improvement. The aim of this research work is to analyze the influence of wick material to improve heat transfer characteristics in heat pipes. In addition, combination of nano coated wick material with heat pipes is comparatively analyzed. From the final observed results it was found that, the best combination of wick material is supporting the better cooling requirements in electronic devices.

Keywords:

Micro-Heat Pipe, Wick Material, Nano Coat, Heat Transfer, Comparision.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Vehicle Performance	51	Nov, 2020	191-198	Trans Tech Publications Ltd, Switzerland	Q2

Paper No: PU-SOE- Mech - 07

Energy Efficiency Improvement of a Refrigerator Integrated With Phase Change Material-Based Condenser

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Abstract

Energy consumption of a household refrigerator majorly depends on the ambient temperature and is highest at the noontime and lowest at the night. To mitigate the impact of higher ambient temperature, condenser of the refrigerator is modified by incorporating phase change material (PCM) in it. This article presents the development of numerical model of the PCM-based condenser and its comparison with the experimental model. A 3D numerical model for a PCM, namely, FS21-based condenser has been developed in commercial software ansys fluent 16.2, and the simulation outcomes are compared with the experimental test results. A correlation of a coefficient of performance (COP) which is a function of PCM temperature has been proposed. Based on the developed numerical model and the correlation, two other PCM-based heat exchangers, RT25 and RT25HC, are also analyzed numerically and their PCM temperatures are predicted. At the end, COP of the refrigerator with each PCM is compared.

Keywords:
ambient temperature, COP, energy efficiency, household refrigerator, numerical modeling, phase change material material, energy conversion/systems, energy storage systems

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
The Journal of Energy Resources Technology	143 (8)	Nov, 2020	NA	The Americal Society of Mechanical Engineers	Q1

Paper No: PU-SOE- Mech - 08

Modelling of biodiesel blend using optimised deep belief network: blending waste cooking oil methyl ester with tyre pyrolysis oil

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2. Department of Mechanical Engineering, Satyabama Institute of Science and Technology, Chennai, India
3. Department of Mechanical Engineering, School of Engineering, Presidency University, Bangalore, India

Abstract

This study introduces a new biodiesel blend as an alternative for diesel using waste cooking oil methyl ester by adding tyre pyrolysis oil and cerium oxide. Despite the conventional biodiesel blending models, this study made an effort to efficiently measure the prediction rate of these blended fuels by modelling through the deep belief network (DBN). To attain the accurate prediction, this study moves on with the new logic of optimal tuning of the count of hidden neurons in DBN. The optimal selection is carried out by introducing a new algorithm named lioness updated crow search algorithm (LCSA), which hybrids the concept of the lion algorithm (LA) and crow search algorithm (CSA). Finally, the proposed work is analysed and compared over other conventional models with respect to emission analysis and error analysis. From the analysis, the proposed model in terms of mean deviation (MD) measure has gained betterment and is 75.57, 17.71, 85.55, and 74.19% better than grey wolf optimiser (GWO), whale optimisation algorithm (WOA), LA, and CSA, respectively. For the mean absolute error measure, the implemented model is 42.38, 24.42, 43.53 and 36.72% improved than GWO, WOA, LA, and CSA, respectively.

Keywords:
Pyrolysis, petroleum, vegetable oils, belief networks, biofuel, combustion, diesel engines, blending, tyres, particulate matter, exhause emissions, petroleum diesel, biodiesel blending changes, blend percentages, biodiesel blend, waste cooking oil methyl ester, tyre pyrolysis oil, conventional biodiesel blending models, blended fuels, crow search algorithm, optimized deep belief network.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
IET Renewable Power Generation	14	Dec, 2020	3238-3251	The Institution of Engineering and Technology	Q1

Paper No: PU-SOE- Mech - 09

A Comprehensive review on Light weight Kenaf fiber for Automobiles

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Abstract

Natural fibers have been used since the dawn of civilization. Customer demand for sustainable products and advances in technology has increased due to which the utilization of natural fibers are playing vital role in application of aerospace, automobile, marine industries etc., whereas natural fibers are extensively used in automotive industries and aerospace applications. Good amount of research has been directed on natural fibers and related composites to find mechanical, thermal and physical characteristics. Amongst variety of available natural fibers like bamboo, sisal, cotton, jute, kenaf, coir, industrial hemp, banana etc., kenaf fibers has been used exclusively in hybrid composites because of its enhancing mechanical properties. Therefore, this paper gives an overview on development of kenaf based composite by considering various factors like, stacking sequence (layer by layer), volume ratio of fibers to matrix, angular orientation of fibers and chemical modification of fiber surface to enhance adhesion of fiber to matrix etc., the mechanical properties and various application of kenaf hybrid composite. Several issues related to enhancing the properties of composite are also discussed in order to get sustainable hybrid composite.

Keywords:
Natural fiber, Kenaf. Composite material, Development of composite, Hybrid composite, Mechanical properties

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Lightweight Materials and Manufacture	3 (4)	Dec, 2020	328-337	Elsevier	Q1

Paper No: PU-SOE- Mech - 10

Role of Heat Treatment on Hardness of Al 6061- AlB2 Metal Matrix Composites

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Abstract

Insitu AlB2 particles with Al6061 combination system increase its hardness strength and abatement in density. Al6061-AlB2 insitu composites were created by exothermic response utilizing premixed halide salt KBF4 and Na3AlF6 (for refining aluminium matrix) by liquid strategy with distinct weight rates of AlB2 particles. The as cast matrix combination and the related insitu are exposed to heat treatment at a required temperature of 535°C for one hour followed by quenching in various media like ice, oil, and water. Then the specimens are exposed to an artificial ageing for 175°C for around 10 hours. Microstructural study was directed on as cast and insitu composite to determine the dissemination of AlB2 particles in the base matrix. The reinforced composite showed improvement in hardness when contrasted with as cast alloy. There has also been some improvement in hardness with increasing AlB2 content. The Al6061-AlB2 particulate composites showed critical improvement in hardness when quenched in ice.

Keywords:
Ageing, AlB2, Hardness, Insitu, MMC, Solutionizing

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Surface Engineering and Interdisciplinary Materials Science	9 (1)	Jan, 2021	NA	IGI Global	Q4

Paper No: PU-SOE- Mech - 11

Effect of Hardness and Tensile Behaviour of Al-2024/ TiB2 coated B4C particles synthesized by stir casting route

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Abstract

Nowadays the production of light weight, low cost and high performance aluminium based composites has undergone significant evolution. In this work, Boron Carbide (B4C) were introduced into Al-2024 alloy produced by stir casting method. The B4C particles is coated with TiB2 via sol-gel process and reinforced in Al-2024 alloy by stir casting process to produce composite. Stir casting technique is gaining importance due to its easy setup, low cost, uniform dispersion of reinforcement compare to other techniques. Metal Matrix Composite is stir casted by incorporation of B4C reinforcements by varying 2%, 4%,6%, 8% and 10 wt% to investigate mechanical properties. Hardness, porosity and tensile behavior of alloy and composites were evaluated and found that both hardness and tensile strength increases with increases in percentage of reinforcement. On the other hand a slight increasing amount of porosity is observed with increasing the B4C particles of the composites. Microstructure of tensile fractured surface of Al-2024/B4Cp composites indicates that the presence of intact reinforcement B4C particles on the fracture surface and bonding between boron carbide and aluminum was superior indicating that deformation caused due to ductile behavior

Keywords:
Al-2024, Hardness, Porosity, Tensile, Tensile Fracture.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Manufacturing Technology Today	20 (1)	Jan, 2021	40-46	Central Manufacturing Technology Institute, Bengaluru	NA

Paper No: PU-SOE- Mech - 12

Mechanical and Wear Characterization of Ceramic Boron Carbide-Reinforced Al2024 Alloy Metal Composites

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Abstract

In the present research, the effect of 44-µm-sized B4C addition on the mechanical and wear performance of Al2024 alloy has been studied. The Al2024 alloy metal matrix composites reinforced with varying wt% (2, 4, 6 and 8) of B4C particulates were fabricated by stir cast route. The synthesized composites were subjected to microstructural studies, mechanical and wear properties testing. Microstructural characterizations of obtained samples were carried out by SEM microscopy and XRD patterns. The presence of B4C particles was confirmed by the XRD patterns. The hardness, tensile and compression strengths of metal composites have been enhanced with the addition of B4C reinforcement. There was, however, a decrease in the ductility of the Al2024 alloy composite after the incorporation of the reinforcement. The wear behaviour of the prepared samples was tested at varying loads and speeds. The microcomposites exhibited superior wear resistance. Various fracture and wear mechanisms were observed in the Al2024–B4C composites using SEM.

Keywords:
Al2024 alloy, B_4C particles, Microstructure, Hardness, Tensile strength, Wear, Fractography, Wear debris

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of bio and tribo corrosion	7 (1)	Jan, 2021	328-337	NA	Q2

Paper No: PU-SOE- Mech - 13

Evaluation of Wear Properties of Heat-Treated Al-AlB2 in-situ Metal Matrix Composites

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Abstract

Considerable improvement in weight reduction, strength, wear obstruction, and modulus is the basic in meeting the plan and design criteria for the production of airplane, launch vehicles, and automobiles. This work proposes the low-cost manufacture process involving 2, 4, and 6 wt% AlB2 in-situ particle strengthened with aluminum (Al) Metal Matrix Composites (MMCs) utilizing chemical reaction through exothermic response between halide salt KBF4 and Al matrix at a temperature of 850 °C through vortex technique. The as-cast matrix blend and the in-situ composite were heat treated at a temperature of 535 °C for 1 h accompanied by quenching in various media like ice, oil, and water. The quenched samples were subjected to artificial aging at a temperature of 175 °C for 10 h. Microstructural studies were conducted on the as-cast and in-situ composites for dissemination of AlB2 particles in the as-cast matrix. SEM images affirm the development of AlB2 with uniform circulation in the matrix. X-ray diffractometer test was performed for the formation of AlB2 reinforcement phase in the matrix composite. Wear and mechanical properties were explored for the in-situ composites; for wear test, the impact of sliding rate, applied load, and sliding distance were basic parameters corresponding to the wear experienced by the material. The wear conduct and worn morphology of the aluminum MMCs subjected to various quenchants were additionally evaluated using pin-on-disc tests involving specimens to slide against a hardened steel disc under different load conditions. The exploratory outcomes exhibited that the typical load and fortification proportions were significant variables affecting the volumetric wear rate for all the quenched samples, trailed by sliding speed. The wear resistance behavior is found to be higher for specimens involving ice quenching treatment followed by water and oil-quenched composites.

Keywords:

AlB_2, in-situ, Halide salt, AMMC, Stir casting

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of bio and tribo corrosion	7 (1)	Jan, 2021	NA	Springer	Q2

Paper No: PU-SOE- Mech - 14

Wear behavior of Aluminium 6061 alloy reinforced with coated/uncoated multiwalled carbon nanotube and graphene

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Abstract

The current study deals with the fabrication and investigation of wear characteristics of Aluminium 6061(Al6061) hybrid metal matrix composites (MMCs) processed through powder metallurgy technique. Al6061 hybrid MMCs involving fixed 2 wt% of coated/uncoated multiwalled carbon nanotubes (MWCNTs) and varying weight percentages of graphene were fabricated through ball milling procedure. To enhance the scattering of MWCNTs in the matrix, MWCNTs were coated by means of copper through electroless deposition method. Dry sliding wear conduct of Al6061 MMCs was investigated using a pin-on-disc wear testing machine. It was found that at lower load, composites exhibited lower wear resistance than base alloy however at higher load, nanocomposites showed higher wear resistance. The research tried to find the effect of higher loads on the wear resistance. The composites were evaluated if they could give out reinforcements at higher loads during wear tests. The wear morphologies were reported using Scanning Electron Microscopy (SEM) and it was noticed that lower load abrasion was superior for the composites and base alloy although at higher loads adhesion was considered to be main reason for the wear of composites. Green ZnO NPs exhibited better antibacterial and antifungal activities, in addition to superior photocatalytic behaviour.

Keywords:

Aluminium 6061, Powder metallurgy, MWCNTs, Graphene, Wear

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Metals, Materials and Minerals	31 (1)	Feb, 2021	17-24	MMR	Q4

Paper No: PU-SOE- Mech - 15

Performance Analysis of MR damper Based Semi-Active Suspension System Using Optimally tuned Controllers

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Abstract

This study assesses the dynamic performance of the semi-active quarter car vehicle under random road conditions through a new approach. The monotube MR damper is modelled using non-parametric method based on the dynamic characteristics obtained from the experiments. This model is used as the variable damper in a semi-active suspension. In order to control the vibration caused under random road excitation, an optimal sliding mode controller (SMC) is utilised. Particle swarm optimisation (PSO) is coupled to identify the parameters of the SMC. Three optimal criteria are used for determining the best sliding mode controller parameters which are later used in estimating the ride comfort and road handling of a semi-active suspension system. A comparison between the SMC, Skyhook, Ground hook and PID controller suggests that the optimal parameters with SMC have better controllability than the PID controller. SMC has also provided better controllability than the PID controller at higher road roughness.

Keywords:

MR damper, semi-active suspension, PSO, sliding mode controller, PID

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Automobile Engineering	NA	Mar, 2021	NA	SAGE	Q2

Paper No: PU-SOE- Mech - 16

Performance Investigation of a Vapor Adsorption Refrigeration System Based on Adsorption / Desorption Time and Heat Transfer

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Abstract

In the past two decades, the development of sustainable refrigeration systems such as thermally operated vapor adsorption refrigeration systems achieved unparalleled growth in the research world as compared to conventional vapor compression systems and even thermally operated vapor absorption refrigeration system. Yet, the commercial success of the adsorption refrigeration system could not be achieved due to mainly its higher space area required per kilowatts of refrigeration capacity. With the focus to look improvement on this issue, the performance of the adsorption refrigeration system has been studied concerning adsorption/desorption time and heat transfer of adsorber. It is proposed to reduce the adsorption/desorption time, due to which the concentration (ratio of the mass of adsorbed refrigerant to the mass of activated carbon) will not reach its equilibrium value, but it is possible to get a higher mass flow in a shorter period. In turn, the cooling capacity will increase. In view of this, a mathematical model has been developed to study the performance and applied to three adsorbent–adsorbate pairs, namely, Maxsorb III–ethanol, Maxsorb III–R507a, and Maxsorb III–R134a. Based on the mathematical investigations, it is observed that the cooling capacity can be improved significantly at a litter higher cost of the heat transfer mechanism.

Keywords:

adsorption isotherm, adsorption kinetics, cooling capacity, COP, heat transfer analysis, vapor adsorption refrigeration, energy systems, thermal systems

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
ASME Journal of Thermal Science and Engineering	13 (5)	March, 2021	NA	ASME	Q1

Paper No: PU-SOE- Mech - 17

An experimental investigation of MPFI gasoline engine fuelled with ethanol and n-butanol

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Abstract

In today's world, energy security emerged as a decisive challenge among developing economies of the world, India is one such country. Importing the colossal amount of oil to fulfill daily oil demand, uncertainty in the fuel prices, and continuous degradation of air quality thwarts the nation's economy. To make it less severe, biofuels are observed to be promising alternatives that can overcome the issues of oil import and emission drawbacks. Biofuels seem to be an alternative to conventional fuels due to the advantage of having reduced emissions and better air quality. This paper presents an experimental investigation of biofuels Ethanol and n-Butanol in a Multipoint Fuel Injection (MPFI) Gasoline Engine. It involves the testing of different biofuel blends in a four-cylinder petrol engine to obtain the best biofuel proportion in terms of performance and emission. The analysis of the results shows that the use of biofuel blend in gasoline significantly improves the performance of an engine for ethanol blend of E5 and E10 and the n-butanol blend of B10. Further, there is a considerable decrease in emission parameters for the E5 and B10 blend of biofuel compared with all other tested blends.

Keywords:

Biofuel, Butanol, Ethanol, Emission analysis, Gasoline engine, Multi-Point Fuel Injection

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Environmental Science and Tech.	18 (4)	March, 2021	NA	Springer	Q2

Paper No: PU-SOE- Mech - 18

Harnessing ZnO nanoparticles for antimicrobial and photocatalytic activities

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Abstract

Zinc oxide nanoparticles (ZnO NPs) have proven record of exhibiting multifunctional properties and thus utilized for diversified applications. ZnO NPs were successfully synthesized by chemical and green routes. The *Syzygium cumini* plant leaf extract was used to synthesize green ZnO NPs. The chemical and green ZnO NPs were characterized by using advanced technical tools to explore their bonding, structural and morphological features. The PXRD (Powder X-Ray Diffraction) patterns confirmed the hexagonal phase of ZnO with wurtzite structure. The scanning and transmission electron microscopic (SEM and TEM) analysis revealed rectangular flake like structures for chemical ZnO whereas spherical structures were found for green ZnO NPs. Maximum antibacterial activity was observed against *Pseudomonas aeruginosa* bacterial strain with zone of inhibition of 14.5 mm followed by 5 mm for *Klebsiellaoxytoca* and 4 mm for *Escherichia coli* for green ZnO NPs. The percentage of inhibition was found to be 85, 29 and 50 for *Pseudomonas aeruginosa*, *Klebsiellaoxytoca* and *Escherichia coli* bacterial strains. The percentage of inhibition of mycelial growth observed during antifungal testing was varied from 5% to 70%. The photocatalytic efficiency of 98 % for Acid Red 88 dye degradation was recorded for ZnO NPs. Green ZnO NPs exhibited better antibacterial and antifungal activities, in addition to superior photocatalytic behaviour.

Keywords:

Green ZnO NPs, Syzygium cumini, Antibacterial activity, Antifungal activity, Dye degradation

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Photochemistry and Photobiology	6	June, 2021	NA	Elsevier	Q1

Paper No: PU-SOE- Mech – 19

Fabrication of carbonized flakes epoxy electrode using lemon rind for supercapacitor applications

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Abstract

The present study confirms the application of phytochemicals of Lemon rind (LR) towards the synthesis of activated carbon using a low temperature carbonization method. The structural, morphological, and electrochemical properties of the prepared carbonized flakes epoxy (CFE) electrode has been analyzed using various characterization techniques. The electrochemical double layer capacitance (EDLC) behavior of the LR-activated carbon has been evaluated. The synthesized LR-activated carbon material exhibited flake like structure along with hydroxyl groups as confirmed by studies by scanning electron microscope (SEM), X-ray diffractometer (XRD), and Fourier transform infrared (FTIR) spectroscope. In addition, the band gap energy (Eg) has been estimated using diffused reflectance spectroscopy (DRS-UV-Vis) and found to be 2.06 eV. The electrochemical property of CFE-electrode was studied utilizing cyclic voltammetric (CV) and electrochemical impedance spectroscopic (EIS) techniques. The galvanostatic charge–discharge tests for this prepared carbon flake electrode demonstrated excellent capacitance performance, making it favorable for the fabrication of supercapacitors. These progressive results could be considered for the enlargement of novel assets to scale for power-storage utility using low-cost carbon materials in various energy storage applications as well.

Keywords:

Lemon rind, Activated carbon, Carbonized Flakes Epoxy (CFE) Electrode, Capacitance, Supercapacitor

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Case Studies in Chemical and Environmental Engineering	3	June, 2021	NA	Elsevier	Q1

Paper No: PU-SOE- Mech - 20

Minimization of delamination, surface roughness and thrust force in drilling of Al2O3 ceramic particle filled CFRP composites

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Abstract

Present study explores the influence of filler material and drilling parameters on delamination factors, surface roughness and thrust force in the drilling of carbon fiber reinforced epoxy composites (CFRP) using high speed steel (HSS) drill. The CFRP composite was fabricated by hand layup technique and the drilling tests were carried out using L27 orthogonal array (OA) design with wt% of Al2O3, spindle speed, point angle and feed rate as input process parameters. Grey Relational Analysis (GRA) is used for multi objective optimization and optimum parameter condition obtained include 4 wt% of Al2O3, 3000 rpm speed, 100o point angle and 50 mm/min feed. The optimum set of inputs resulted in 1.1469 and 1.2918 as entry and exit delamination factor values, 1.94 µm surface roughness and 95.29N thrust force. ANOVA is employed to find the influence of process variables on output responses.

Keywords:

Composites, grey relational analysis, ANOVA, drilling, optimization.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Ceramic Processing Research	22 (2)	2021	1-11	Hanyang University, Wangsimni-ro, Seongdong-gu, Seoul, Korea	Q4

Paper No: PU-SOE – Mech- 21

Study on Mechanical Testing of Various Nanoclay Reinforced with High Density Polyethylene Nanocomposites

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Abstract

The Polymer nanocomposites materials are comprising of polymer as matrix material and reinforcement material as filler that has particles of nanometer in size. These materials have different physical and chemical properties and are mixed together to yield unique properties of nanocomposites. The High Density Poly Ethylene (HDPE) has been chosen as polymer matrix material. The reinforcement materials used are different nanoclay such as Montmorillonite (MMT), Cloisite 30B, Cloisite 25A and hybriding of Cloisite 30B with Rice Husk Ash (RHA). These nanoclay materials are reinforced with HDPE with different wt % (0 - 4 wt %). Compatibilizer of 3 wt% of HDPE grafted with Maleic Anhydride (HDPE-g-MA) was added to provide superior adhesion between the HDPE and nanoclay. The nanocomposite materials were fabricated by melt blending in a twin screw extruder with the spindle speed of 50rpm with different zone temperatures. The melt blending is one of the best methods for the preparation of nanocomposites. This method makes it easy to blend the nanoclay and the matrix materials for preparing specimens for different tests. The ASTM standard specimens were prepared for various mechanical tests like flexural, tensile, hardness and impact using respective dies in injection moulding machine. In flexural test, the specimens were subjected to different cyclic loads before conducting three point bent test. In bend test, maximum load that could withstand by the material was used to examine the flexural strength and modulus of the composite materials. In tensile test, different nanoclay specimens were tested in tensometer machine which had a capacity of 20KN. Tensile strengths of different nanoclay with different wt% of nanocomposites were compared. The results of D shore hardness number and Izod impact strength of different nanoclay with HDPE were also compared.

Keywords:
HDPE, Nanoclay, Cloisite 30B, Tensile, Bending, Hardness and Impact.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Applied Engineering Research	16(3)	2021	220-227	Research India Publications	Q2

Paper No: PU-SOE- Mech - 22

Development & Characterization of Low Friction Wear & Corrosion Resistant Coating for Automobile Application

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Abstract

Multilayer protective coatings that are applied over a substrate are disclosed that comprise a plurality of superimposed multilayer units. Each multilayer unit contains two or more superimposed thin layers in which at least two layers are compositionally different. The properties of the resulting coating are a combination of the properties of the individual layers. One layer of the multilayer unit may provide hardness or wear resistance, another layer is corrosion resistant and another layer may provide lubricity. The substrate materials chosen are Inconel 600,625 and 718.The coating materials chosen to coat from the direction of substrate are Al2O3, Cr3C2 – NiCr and BN. The multilayer coated specimens will be subjected to various mechanical, wear and corrosion tests followed by morphological studies. Also suitable application of the developed coated specimens in various automobile/high temperature applications will be identified.

Keywords:
Multilayer Coatings, Inconel, Al2O3, Cr3C2 – NiCr, BN, AFM, Wear, Corrosion, SEM & XRD

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Engineering Research in Mechanical and Civil Engineering (IJERMCE)	6(3)	Mar, 2021	13-16	Institute For Engineering Research and Publication	NA

Paper No: PU-SOE- Mech - 23

Estimation of Damping Force of double Ended Magnetorheological Damper through one way coupled CFD and FEA Analysis

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Abstract

The magnetorheological damper has variable damping characteristic and the damping force is controllable, which made them employable in the semi-active suspension system of various engineering applications. Basically, there are three types of MR damper i.e monotube, twin-tube and double end. In this paper, a double-ended damper has been chosen to model and evaluated its dynamic behaviour through a computational approach. Electromagnetic circuit analysis and design have been carried out through Finite element analysis. The magnetic force induced in the fluid flow region is calculated at different currents. Later by using the Herschel Bulkley model the FEA and CFD analysis are coupled, which has been achieved by establishing communication between the Navier stokes and Maxwell equations. The damping force versus displacement characteristics are evaluated at different input currents and response were plotted. It has been observed that the compressive force and rebound forces are same in magnitude and opposite in sign which is due to negligible variation in the control volume of the damper.

Keywords:
CO2 absorption,nanofluids,relative absorption index,stability of saline water nanofluids,direct contact system.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of The Institution of Engineers (India): Series C	22	July, 2021	NA	Springer	Q2

Paper No: PU-SOE- Mech - 24

Influence of stacking sequence and orientation of the fabric on mechanical properties of twill Kenaf/Kevlar reinforced unsaturated polyester hybrid composites

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Abstract

The current study investigates on development of hybrid composite with Kenaf/Kevlar as reinforcement and unsaturated Polyester as the matrix considering stacking sequence, the orientation of fabric and twill 2x2 weave of the Kenaf fabric in particular. Five laminates (L1, L2, L3, L4, and L5) were developed by stacking the lamina's one over the other with the matrix and then cured in an autoclave. The laminates were subjected to experimental investigation to evaluate mechanical properties such as tensile strength, flexural strength, hardness, and impact strength. Results indicate that L5 shows good flexural strength and modulus, high hardness, and good impact strength, whereas L4 indicates the best tensile strength and tensile modulus. To summarize, the hybridization resulted in an average of 30% increased mechanical property for Laminate L5. The effect of stacking in L5 has a significant impact on the property of the composite. The results of the study were mainly focused on minimizing the use of synthetic fiber and replacing it with natural fiber. SEM analysis was performed on fractured surfaces of specimens which revealed that the failure of the laminated composite is due to poor interfacial bonding among fiber and matrix. Overall, the composite obtained from the combination of Kenaf and Kevlar fabrics had the best balance of properties finds appropriate application for car bumpers, fenders, boat hull, turbine blade etc

Keywords:
Hybrid composites, twill weave Kenaf, Kevlar, stacking sequence, orientation of fabric, mechanical strength

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of The Institution of Engineers (India): Series C	22	July, 2021	NA	Springer	Q2

Paper No: PU-SOE- Mech - 25

Effect of Carbon Black & Titanium Dioxide Dispersants on solidification of multiwall carbon nanotube added saltbased phase change material

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Abstract

The effect of carbon black and titanium dioxide (TiO2) dispersants on solidification of potassium nitrate phase change material (PCM) with multiwall carbon nanotube (MWCNT) addition was investigated using the Fourier method of thermal analysis. On addition of 0.1 % of MWCNT, the solidification time of PCM decreased by 26 %, enhancing the heat release rates. A decrease in thermal diffusivity of the PCM was observed on addition of MWCNT particles. These benefits were observed to diminish over successive thermal cycles because of the agglomeration of MWCNT particles. To prevent the agglomeration of additives, dispersants such as carbon black and TiO2 were used. In the presence of carbon black, the nanosalt PCM retained all the cooling curve parameters over 10 thermal cycles, preventing the agglomeration of nanoadditives. On the other hand, the dispersant TiO2 significantly enhanced the thermal diffusivity property of PCM by virtue of its superior thermal conductivity. These are critical outcomes in development of nanosalt PCMs for thermal energy storage applications.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials Performance & Characterization	10	April, 2021	NA	ASTM International	Non Ranked

Paper No: PU-SOE- Mech - 26

Development and Mechanical Characterisation of Al6061-Al2O3-Graphene Hybrid Metal Matrix Composites

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Abstract

MMC based on aluminium (Al) were produced for light-weight applications especially in aviation and automobile areas. Present paper deals with the fabrication and mechanical performance of AA6061 matrix composites fortified with Al_2O_3 (alumina) and graphene particulates. Fluid metallurgy method namely stir casting route was employed for fabricating the hybrid composites. Al_2O_{3p} and graphene powder are mixed in different weight fractions in which graphene (1 wt. %) particle reinforcement is held consistent and Al_2O_3 reinforcement is differed freely with 5, 10 and 15 wt. %. Using optical analyser and SEM equipment, microstructural examination is carried out and the result reveals that the graphene and Al_2O_3 particles prevalently are homogeneously appropriated on the grain limits of Al matrix and Al_2O_3 particles are disseminated between graphene in the as-cast AA6061 MMC's. Detailed analysis on investigation of the microstructure and mechanical aspects of Al6061-graphene-Al_2O_{3p} composites is presented by following ASTM guidelines; results uncovered that with increment in reinforcement particles, there is an enhancement in the hardness, ultimate strength, yield strength and a decline in the elongation values was however noticed when contrasted with Al6061 alloy. Fractography investigation revealed dimples in unreinforced alloy and the composite.

Keywords:

Metal matrix composites; Al_2O_3; graphene; mechanical properties; fractography.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Composites Science	5	June, 2021	NA	MDPI	NA

Paper No: PU-SOE- Mech - 27

Effect of stand-off distance (SOD) on damping properties of atmospheric plasma sprayed alumina-zirconia ceramic coatings

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Abstract

Alumina–25 wt-% zirconia (AZ) coatings were deposited on AISI304 stainless steel substrates by atmospheric plasma spraying (APS) technique with three different stand-off distances (SOD) namely, 75, 100 and 125 mm. X-ray diffraction (XRD) and scanning electron microscopy (SEM) techniques were utilized to study the phases and microstructures of the coatings, respectively. Surface roughness and percentage of open porosity of the coatings were also quantified by confocal laser scanning microscopy (CLSM) and SEM image analysis through Material Plus software, respectively. Finally, dynamic mechanical analyser (DMA) was employed for thorough investigation of the damping behaviours of the AZ coatings deposited at SODs conditions

Keywords:

Alumina 25% Zirconia Coating, Damping Properties, Syrface Roughness, Porosity, Microstructure

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of The Institution of Engineers (India)	37	June, 2020	599-605	Taylor & Francis	Q1

Paper No: PU-SOE- Mech - 28

Evaluation of Slurry Erosive Wear Performance of Plasma-Sprayed Flyash-TiO2 Composite Coatings

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Abstract

The present research is intended at the development of plasma-sprayed coatings of Flyash-TiO2 on the Al-6061 substrate. The coatings were developed under optimum process conditions and subjected to evaluate the slurry erosive wear characteristics in 3.5% NaCl solution with varying levels of operating factors such as slurry concentration, slurry rotation speed, impinging particle size, and test duration. Under identical test conditions, the developed coatings demonstrate a 52% enhancement in slurry erosive wear resistance compared to the uncoated Al-6061 alloy. The Scanning Electron Microscopy (SEM) and Confocal Microscopy (CM) were used to examine the eroded surfaces of coated and uncoated specimens under varying test conditions. It is identified that severe plastic flow is observed in uncoated alloy, and curtailed damage of surfaces in the case of coated substrates confirms superior slurry erosion resistance in coatings compared to uncoated ones. Six-fold enhancements in the surface hardness and corrosion resistance are the main reasons for improved slurry erosive wear performance of coatings compared to alloy.

Keywords:
Plasma Spray, Flyash, Titania, Al-6061, Slurry erosive wear

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Bio and Tribo Corrosion	7	May, 2021	NA	Springer International Publishing AG	Q2

Paper No: PU-SOE- Mech - 29

A Study on Tribological Behaviour of Thermally Sprayed Coatings

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Abstract

The process of coating is used for modifying the surface properties such as corrosion, wear, and oxidation when the components are subjected to excessive heat load failure. Therefore it is necessary to select the coating material, and deposition becomes very important for any application. Coatings are significantly used on the metal substrate to protect from wear and friction. The tribological behavior of coating process depends on many parameters like, coating properties, metal substrate, interface, and running conditions. Hence selection of coating for tribological application is difficult process. Thermally sprayed WC, CRC based coatings are used in turbines for resistance to wear like abrasive, cavitation, erosion and corrosion. The Nicr-Al coating showed better protection to high-temp oxidation, corrosion due to generation of protective oxides. The alloy NiCrSiBc shows good balance with respect wear and corrosion resistance when subjected to high temp working atmosphere and chemically aggressive situation. The NiCrBSi coatings gives good surface finish and also good bonding interface.This article indicates the review related to selection of coating, powder, process of protective wear resistance of coating by thermal spray process. The significance of various spraying techniques and spraying parameters on the improvement of coating is different for every coating.The wear types, coating process types, powders, significantly plasma spray, and HVOF spray methods are discussed to identify the coating for particular application.

Keywords:

Tribological behavior, coating properties, metal substrate, interface, cavitation, erosion and corrosion**.**

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Advancements in Material Engineering	6 (1)	2021	NA	NA	NA

Paper No: PU-SOE- Mech - 30

Surface Coating: An Overview of Research Work

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Abstract

Surface coating, any mixture of film-forming materials plus pigments, solvents, and other additives, which, when applied to a surface and cured or dried, yields a thin film that is functional and often decorative Surface coating is an economic method for the production of materials, tools and machine parts that require the desired surface properties such as corrosion, erosion and wear resistance. Individuals and industry tend to focus on the wearing surface that has the greatest impact on their own economic situation. Research is going on over years to reduce the corrosion, erosion and wear either in the form of using a new corrosion, erosion and wear resistant material or by improving these properties in the existing material by using surface coating methods. In this paper an attempt has been made to review the work of some researchers who conducted the experimental studies on different surface coatings, which are employed on the substrate surface of material by different methods. The various coating methods used and their advantages have been discussed.

Keywords:

Wear, Resistance, Surface coatings, Thermal Spraying, Abrasive. Etc

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Research Journal of Engineering and Technology (IRJET)	8 (4)	Apr, 2021	2235-2237	NA	NA

Paper No: PU-SOE- Mech - 31

Prediction of Mechanical Properties for Polyetheretherketone Composite Reinforced with Graphene and Titanium Powder using Artificial Neural Network.

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Abstract

High performance Polyetheretherketone (PEEK) hybrid composite were synthesized by reinforcing different wt% of Graphene (C) and Titanium powder (Ti) using Injection molding for applications such as compressor plate valves, piston parts, impeller wheels for regenerative pumps, shock absorber bearings, gears for oil and gas companies, cams, ball bearing cages aircraft exterior parts. For modeling and prediction of mechanical properties of PEEK/C/Ti composite, a multi layer perceptron feed forward neural network was constructed using input vectors as wt% of PEEK and reinforcements. Hardness, Tensile strength, Tensile elongation, and Modulus of elasticity are output vectors for polymer composite. The proposed ANN model for PEEK composites delivers satisfactory results in comparison to experimental measurements. The correlation factor connected with training and test dataset was greater than 0.9. 3-D plots for the predicted mechanical properties as a function of material compositions were established.

Keywords:
Polyetheretherketone, Graphene, Polymer composite, Artificial Neural Network, Mechanical properties

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials Today: Proceedings	NA	June-2021	NA	Elsevier	Q1

Paper No: PU-SOE- Mech - 32

Thermal performance of fly ash nanofluids at various inlet fluid temperatures: An experimental study

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Abstract

The article presents the heat transfer coefficient and the friction factor for the flow of water-base fly ash nanofluid in the concentration range of 0.5 to 2.0 vol%. Experiments are undertaken for flow in a horizontal copper tube subject to uniform heat flux in the Reynolds number range of 7000 to 45,200, for inlet fluid temperatures of 30, 45, and 60°*C*. The results revealed that in contrast to base fluid, nanofluids exhibit greater heat transfer coefficients which increase with concentration and fluid inlet temperatures due to augmentation in nanofluid thermal conductivity. The maximum amplification in Nusselt number and pressure drop of 67.4% and 11.9% are observed with 2% nanofluid concentration as compared to base liquid, for an inlet fluid temperature of 60°*C* and 30°*C* respectively. The values of Efficiency Index (EI) are evaluated for different concentrations and inlet fluid temperatures. Correlations are reported based on the experimental data for the estimation of dynamic viscosity, thermal conductivity, Nusselt number, and the friction factor of fly ash nanofluid

Keywords:
Indonesian coal, Ball milling of Fly ash, Water base nanofluid, Heat transfer coefficient, Pressure drop, Efficiency index

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Communications in Heat and Mass Transfer	119	Dec, 2020	104926	Elsevier	Q1

Paper No: PU-SOE- Mech - 33

Experimental determination of thermophysical properties of Indonesian fly-ash nanofluid for heat transfer applications

Praveen Kanti, Korada Viswanatha Sharma, **Ramachandra C. G**. & W. H. Azmi
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Abstract

The heat transfer fluid's thermal properties are a significant topic of current research. In this study, coal fly ash nanoparticles of 14 nm average diameter were dispersed in water to prepare stable nanofluid in the concentration range of 0.1–0.5% volume concentration. The nanofluid was stabilized and uniformly dispersed using an ultrasonic homogenizer with the addition of Triton–X 100 surfactant. The thermophysical properties, viz., thermal conductivity, viscosity, density, and specific heat of the nanofluid were measured in the temperature range of 30–60 °C. The maximum thermal conductivity and viscosity augmentation of 14 and 6.38% are observed for 60 and 30 °C, respectively, at 0.5% volume concentration compared to water at the same temperatures. The experiment results revealed that thermal conductivity, viscosity, and density increased while specific heat decreased with an increase in nanofluid concentration. Also, the thermal conductivity and specific heat increase, while viscosity and density decrease with an increase in temperature. The thermal conductivity of fly ash nanofluid is observed to be superior by 3.9% compared to SiO_2 nanofluid which can be due to its chemical constituents. Hence, fly ash particles are useful in heat transfer applications.

Keywords:
Fly ash nano fluids, ball mill, partical size, thermophysical properties, heat transfer**.**

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Particulate Science and Technology	39	Aug, 2020	597-606	Taylor & Francis	Q2

Paper No: PU-SOE - PET - 01

Effect and Optimization of Rheology Control Agent of Non-Damaging Drilling Fluid

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1. Assistant Professor, Dept. of Petroleum Engineering, Presidency University, Bangalore, India

Abstract

Drilling mud is one of the most important things in Oil and Gas well drilling operation. The most important is to decompose that used drilling mud. Conventional drilling mud is non-biodegradable in nature and harmsthe environment. In this study some specific biopolymerssuch as XC-polymer (XCP), pregelatinized starch (PGS) has been used tomake in laboratory called Non-Damaging Drilling Fluid (NDDF) which is biodegradable, environment friendly. XC-polymer generally used as a viscosifier which controlsthe viscosity of the mud. Pregelatinized starch (PGS) is used asfluid loss control agent. CalciumCarbonate is used as weighing and bridging material. Biocide is used to prevent the bacterial action in the drilling mud. A rigorous study has been performed on the mud properties and found their excellent role in respective purpose in the Reservoir Drilling Fluid (RDF)

Keywords:
Environment friendly, XC-polymer, PGS, NDDF, RDF

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Research Journal of Engineering and Technology (IRJET)	Vol. 7 (11)	Nov, 2020,	613-621	Fast Track Publications	NA

Paper No: PU-SOE- PET - 02

Formulation of a Rice Husk based Non-Damaging Drilling Fluid and its effect in Shale Formations

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2. Department of Petroleum Technology, Dibrugarh University, Dibrugarh- 786004, Assam, India

Abstract

Drilling a borehole is the most important process in the Petroleum Industry for crude oil or fossil fuel production. This facilitates via drilling fluid or mud for an efficient drilling operation to produce the crude oil. Conventional drilling fluid contains bentonite and barite which is a disadvantage for reservoir formations as these react with shale to cause extensive damage in the formation. Formation damage results in decreased productivity of the well thereby reducing its economic value and thus, this can be overcome by an unconventional fluid to produce the unconventional liquid. The unconventional liquid is crude oil or hydrocarbons which cannot be drilled or produced using the conventional method. Swelling and spalling also have big repercussion during drilling such as borehole collapse and stuck pipe using the conventional drilling fluid. In this work, counter these challenges, the unconventional fluid such as non-damaging drilling fluid (NDDF) of rice husk has formulated which is free of bentonite and barite. Rheological properties and shale stability test have investigated for the formulated NDDF. It is observed that the NDDF of rice husk has shown improvement in the rheological properties as compared to base mud. Also, the filtrate loss is reduced drastically in the presence of rice husk, which has the potential to minimize the formation damage and will be less reactive to the reservoir formations. NDDF is a polymer mud system free from clay or other materials which are used in the pay zone or production section and shale to minimize the formation damage. From the enhancing results of the shale stability test of rice husk based NDDF, this has prevented the swelling of the shale and highly helpful to enhance the wellbore stability which will be a potential advantage to the drilling operations of oil and gas industries.

Keywords:
Filtrate loss, Non-damaging drilling fluid (NDDF), Rheological properties, Shale stability, Water-based drilling fluids

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Energy and Climate Change	1	Dec, 2020	NA	Elsevier	NA

Paper No: PU-SOE - PET - 03

Clay Analysis of Upper Assam Basin for Chemical Enhanced Oil Recovery

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2. Department of Petroleum Technology, Dibrugarh University, Dibrugarh, 786 004, India

Abstract

The success and failure of different chemical enhanced oil recovery (CEOR) techniques can control to a large extent by the presence of different types of clay, its surface area and the reactivity of the clay with the injected chemicals during CEOR techniques. Therefore, reservoir clay analysis is important to study the CEOR process in general and to formulate the CEOR slug in particular. This study pertains to the underground porous media of upper Assam basin. In this paper effective porosity, absolute permeability, minerals and clays present in porous media is studied. Effective porosities were determined to estimate the total pore volume and more importantly the connecting pores and the throat volumes. The absolute permeability are exclusively the properties of the porous media, which determines the ease of flow of fluid through the porous media. Rock petrography study was done by examining the thin sections under optical microscope, Scanning Electron Microscope (SEM) and X-ray Diffractometer (XRD). From these studies the mineral and clay content of the reservoir was characterized, which helps to study the feasibility of a CEOR in upper Assam basin. This petrography study provides two and three dimensional accurate description of minerals of reservoir rock and clay particles. The porous media is a sandstone with high porosity and low absolute permeability. The clays present are smectite, kaolinite and illite with a dominance of smectite and kaolinite, conforming to the swelling and disintegration.

Keywords:
Chemical Enhanced Oil Recovery techniques, Scanning Electron Microscope (SEM) and X-ray Diffractometer (XRD),

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of the Geological Society of India	NA	Feb, 2021	NA	Springer	Q2

Paper No: PU-SOE- PET - 04

Real-time data analysis: An IoT-Based LoRAWAN-Enabled proposed method to reduce Non-Productive Time while Oil well fishing job in deviated wells

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3. Assistant Professor, Department of Petroleum Engineering, Presidency University, Bengaluru

Abstract

The oil and gas industry has been growing so fast due to modernization of new benchmark of technologies which plays a vital part for the economy of a country starting from day to day life of an individual to establishments like Industries, Corporations, Institutions etc. Reduction of Non Productive time in the oil industry has also a tremendous impact on the economy of a country. Whenever drilling operation is ceased or put into a halt for different reasons which cause unintentional delay, can be termed as Non-Productive Time (NPT) event. These NPT not only cause a delay in the completion of drilling operation but also it leads to spending extra money. The fishing operation, differential sticking, bad weather conditions, these are the few reasonsleading to NPT. Drilling in a deviated well is a complicated operation and maybe because of human or mechanical errors sometime we may encounter several problems. Managing such problems and reducing NPT should be one priority of a drilling operator. Whenever a junk falls into the wellbore, drill pipe got stuck or fall off, such objects are termed as Fish. It is important to retrieve such objects from the wellbore or else we can't continue the drilling operation. Removal ofbroken or unnecessary equipment from the wellbore is called Fishing operation. In this paper, we are proposing a methodology which can be implemented in the field to reduce the NPT during a fishing job. Throughout this paper, we will be discussing gathering Real-time data about a fish using LoRaWAN® technology which will help us to plan a proper fishing job in a deviated well.

Keywords:
Non-Productive Time, Fishing, LoRaWAN®, IoT, Deviated well

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Huazhong University of Science and Technology	50 (4)	2021	NA	Huazhong University of Science and Technology	Q4

Paper No: PU-SOE- PET - 05

Rice Husk as an additive for Drilling Fluid: A rheological and filtration loss investigation for Water based Drilling fluid

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Abstract

Requisition of efficient use of imprudent by- products for the enhancement of drilling fluid is preferentially beneficial for a hassle-free and relentless drilling process. Intricately designed drilling fluids have been used in the petroleum industry having significant properties to meet many operational requirements. The conventional methods are proven to be efficient in the current scenario, but they have limited capability and may not be suitable for future drilling operations due to the increasing challenges in the petroleum industry. A need exists for a strong, stable and customizable fluid which can not only satisfy the basic functions of a drilling mud, but also make productive use of waste products for its enhancement. Rice husks can be defined as the by-product generated by rice milling, since it is generated in large quantities, it is economical and easily available. Rice husks does not have any adverse effects on the environment. During the growing period of rice, the rice husks acts as a protective covering to the rice ,its utilization is not only limited to that , it can also be used as building material , fertilizer, insulation material and fuel . In the work we have attempted to use to use Rice Husk as an additive in Water Based Drilling Fluid (WBDF). The main components of Rice Husk are silica, cellulose and lignin. Rice plant collect Silicon from earth and store it in the hull. Study show that 50-70% of SiO_2 is present in Rice Husk Ash (RHA). Comparative analysis of the rheological and filtration loss properties for different sample of Drilling fluid been studied. Based on the comparative study it is observed that Rice Husk can be used as an additive to WBDF to maximize rheological and filtration loss properties. Hence, this paper will give the practicing engineer a thorough and complete outlook of the regularly faced challenges and will convey the scope in coming years. In our future studies we will focus to improve this paper such that it is beneficial for the future engineers and the developing technologies

Keywords:
Rich Husk, rheology, drilling fluid

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Drilling and Exploration World journal	NA	Sept, 2020	NA	DEW	NA

Paper No: PU-SOE - Physics - 01

Growth and Impedance analysis of pure TGAc and dye doped TGAc crystals- enhaced dielectric permittivity for energy storage devices

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Abstract

Herein, we delineate the enhancement of the dielectric properties of an anionic dye doped triglycine acetate crystal for the first time. Single crystals of pure triglycine acetate (TGAc) and reactive orange 16 (RO16) dye-doped (0.01, 0.03 mol%) triglycine acetate were synthesized with an intention to enhance the strengths of pure TGAc crystal using slow evaporation process. The crystalline structure and phase purity of the grown crystals were analyzed using Powder XRD studies. The frequency dependence of real and imaginary part of dielectric constant, loss tangent, real and imaginary part of impedance, electrical modulus and ac electrical conductivity have been investigated. The dielectric constant and dielectric loss for the grown crystals, have been found to decrease with increasing frequency. The decrease in permittivity and dielectric loss with an increase in applied field frequency is as per Maxwell–Wagner theory. The Cole–Cole plot implies that the mechanism of conduction is mainly due to bulk resistance. The enhanced dielectric constant of the doped crystals confirms the appropriateness of the developed crystals for energy storage capacitor applications.

Keywords:

Dye doped crystal, Dielectric properties, Electrical conducctivity

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
SN applied Sciences	NA	Aug, 2020	NA	Springer	Q1

Paper No: PU-SOE- Physics - 02

Phase stability and conductivity of rare earth co-doped nanocrystalline zirconia electrolytes for solid oxide fuel cells

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2. Presidency University, Itgalpur, Rajanakunte, Yelahanka, Bengaluru, 560064, India

Abstract

Solid oxide fuel cell (SOFC) is a green energy technology that directly coverts chemical energy into electricity. Scandia stabilized zirconia (SSZ) shows the highest conductivity among zirconia based electrolytes for SOFCs. However, the stability of the cubic phase, which is the desirable phase for high conductivity, can be an issue in SSZ electrolytes due to its transformation to other low-conducting phases at higher temperatures. In the present investigation, SSZ electrolyte was co-doped with ytterbia, gadolinia and ceria with an objective of improving the high-temperature phase stability. Both the doped and co-doped compositions exhibited a single cubic phase in the as-processed condition. The phase stability at high temperature was studied by aging the sintered pellets at 900 °C for 500 h in air. X-ray diffraction and transmission electron microscopy analysis revealed formation of small amount of the low-conducting tetragonal phase in 1 mol % ytterbia and gadolinia co-doped compositions on ageing which resulted in conductivity degradation. Increasing the doping level to 2 mol% prevented the formation of the tetragonal phase. The ceria co-doped composition (1 mol%), on the other hand, was clean without any sign of the secondary phases even after high-temperature ageing. The rhombohedral 'β' phase formed in the binary composition (SSZ) after sintering but was absent in all the co-doped compositions. The conductivity of the co-doped samples was higher than the binary SSZ. Thus, it can be said that rare earth co-doping is an effective way of improving the phase stability and conductivity of SSZ electrolytes.

Keywords:

Fuel cells, Nanostructured materials, Ionic conduction, Electro chemical impedance spectroscopy, Phase transitions

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Alloys and compounds	833	Aug, 2020	NA	Elsevier	Q1

Paper No: PU-SOE- Physics - 03

Structural, Microstructural, Electrical, and Magnetic Properties of $CuFe_{2-(x+y)}$ $Eu_xSc_yO_4$ (where x and y vary from 0 to 0.03) Nanoparticles

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Department of Physics, P.C. Jabin Science College, Hubballi, 580031, India

Abstract

In the present work, the CuFe2-(x+y) EuxScyO4 nanoparticles were prepared by solution combustion method for reporting the structural, microstructural, dielectric, and magnetic properties of prepared samples. The XRD (X-ray diffractometer) patterns confirm the spinel cubic structure with space group Fd3m. The average crystallite size was found in the range from 25 to 10 nm for x = y = 0.00, 0.01, 0.02, and 0.03 concentrations. The SEM (scanning electron microscopy) investigations indicate the porous nature and particle agglomeration. The elemental composition of the samples was studied by using energy-dispersive X-ray spectroscopy (EDS). The FTIR (Fourier transform-infrared spectroscopy) investigation shows the two absorption bands around 554.07 cm−1 and 468.98 cm−1 due to stretching vibrations of the Cu⇔Ometal-oxygen bond at the A-site and stretching vibrations of Fe⇔Ometal-oxygen bond at the B-site, respectively. The real and imaginary parts of dielectric constant, dielectric loss tangent, AC conductivity, and impedance spectroscopy have been recorded by the methods of impedance analyzer from the range 0.1 KHz to 1 MHz. The dielectric constant and dielectric loss show maximum value at smaller frequency region and are decreases with increase in frequency. AC conductivity increases with the increase of frequency. The real and imaginary part of impedance spectra as function of frequency was studied. The Cole-Cole plots drawn from the impedance spectra show one semicircle for each of the samples. The magnetic hysteresis loop reveals the soft ferromagnetic nature. The magnetic parameters such as saturation magnetization, coercivity, and remanence magnetization decrease with the increase of Eu3+ and Sc3+ concentration.

Keywords:
AC Conductivity, Scanning electron micrograph, Saturation magnetization, Solution combustion method

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Super conductivity and Noval Magnetism		Sept, 2020	3963–3973	Springer	Q3

Paper No: PU-SOE- Physics - 04

Investigation of kinetics and mechanistic studies of N-(2-hydroxyethyl) phthalimide by +1 halogen oxidant in acidic medium

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3. Department of Chemistry, Bangalore University, Central College Campus, Bangalore 560 001, India

Abstract

The oxidation of N-(2-hydroxyethyl) phthalimide (NHEP) by chloramine T (CAT) in perchloric acid medium has been investigated iodometrically at 298 K. The stoichiometry of the reaction was found to be 1:2. The oxidation products were identified by LC-MS analysis. Kinetic orders with respect to oxidant, substrate and acid concentrations were determined. Enhancement of rate observed with an increase in acid concentration. Effect of solvent polarity and ionic strength was studied. Addition of p-toluene sulfonamide (reductant) to the reaction mixture has no significant influence on the rate. The active species of the oxidant in acidic medium was ascertained. Plausible mechanistic scheme explaining all of the observed kinetic results have been proposed. The effect of temperature on the reaction rates has also been studied. Activation parameters and thermodynamic quantities were evaluated and discussed. The rate constant of the slow step of the reaction along with the equilibrium constants were also calculated.

Keywords:
NHEP-CAT redox system, Oxidation-kinetics, Rate law, Mechanism, Activation parameters

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Chemical Data Collections	29	Oct, 2020	3963–3973	Elsevier	Q3

Paper No: PU-SOE- Physics - 05

Effect of type of fuel used and calcination temperature on the disorder-order transformation of zinc aluminate spinel during combustion synthesis

Srinivas Reddy, G and Sharma, H and Bhaskar, P and Manjunatha

Abstract

Order-disorder transition for zinc aluminate samples synthesized via auto combustion synthesis method using different fuels (Citric acid, Glycine and Urea) were determined. The synthesized powders with various fuels are showing abnormal X-ray diffraction intensities, specifically in (331) and (400) reflections are too sensitive because of a significant amount of cations (Zn2+-tetrahedral site and Al3+- octahedral site) displaced from their ideal positions. With increase in calcination temperatures disorder to order transformation achieved through the diffusion of cations into the respective tetra and octahedral sites. Complete ordered structure attained at 750 Â°C for the sample synthesized with citric acid. However, powders synthesized with glycine requires high calcination temperature (1000 Â°C) due to the diffusion of the metal cations is severely impeded in powders of foam morphology. XRD and Raman results are corroborate with each other. Further, the UVV is and Photoluminescence studies for a sample with glycine as fuel is studied which shows the variation in band gap and narrowing of the emission band respectively.

Keywords:

Amino acids; Calcination; Citric acid; Energy gap; Fuels; Positive ions; Powder metals; Sodium Aluminate; Urea; Zinc compounds, Auto-combustion synthesis; Calcination temperature; Octahedral sites; Order transformation; Ordered structures; Synthesized powder; Tetrahedral sites; Zinc aluminate spinel, Combustion synthesis

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials Chemistry and Physics	253	Oct, 2020	123–388	Elsevier	Q2

Paper No: PU-SOE- Physics - 06

Structural, optical and photoresponse characteristics of metal-insulator-semiconductor (MIS) type Au/Ni/CeO_2/GaN Schottky barrier ultraviolet photodetector

Nanda Kumar Reddy, Nallabala, **Srinivas Godavarthi**, Venkata Krishnaiah Kummara**, Mohan Kumar Kesarla**, Debabrata Saha, Harish Sharma Akkera, Gopi Krishna Guntupall, Suresh Kumar, S.V. Prabhakar Vattikuti

Abstract

GaN based metal-insulator-semiconductor (MIS) type ultraviolet photodetector was fabricated and investigated using high-k dielectric CeO_2 as an insulating oxide layer. Using XRD analysis, the phase formation of the as-deposited CeO_2 films on GaN was found to be cubic fluorite. Non-contact mode atomic force microscopy technique was utilized and explored the surface morphology of CeO_2 films on GaN composed of prearranged clusters of spherical shape with an average rms surface roughness of 0.428 μm. XPS analysis has revealed the existence of two oxidation states such as Ce^{3+} and Ce^{4+} in the Ce3d spectral envelop. Using absorbance versus wavelength data, the Tauc's plot was plotted and calculated a direct optical bandgap of 3.52 eV. The current-voltage (I–V) characteristics extracted from the device revealed the symmetric behavior or formation of back-to-back Schottky barrier at the metal-semiconductor (MS) interface. Photoresponsivity of the device at +10 V bias was calculated as 28.99 A/W and it is higher compared to the values extracted from metal-semiconductor-metal (MSM) type UV PDs reported in the literature. Furthermore, the transient response characteristics of the prepared device showed good stability with almost same rise time and fall time of ~2.73 s and ~5.35 s, respectively. Based on the device performance, the proposed MIS type structure could be a suitable for the development of ultraviolet photodetectors.

Keywords:

NHEP-CAT redox system, Oxidation-kinetics, Rate law, Mechanism, Activation parameters

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials Science in Semiconductor Processing	117	Oct, 2020	NA	Elsevier	Q2

Paper No: PU-SOE- Physics - 07

Enhanced humidity sensing and magnetic properties of bismuth doped copper ferrites for humidity sensor applications

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Abstract

In present investigation, the $CuFe_{(2-x)}Bi_xO_4$ (where, x = 0.00, 0.01, 0.02, 0.03) nanoparticles synthesized by solution combustion technique using mixture of fuels as glucose and carbamide. The refined XRD (X-ray diffraction) patterns of the samples confirms the spinel cubic structure having space group *Fd3m*. The average crystallite size was found to be in nanometer. The lattice parameter, volume, strain and hopping lengths were estimated. TEM (Transmission Electron Microscopy) micrographs confirm the particles are agglomeration. SAED (Selected Area Electron Diffraction) pattern reveals the polycrystalline nature of the material. The magnetic nature of spinel ferrite can be explained by Neel's two sub-lattice model. In the present work, the observed decrease in magnetization can be ascribed to occupancy and migration of cations at/from B sites by the substitution of Bi^{3+} ions. The magnetic parameters such as saturation magnetization, remanent magnetization (M_r), coercivity field (H_c), remanence (S), uniaxial anisotropy (K_u) and cubic anisotropy (K_c) were estimated. The resistance and humidity sensing responses increases with increase of the Bi^{3+} concentration. The hysteresis curves reveal the desorption process is somewhat slower than the adsorption process. The sensing response time 73 s was recorded when sample was moved from 11% RH to 97% RH and the recovery time 36 s was recorded when sample was moved from 97% RH to 11% RH. The humidity sample shows exceptionally stable response at relative humidity 99% RH and 33% RH.

Keywords:

X-ray diffraction, Humidity sensors, Saturation magnetization, Hysteresis
Anisotropy

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Alloys and Compounds	848	Dec, 2020	NA	Elsevier	Q1

Paper No: PU-SOE - Physics - 08

Influence of Ga doping on structural, optical and electrical properties of transparent conducting SnO2 thin films

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Abstract

Different concentrations (1, 3, and 5 at %) of Ga doped SnO2 thin films were deposited onto glass substrate using sol-gel spin coating technique. X-ray diffraction studies revealed that all deposited films were exhibited tetragonal rutile structure of SnO2 with preferred orientation along (110) direction. The AFM micrographs shown that the grains are in spherical structure, and the average grain size decreased with the increase of Ga doped concentration in SnO2 lattice. In the visible light region, the average transmittance of pure SnO2 film found to be above 85%, whereas Ga doped SnO2 films were found to be a decrease of transmittance up to 74 % in 5 at % Ga doped SnO2 film. The optical band gap energy values were considerably decreased from 3.92 to 3.68 eV with the increase of Ga content. Further, the sheet resistance (Rsh) and resistivity (ρ) values were found to be increased with the increase of Ga doping. The efficiency parameter figure of merit (ϕ) was estimated for all deposited films and it was found to be decreased from 3.3 × 10-3 Ω-1 for pure SnO2 to 0.7 × 10-3 Ω-1 for 5 at % Ga doped SnO2 film.

Keywords:
Dye doped crystal, Dielectric properties, Electrical conducctivity

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Optik	226	Jan, 2021	NA	Elsevier	Q2

Paper No: PU-SOE- Physics - 09

^{59}Co Internal field NMR analysis of $Co_{35}Fe_{35}Ni_{30}$ alloy synthesized via novel low cost chemical reduction technique

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Abstract

We have synthesized ternary cobalt alloy using a chemical reduction process using hydrazine as a reducing agent . X-Ray Diffraction (XRD) measurements shows that the synthesized cobalt ternary alloy exists in the pure face centred cubic (*fcc*) phase with lattice parameter of 3.5562 ± 5 Å. The SEM micrograph shows that the particles exist in the spherical shape which suggests that the particles are crystallized in *fcc* phase. The magnetic properties are determined using Vibrating Sample Magnetometry (VSM) and ^{59}Co IFNMR technique. The saturation magnetization (M_S) of the synthesized sample is ~80 emu/g, a slightly lower value compared to the pure cobalt metal. ^{59}Co IFNMR technique shows that there is a broad distribution of hyperfine field (~6 T) compared to the pure *fcc* cobalt metal. Further, from the deconvoluted NMR peaks suggests that the variation in the nearest neighbours to the central cobalt atom leads to the different hyperfine field.

Keywords:
Ternary alloy, ^{59}Co IFNMR, *fcc*, VSM, XRD, $Co_{35}Fe_{35}Ni_{30}$

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Physics and Chemistry of Solids	148	Jan, 2021	NA	Elsevier	Q2

Paper No: PU-SOE- Physics - 10

Enhanced near-infrared luminescence at 1.07 µm of Nd^{3+} doped $PbCl_2$–$Li_2B_4O_7$ glasses for solid state laser and optical fiber amplifier applications

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Abstract

Nd^{3+} doped $PbCl_2$–$Li_2B_4O_7$ glasses have been synthesized using melt quenching technique. XRD spectra reveals the signature of non-crystalline behavior of synthesized glasses. DSC studies reveal glass transition temperature and thermal stability parameter (ΔT) exhibit composition dependent trends and ΔT is as high as 114 °C. UV–Vis spectra contain eleven well-defined absorption peaks with five intense absorption bands centered at 527, 586, 750, 806 and 876 nm which are assigned to transitions from $^4I_{9/2} \rightarrow {}^4G_{7/2}$, [$^4G_{5/2}$,$^2G_{7/2}$], [$^4F_{7/2}$, $^4S_{3/2}$], [$^4F_{5/2}$, $^2H_{9/2}$] and $^4F_{3/2}$ respectively. The maximum absorption cross section 1.139×10−20 cm^2 of 806 nm pump level transition $^4I_{9/2} \rightarrow$ [$^4F_{5/2}$, $^2H_{9/2}$] is comparable with maximum absorption cross section 1.149×10−20 cm^2 of 586 nm hypersensitive transition $^4I_{9/2} \rightarrow$ [$^4G_{5/2}$, $^2G_{7/2}$]. Near infrared emission spectra exhibit very high emission intensity at 1070 nm for $^4F_{3/2} \rightarrow {}^4I_{11/2}$ transition along with two dominant emission bands at 904 and 1340 nm corresponding to $^4F_{3/2} \rightarrow {}^4I_{9/2}$ and $^4F_{3/2} \rightarrow {}^4I_{13/2}$ transitions. This high absorption and emission intensities are attributed to high degree of covalent environment of ligands surrounding Nd^{3+} ions. Bonding parameter, δ increase with Nd_2O_3 content which suggests dominance of covalency between Nd^{3+} ion and ligands. ^{11}B MAS NMR studies reveal that, the addition of Nd_2O_3 to $Li_2B_4O_7$ converts diborate units into chain-like network structures such as charged trigonal borate units which is further supported by FTIR study. Two photon absorption coefficient shows linear relationship with optical band gap energy. Hence Nd^{3+} doped $PbCl_2$–$Li_2B_4O_7$ glasses with superior absorption and emission properties are found to be potential candidates for near-infrared solid state laser and optical fiber amplifier applications.

Keywords:
Thermal stability, Near-infrared luminescence, Metallization, Spectroscopy, ^{11}B MAS NMR,

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Optical Materials	111	Jan, 2021	NA	Elsevier	Q1

Paper No: PU-SOE- Physics - 11

Effect of Ti doping on Structural, Optical and electrical properties of SnO2 transparent conducting thin films deposited by sol-gel spin coating

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Abstract

In the present work, various concentrations of Ti (1, 2, 3, 4 and 5 at %) doped SnO_2 thin films were grown onto glass substrate using cost effective sol-gel spin coating method and subsequently investigated the effect of Ti doping concentration on structural, optical and electrical properties. X-ray diffraction studies revealed that all deposited films exhibit polycrystalline tetragonal rutile structure with fundamental orientation peak along (110) direction. Moreover, Ti doped SnO_2 films were started growing along (211) direction and it was more pronounced with increasing of Ti concentration. The average grain size was decreased with the increase of Ti concentration, confirmed by XRD and AFM studies. The UV–visible spectrometer measurements shown that the average transmittance of un-doped SnO_2 film was above 85%, whereas Ti doped SnO_2 films were found to be a decrease of transmittance up to 77% in 5 at% Ti:SnO_2 film. The optical band gap energy values were considerably decreased from 3.91 to 3.73 eV with increase of Ti content. Further, the sheet resistance (R_{sh}) and resistivity (ρ) values were found to be decreased with the increase of Ti doping up to 3 at % then it was slightly increased in 4 and 5 at % of Ti:SnO_2 films. The efficiency parameter figure of merit (φ) was also estimated for all deposited films with the function of Ti doping.

Keywords:
Spin coating, Transparent conducting oxides, Optical transmittance, Band gap energy, Figure of merit

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Optical Materials	113	Jan, 2021	NA	Elsevier	Q1

Paper No: PU-SOE- Physics - 12

The effect of nickel doping on the microstructure and conductivity of Ca(Ti,Al)O3–δ for solid oxide fuel cells

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Abstract

The ABO_3 type perovskite oxide-based ceramic membranes are one of the most important classes of materials for high-temperature solid oxide fuel cell applications. The acceptor-doped calcium titanate ($CaTiO_3$) perovskite has attracted considerable attention as an oxide ion-conducting membrane due to its potentially high ionic conductivity and excellent stability. Nonetheless, the ionic conductivity of the material must still be improved. Following the strategy of the substitution of dopants on the B-site, the current work is focused on exploring the effect of Al and Ni additions on electrical properties, by studying the nominal compositions $CaTi_{0.7}Al_{0.3-x}Ni_xO_{3-\delta}$ (x = 0, 0.1, 0.2 and 0.3). The materials were synthesized by the sol–gel method and studied as a function of phase composition, microstructure, and electrical properties. The results demonstrate an increase of both total and specific grain boundary conductivity with increasing Ni content, while predominant p-type behavior is shown under oxygen-rich atmosphere.

Keywords:

Spin coating, Transparent conducting oxides, Optical transmittance, Band gap energy, Figure of merit

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of the American Society	01	May 2021	17922	Elsevier	Q1

Paper No: PU-SOE- Physics - 13

Synthesis and characterization of multi functional nickel ferrite nano-particles for X-ray/gamma radiation shielding, display and antimicrobial applications

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Abstract

In the present communication, $NiFe_2O_4$ (NFO) nanoparticles (NPs) are synthesized by using solution combustion method. To know the phase purity, functional group, surface morphology, structural analysis and energy band gap, the synthesized sample was characterized by using the techniques such as powder X-ray diffraction (PXRD), Scanning electron microscopy (SEM), Fourier transmission infrared spectroscopy (FTIR) and UV–Visible spectrophotometer. The Bragg's reflection of PXRD confirms the formation of cubic NFO NPs with $Fd-3m$ space group. The SEM morphology shows the distribution of irregular shaped agglomerated NFO NPs and EDAX confirms the presence of Ni, Fe and O elements and absence of other impurities. The concentric circles observed in SAED pattern confirms the high crystallinity nature and the estimated crystallite size matches well with that of the crystallite size calculated from Scherrer's equation. The direct energy band gap calculated using Tauc's relation is found to be 5.2 eV. Further, the X-ray/gamma ray shielding properties of NFO NPs in the energy range 0.081–1.332 MeV using NaI (Tl) detector and multi channel analyzer (MCA) were measured. The measured shielding parameters are compared with the theory. Above 356 keV energy of X-ray/gamma ray, the measured shielding parameters agrees well with the theory, whereas slight deviation is observed below 356 keV. This deviation is mainly due to the influence of atomic size of the target medium. Hence, we can conclude that an accurate theory is necessary to explain the interaction of X-ray/gamma with the nano size atoms. The photoluminescence emission spectra consists of peaks at 448, 540 and 628 nm. The CIE and CCT coordinates clearly confirms that the present nanophosphor might find applications in display/cool white light LEDs. Furthermore, antimicrobial activity of synthesized NFO NPs are also studied. Viability test was conducted on two food borne pathogens such as *Bacilluscereus* and *Pseudomonasaeruginosa*. The material showed fairly good antimicrobial activity compared to streptomycin which was used treat a number of bacterial infections. Thus NFO material may unfold new prospects in the fields like shielding of X-ray/gamma ray, display and biomedical applications.

Keywords:

X-ray diffraction, Humidity sensors, Saturation magnetization, Hysteresis, Anisotropy,

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Physics and Chemistry of Solids	159	Dec, 2021	NA	Elsevier	Q2

Paper No: PU-SOE- Physics - 14

Influence of Al dopant on structural and magnetic properties of ZnO nanoparticles prepared by simple solution combustion method

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Abstract

Al doped ZnO nanoparticles (Zn1-xAlxO where x=0, 0.005, 0.01, 0.02, 0.03) were prepared by simple solution combustion method using stoichiometric composition of metal nitrates (Zinc nitrate and aluminum nitrate) as oxidizers and glycine as a fuel. The prepared samples were characterized by UV-Visible spectrophotometer, powder X-ray diffractometer (XRD), Scanning electron microscope (SEM) and energy dispersive analysis of X-rays (EDAX). UV-Visible spectral graphs of Al doped ZnO nanoparticles shows that the wavelength corresponding to maximum absorbance (λm) for Al doped ZnO samples is shifted to higher wavelengths compared to the undoped ZnO. This is attributed to the presence of allowed states near the conduction band in the energy band gap of Al doped ZnO samples. XRD patterns of the prepared samples can be indexed to wurtzite structure (JCPDS 89-0510) and no addition peaks were present showing the formation of single phase Zn1-xAlxO nanoparticles. It was observed that, the broadening of the diffraction peaks increases with increase of Al doping, which confirms the decrease of the crystallinity of the material. The average particle size of the samples was calculated by Scherrer's formula and found to be in the range of 14-29 nm. SEM images shows the formation spherical shape particles with high porosity and composition analysis of the prepared samples was confirmed by EDAX. The magnetic properties of the Zn1-xAlxO (x = 0, 0.005, 0.01, 0.02, 0.03) samples were measured using vibrating sample magnetometer (VSM) upto 10 kOe at room temperature

Keywords:
Al doped ZnO nanoparticles, Structural characterization, Magnetic properties.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Advanced Materials & Technology	NA	Mar, 2021	23-32	NA	NA

Paper No: PU-SOE- Physics - 15

Role of zinc sulfate on thermal and mechanical properties of borovanadate glasses

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Abstract

Zinc sulfate doped boro-vanadate glasses have been synthesized using melt quenching method. Amorphous character of glasses is verified by X-ray diffraction studies. Scanning electron micrograph reveals good homogeneous glass formation but consists of SO_4^{2-} nano clusters randomly distributed in the amorphous tissue. Glass transition temperature estimated from differential scanning calorimetric studies vary with glass composition. Ultrasound velocities, elastic moduli and Debye temperature decrease whereas Poisson's ratio increase with $ZnSO_4$ content. This occurs due to reduced network connectivities and weakening of the glass network. The above studies suggest that $ZnSO_4$ do not participate in network formation but dissolves isotropically which results in volume expansion and loose packing of network structure. FTIR studies reveal presence of $[B_2V_2O_9]^{2-}$ (type I and II), $[BO_{3/2}]^0$ and $[VOO_{3/2}]^0$ structural units which are characteristic of modified boro-vanadate glasses.

Keywords:
Boro-vanadate glasses, Poisson's ratio, Elastic moduli, Debye temperature

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materialstoday Proceedings	NA	May, 2021	NA	Elsevier	NA

Paper No: PU-SOE- Chemistry - 01

Mixed Ligand Cobalt and Palladium Complexes Containing Triphenylphosphine and a Hydrazone: Synthesis and Application in Non-Linear Optics

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Abstract

Mixed ligand complexes of cobalt and palladium containing triphenylphosphine and a hydrazone derived from furfural and hydrazine hydrate have been designed, synthesized, evaluated, and characterized from their spectral properties, elemental analysis, and magnetic susceptibility measurements. The spectral techniques suggest that the complexes exhibit square planar geometry. The monomeric properties of the complexes are evaluated from their magnetic susceptibility values. The complexes were subjected to z-scan analysis for third-order non-linear optical measurements. Non-linear transmission measurements performed using laser pulses at 532 nm in nanosecond indicate that the complexes may show good potential as optical limiters.

Keywords:
Furfural, metal complexes, mixed ligands, non-linear optical, optical limiting, z-scan

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Chemical Research	NA	July, 2020	NA	SAGE	Q3

Paper No: PU-SOE - Chemistry - 02

Physicochemical and non-linear optical studies of mixed ligand Cu(I), Fe(II) and Ru(II) complexes containing triphenylphosphine and a Schiffbase derived from furfural and hydrazine hydrate

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Abstract

Mixed ligand complexes of Copper, Iron and Ruthenium containing triphenylphosphine and a simple Schiff base made up of furfural and hydrazine hydrate have been synthesized and characterized by their UV, IR, NMR, elemental analysis and magnetic susceptibility measurements. The characterization techniques suggest that the copper complex exhibits four coordinated square planar geometry, the iron complex exhibits a five coordinated square pyramidal geometry and the ruthenium complex exhibits a six coordinated octahedral geometry. The monomeric nature of the complex is assessed from their magnetic susceptibility values. The third-order nonlinear optical parameters of the complex were investigated by Z-scan technique. Nonlinear transmission measurements carried out using nanosecond laser pulses at 532 nm show that the complexes can be used as potential optical limiters.

Keywords:
Mixed ligands, Metal complexes, Furfural, NLO, Z-scan, Optical limiting

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Chemical Data Collections	28	Aug, 2020	NA	Elsevier	Q3

Paper No: PU-SOE- Chemistry - 03

Preparation of Printable and Biodegradable Cellulose-Laponite Composite for Electronic Device Application

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Abstract

Printable and biodegradable printed circuit boards (PCBs) prepared by using cellulose as the continuous matrix, laponite as flame retardant filler with various weight ratio (0, 5, 10 and 20 wt% with respect to the α-cellulose quantity used to prepare the composites) and 1-ethyl-3-methylimidazolium acetate ([emim][OAc]) as the recoverable dissolution medium. Prepared cellulose-composites were subjected into physical, chemical, thermal, mechanical and biodegradation analyses to check the suitability of the cellulose-laponite composite for biodegradable electronic application. The addition of laponite into cellulose increased the degradation temperature, flame retardancy and decreased the mechanical properties of the cellulose-laponite composites. The surface nature of the cellulose composite converted from hydrophilic to hydrophobic (contact angle value increased in the range from 50° to 112°) by treating with relatively small amount of hydrophobizing agent (< 1 wt%). The conductive ink printing experiments on the composites explaining the role of hydrophobizing agent and laponite in the composites. Biodegradability of the cellulose was evaluated by enzyme treatments and derived the effect of laponite, hydrophobic agent and conductive ink.

Keywords:
α-Cellulose, Laponite clay, Ionic liquid, Hydrophobic agent, Biodegradable electronics

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Polymers and the Environment	29	Aug, 2020	17-27	Springer	Q2

Paper No: PU-SOE- Chemistry - 04

Design, synthesis and nonlinear optical characterization of novel mixed ligand ruthenium metal-organic complex

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Abstract

In the present study, novel mixed ligand ruthenium metal-organic complex (RuThAP) was designed and synthesized. The chemical structural analysis was performed using NMR, UV–Vis and FTIR spectroscopy. RuThAP/Poly (methylmethacrylate) (PMMA) films were successfully fabricated by homogeneously embedding RuThAP in optically inactive PMMA using spin-coating. Third-order nonlinear optical coefficients of RuThAP in liquid and solid phase were determined by Z-scan technique with nanosecond laser beam. RuThAP molecule exhibited strong reverse saturable absorptive ($\beta_{eff} = 8.81 \pm 0.88 \times 10^{-9}$ m/W) and negative refractive ($n_2 = -5.47 \pm 0.55 \times 10^{-9}$ esu) optical nonlinearity at 532 nm. The RuThAP molecule also demonstrated strong optical limitation with optical limiting clamping level as low as 38 μJ due to large absorptive optical nonlinearity. These results pave the platform for high efficient metal-organic/PMMA films based solid-state optical limiters with low cost, flexible, dependable and low optical loss.

Keywords:
NLO, Metal-organics, Optical limiting

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Optical Materials	107	Sept, 2020	NA	Elsevier	Q1

Paper No: PU-SOE- Chemistry - 05

A fundamental approach to compute atomic electrophilicity index

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Abstract

Electrophilicity index (ω) is an important theoretical construct of atoms and molecules and is widely used to understand various chemical phenomena and determine physico-chemical properties. Accordingly, it becomes useful to find an accurate expression for it which is free from any inconsistencies. In view of this, a simple yet rigorous expression is proposed to compute Electrophilicity Index. Since our model is based on ionization potential and electron affinity, it provides a more reliable measure for any electronic changes taking place in a species. Our suggested definition is free from any operational and dimensional discrepancies. We have reported atomic electrophilicity indices for 74 elements of the periodic table invoking our proposed ansatz. The proposed model follows all the sine qua non of existing scale of electrophilicity index. Electrophilicity Equalization Principle is also validated through our computed values. In general, the new expression appears to be powerful and suitable for application in diverse realms.

Keywords:
Density functional theory (DFT), Electron affirnity, Electrophilicity equalization principle (EEP), Ionization energy, Periodicity

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Mathematical Chemistry	58	Sept, 2020	NA	Springer	Q3

Paper No: PU-SOE - Chemistry - 06

A scale of absolute radii derived from electrophilicity index

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Abstract

Atomic radius plays a key role in the realm of science to understand atomic/molecular physico-chemical properties. Looking at the enormous potential this descriptor has, a model is proposed for absolute radius (r) in terms of electrophilicity index (ω). Atomic radii for 103 elements of the periodic table are reported. Considering the periodic relationship between absolute radius and atomic electrophilicity, this empirical model is proposed invoking regression analysis. The computed radii obey sine qua non of periodic properties. Relativistic effects are also distinct in the newly computed radii. On comparison, the computed data is noted to be in close conformity with the reported radii. Further, some size-dependent properties are calculated by employing the computed absolute radius. These present a substantial periodic behaviour and association with absolute radii.

Keywords:
Atomic radii, electrophilicity Index, periodic descriptor, hardness, polarizability

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Molecular Physics	119 (4)	Sept, 2020	1820594	Taylor & Francis	Q2

Paper No: PU-SOE - Chemistry - 07

Ruthenium-Benzimidazole complex: Structural, optical and solvent-free catalytic studies

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Abstract

Two different applications namely catalytic oxidation under solvent free conditions and optical power limiting studies were done on a mixed ligand ruthenium complex containing benzimidazole moiety and Triphenylphosphine. The complex was evaluated for its potential catalytic activity on the alcohol oxidation reaction in presence of hydrogen peroxide (30% aqueous solution) as oxidant to synthesize the corresponding carbonyls and the highlight of the process was that the reaction proceeded without the presence of any solvent. Excellent selectivity was achieved by the Ruthenium catalyst Ru (L) PPh_3Cl_2 for conversion of aromatic alcohols to aldehydes under milder conditions. One another application namely the non-linear optical activity was also studied. This activity of the complex was extracted at 532 nm wavelength, by the Z-scan method. The experimental result displays strong nonlinear absorption in the ruthenium complex and found to be 15.55 cm/W concluding that the complex displays superior optical limitation.

Keywords:
Mixed ligand, Ruthenium complex, solvent-free, alcohol oxidation, optical nonlinearity, z-scan

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Chemical Engineering Journal Advances	2	Oct, 2020	NA	ScienceDirect	Q1

Paper No: PU-SOE - Chemistry - 08

Correlation between the structure and dielectric constant of $Bi_{0.5}(Na_{1-x}Li_x)_{0.5}TiO_3$ ($0 \leq x \leq 0.20$) solid solutions

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Abstract

Bismuth sodium titanate $Bi_{0.5}Na_{0.5}TiO_3$ (BNT) is a lead-free piezoelectric ceramic material with high Curie temperature. The effect of substitution of the smaller ion Li^+ for the larger ion Na^+ in $Bi_{0.5}(Na_{1-x}Li_x)_{0.5}TiO_3$ ($0 \leq x \leq 0.20$) on the structure of BNT is studied using powder X-ray diffraction (XRD) and Raman spectroscopy. The Rietveld refinement analysis of the powder XRD patterns showed that all the compositions formed under the monoclinic Cc space group, with the lattice parameters showing minor changes above $x > 0.08$. Raman spectral parameters such as position and intensity of a peak also showed a similar trend in the same Li concentration range with increasing Li content. A corresponding change in the variation of the dielectric constant with increasing Li content is also observed, suggesting a close correlation between the crystal structure and dielectric properties of the different compositions in the $Bi_{0.5}(Na_{1-x}Li_x)_{0.5}TiO_3$ solid solution series.

Keywords:
$Bi_{0.5}Na_{0.5}TiO_3$, bismuth sodium titanate, dielectrics, lead-free ferroelectrics, Li substitution, Raman spectroscopy, structure-property correlation,

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
International Journal of Ceramic Engineering & Science	3 (1)	Dec, 2020	49-56	The American Ceramic Society	not yet assigned

Paper No: PU-SOE- Chemistry - 09

Mechanical Characterization of Polyurethane Foam and Hybrid Natural Fibre Based Sandwich Composite

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Abstract

The attention towards sandwich composites due to its enhanced strength and high stiffness to weight ratio is giving a new face to the era of modern engineering materials. Further, environmental issues have intended researchers to interchange synthetic fibres with natural fibres in the fabrication of polymer composites. This work makes an effort to synthesize and characterize the behavior of polyurethane foam core based sandwich composite. The specimens generated in this work to evaluate the properties are made to vary in terms of their core densities and skin configurations. The polyurethane foam based core has a uniform thickness and varying densities whereas the skin is varied by three different combinations which are completely natural using jute fibre, completely synthetic using glass fibre and a hybrid combination of natural and synthetic fibres. The mechanical characterization of the specimens involve tensile test, compression test and three - point bending test according to ASTM standards. The results from the investigation revealed that the strength of natural fibre could be enhanced by partially combining it with synthetic fibres and the mechanical properties of sandwich structures increases with increase in the polyurethane foam density.

Keywords:
Polyurethane foam, Jute fibre, Glass fibre, Epoxy resin, Sandwich composites

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
PalArch's Journal of Archaeology of Egypt / Egyptology	17 (9)	2020	5588-5604	ScienceDirect	Q3

Paper No: PU-SOE- Chemistry - 10

Facile One-pot Solvothermal Synthesis of NiCoP and Its Electrochemical Performance as Anode for Lithium Ion Battery

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Abstract

Herein, NiCoP is synthesized by simple solvothermal route and characterized for physicochemical properties and electrochemical characteristics. X-ray diffraction (XRD) confirms that the sample is formed in a pure phase. Cyclic voltammograms and charge–discharge profiles of electrodes exhibit peaks/plateaus corresponding to lithium intercalation/de-intercalation, which is characteristic of battery behaviour. The electrochemical evaluation as an anode for lithium ion batteries are studied in the 0.05–3.00 V range. With a high discharge capacity of 468 mAh g–1 at C/10 rate in the very beginning, excellent cycling stability and superior rate performance, NiCoP proves to be a potential candidate for anode material of lithium ion battery.

Keywords:
NiCoP, Li ion battery, anode materials, phosphides

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Bulletin of Materials Science	NA	Jan, 2021	NA	Springer	Q2

Paper No: PU-SOE - Chemistry - 11

Ionic liquid immobilized Cu (I)-Hydrazone-Triphenylphosphine Complex: An Easily recyclable Catalytic System for Suzuki and Heck Cross Couplings

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Abstract

A highly efficient, reusable catalytic system towards Heck and Suzuki cross-coupling reactions was observed for an inexpensive copper complex dispersed in ethyl-methyl imidazolium hexafluorophosphate medium, [EMIM] PF6. The reaction conditions were optimized by studying the effects of temperature, catalyst concentration, solvent and time. The method functions for a variety of substrates towards the cross coupling reactions. Most notably, the catalyst-ionic liquid mixture was easily recoverable and reused for six times without much loss in the catalytic activity, causing significantly a very low impact on the environment.

Keywords:
Copper complex, ionic liquid, immobilisation, Heck reaction, Suzuki reaction.

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Canadian Journal of Chemisxtry	99 (6)	June, 2021	NA	NA	Q2

Paper No: PU-SOE - Chemistry - 12

Photo Augmented Copper-based Fenton Disinfection under Visible LED Light and Natural Sunlight Irradiation

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Abstract

Copper-based Fenton disinfection system ($Cu(II)/H_2O_2$) is an emerging advanced oxidation process (AOP). Previous works have used reducing agents and organic ligands to improve the disinfection efficiency of $Cu(II)/H_2O_2$ system. Here, we report visible light/$Cu(II)/H_2O_2$ system showed enhanced disinfection compared to $Cu(II)/H_2O_2$ system, without the need of reducing chemical agent or organic ligand. Energy-efficient LED array was used as a visible light source in the visible light/$Cu(II)/H_2O_2$ system. Under the optimized condition, pseudo-first-order inactivation rate constant (k_{obs}) of *E. coli* by visible light/$Cu(II)/H_2O_2$ (0.613 ± 0.005 min^{-1}) was about ~8 times greater than $Cu(II)/H_2O_2$ (0.08 ± 0.011 min^{-1}). Scanning electron microscopy and Baclight Live/Dead assay proved enhanced cell membrane damage by visible light/Cu (II)/H_2O_2 in comparison with Cu (II)/H_2O_2. Based on the bovine serum albumin (BSA) degradation and $OH^{\cdot}$ radical measurement by visible light/Cu (II)/H_2O_2, a ligand to metal charge transfer (LMCT) mechanism by Cu(II)–bacterial complex is proposed for enhanced disinfection. Electrical energy efficiency ($E_{E,1}$) for a log reduction of *E. coli* and the total treatment cost of visible light/$Cu(II)/H_2O_2$ was determined to be 32.64 KWh/m^3 and 350 ₹/m^3 (3.9 €/m^3 or 4.74 \$/m^3), respectively, indicating its cost-effectiveness. Disinfection efficiency by sunlight/$Cu(II)/H_2O_2$ system (solar irradiance; 746 ± 138 W/m^2) was almost comparable to LED-based visible light/$Cu(II)/H_2O_2$ system, with total treatment cost estimated to be 80 ₹/m^3 (0.9 €/m^3 or 1.1 \$/m^3).

Keywords:
Disinfection, LED, Fenton, Bacteria, Advanced Oxidation Processes

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Water Research	190	Feb, 2021	NA	Elsevier	Q1

Paper No: PU-SOE- Chemistry - 13

Novel Nano Corrosion Inhibitor, Integrated Zinc Titanate Nano Particles: Synthesis, Characterization, Thermodynamic and Electrochemical Studies

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Abstract

A novel corrosion inhibitor named integrated zinc titanate nano particles ($ZnTiO_3$) has been reported along with its synthesis and physico-chemical characterization studies like Scanning Electron Microscopy (SEM), Energy Dispersive Spectroscopy **(**EDX) and Fourier Transform Infrared Spectroscopy (FTIR). Thermodynamic parameters i.e., Mass loss, Langmuir adsorption and effect of temperature have been explored and observed the significant enhancement in corrosion inhibition efficiency with increasing doses of the synthesized inhibitor. However, on elevated temperatures, corrosion efficiency has been found in decreasing manner. The synthesized material has been tested for its corrosion inhibition efficiency on mild steel (MS) in HCl medium using Electrochemical methods like Potentiodynamic Polarization and Electrochemical Impedance Spectroscopic (EIS) studies. Studies revealed that it is an efficient corrosion inhibitor showing cathodic type of inhibition activity on MS.

Keywords:
Zinc titanate, Nano corrosion inhibitor, Mild steel, Corrosion inhibition efficiency, electrochemical studies

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Surfaces and Interfaces	22	Feb, 2021	NA	Elsevier	Q1

Paper No: PU-SOE- Chemistry - 14

NiCo-layered double hydroxides: Design and electrochemical studies

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Abstract

NiCo-layered double hydroxides (NCLDH) prepared by adopting a simple one step sol–gel method with the aid of a gelation agent propylene oxide. The prepared compound is evaluated for its crystalline structure, morphology and surface area and electrochemical performance as supercapacitor electrode material. The specific capacitance of as-synthesized NCLDH is 950F/g, when the electrodes cycled in 6 M potassium hydroxide at 5 mV/s. Remarkable specific capacitance can be held responsible for porosity with considerable surface area. This material can be a competitive one among high performance supercapacitor electrode material with significant charge storage capacity.

Keywords:
Nickel cobalt double hydroxides, Layered double hydroxides, Supercapacitors, Electrodes

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials Today: Proceedings	NA	Mar, 2021	NA	Elsevier	not yet assigned

Paper No: PU-SOE- Chemistry - 15

Influence of Calcium Silicate and Hydrophobic Agent Coatings on Thermal, Water Barrier, Mechanical and Biodegradation Properties of Cellulose

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Abstract

Thin films of cellulose and cellulose–CaSiO3 composites were prepared using 1-ethyl-3- methylimidazolium acetate (EMIMAc) as the dissolution medium and the composites were regenerated from an anti-solvent. The surface hydrophilicity of the resultant cellulose composites was lowered by coating them with three different hydrophobizing agents, specifically, trichloro(octadecyl)silane (TOS), ethyl 2-cyanoacrylate (E2CA) and octadecylphosphonic acid (ODPA), using a simple dipcoating technique. The prepared materials were subjected to flame retardancy, water barrier, thermal, mechanical and biodegradation properties analyses. The addition of CaSiO3 into the cellulose increased the degradation temperature and flame retardant properties of the cellulose. The water barrier property of cellulose–CaSiO3 composites under long term water exposure completely depends on the nature of the hydrophobic agents used for the surface modification process. All of the cellulose composites behaved mechanically as a pure elastic material with a glassy state from room temperature to 250 ◦C, and from 20% to 70% relative humidity (RH). The presence of the CaSiO3 filler had no effect on the elastic modulus, but it seemed to increase after the TOS surface treatment. Biodegradability of the cellulose was evaluated by enzyme treatments and the influence of CaSiO3 and hydrophobic agents was also derived.

Keywords:
α-cellulose; CaSiO3 ; ionic liquid; coatings; hydrophobic agent coatings; biodegradability

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Nanomaterials	11 (6)	2021	1-17	MDPI Multidisciplinary	Q1

Paper No: PU-SOE- Chemistry - 16

Exploration of Ruthenium (III) Chloride catalysis on oxidative conversion of aryloximes to arylaldehydes with bromamine-B: A kinetic and mechanistic approach Authors

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Abstract

Conversion of aryloximes to corresponding arylaldehydes is an important oxidative transformation in synthetic chemistry. In the course of this research, optimum conditions for the facile oxidation of benzaldehyde oxime and p-substituted benzaldehyde oximes viz., phydroxybenzaldehyde oxime, p-methoxybenzaldehyde oxime, p-bromobenzaldehyde oxime and p-nitrobenzaldehyde oxime (aryloximes) with bromamine–B (BAB) catalyzed by ruthenium (III) chloride (RuCl3) in perchloric acid (HClO4) medium have been kinetically investigated at 303 K. All the five aryloximes follow identical kinetics with a first-order dependence of rate on [BAB]o, fractional-order each on [aryloximes]o and [RuCl3], and an inverse fractional-order on [H+]. Activation parameters have been evaluated. Oxidation products were characterized by spectral analysis. Under the identical set of experimental conditions, the kinetics of catalyzed reactions has been compared with uncatalyzed reactions and found that the catalyzed reactions are 4–6 folds faster. Isokinetic temperature is found to be 338 K. The catalytic constants (Kc) have been calculated at different temperatures and the values of activation parameters with respect to the catalyst have been evaluated. Spectroscopic evidence for the formation of 1:1 complex between BAB and RuCl3 has been obtained. The observed results have been explained by a plausible mechanism and the related rate law has been deduced. The present method offers many advantages including high conversion, short reaction times and the involvement of nontoxic reagents.

Keywords:
RuCl3-catalysis, Aryloximes, Arylaldehydes, Bromamine-B, Oxidation.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of University of Shanghai for Science and Technology	23(5)	May, 2021	240-261	University of Shanghai for Science and Technology	NA

Paper No: PU-SOE- Chemistry - 17

Removal of color from real textile dyeing effluent utilizing tannin immobilized jute fiber as biosorbent: optimization with response surface methodology

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Abstract

The present study explored an efficient technoeconomic method for treating intensely colored dyeing effluents from a commercial source. Firstly, the adsorption efficacy of jute fiber (JF) was enhanced through grafting with tannin, a natural polyphenol, via incorporation of active epoxy groups by epichlorohydrin onto fiber surface. The effect of different experimental parameters (e.g., initial pH, adsorbent dose, temperature, and contact time) on extent of color removal was evaluated performing batch studies. A full factorial central composite design (CCD) in response surface methodology (RSM) was applied to optimize the decolorization process for achieving maximum color removal (99.5%) at pH 4.9, adsorbent dose 11.8 g/L, temperature 30 °C, and time of contact 117.8 min. The isotherm and kinetic studies of the process revealed that Langmuir model and pseudo-second-order model provided best fit, yielding high correlation coefficients ($R^2 > 0.997$). Significant desorption (76%) of the spent adsorbent by 0.1 M NaOH solution suggested that this tannin-modified JF can find a prospective practical application as a novel, inexpensive, and potential bioadsorbent to treat the dyeing effluent.

Keywords:
Jute Fibre; Bioadsorption, Textile Waterwaste, Response surface methodology, Chemical modification.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Environmental Science and Pollution Research	28	April, 2020	NA	Springer	Q2

Paper No: PU-SOE- Chemistry - 18

A New Approach to Compute Atomic Electrophilicity Index in terms of Gordy's Electronegativity

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Abstract

Electrophilicity index is a well-known Conceptual Density Functional Theory–based reactivity descriptor to explain a wide range of physicochemical behaviours. In the present work, an attempt is made to evaluate a new electrophilicity index scale in terms of nucleophilicity index relying on Gordy's electronegativity scale. The computation is performed for 103 elements of the periodic table invoking regression analysis. The new set of electrophilicity index satisfies the sine qua non of a standard scale. Electrophilicity Equalization Principle is also validated by our computed data. It is put forward that the new scale will be useful in understanding various physicochemical properties and related phenomenon.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of chemical research	45	Feb 2021	1747-5198	Scopus	Q4

Paper No: PU-SOE- Chemistry - 19

Nano NiO-an efficient and a reusable catalyst for the one-pot synthesis of novel tetrahydropyridine-3-carboxylates under sonication

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Abstract

An elegant, atom efficient protocol for the synthesis of a series of pharmacologically interesting polysubstituted tetrahydropyridine-3-carboxylates has been developed *via* a one-pot four-component cyclocondensation reaction of Meldrum's acid, arylaldehydes, aromatic amines and ethyl cyanoacetate catalyzed by NiO nanoparticles in ethanol under ultrasound irradiation. In comparison with the reported methods, our approach is convenient and offers several benefits such as milder reaction conditions, shorter reaction time, excellent yields, and use of reusable catalyst and is environmentally benign. We have herein demonstrated a successful conjuction of NiO nanoparticles and sonication in the synthesis of tetrahydropyridine-3-carboxylates by multicomponent approach.

Keywords:
NiO nanoparticles Ultrasonic irradiation Tetrahydropyridine-3-carboxylates One-pot synthesis Multicomponent reaction

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
MaterailToday Proceding	45	May 2021	4064-4066	Scopus	Not yet assigned

Paper No: PU-SOE- Chemistry - 20

Studies on Sodium lauryl sulphate supported Thorium (IV) phosphate: A New Surfactant supported Cation exchange resin, Useful in Water Purification

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Abstract

Background: With increasing population and decreased quality of drinking water, there is a great demand for the development of new materials and methods that can find applications in the purification of water. This paper presents our small effort from pollution to solution by presenting the synthesis method of new sodium lauryl sulphate supported thorium (IV) phosphate, its characterization, and disquisition of analytical applications by executing some dual separations of calcium.

Methods: Sodium lauryl sulphate thorium (IV) phosphate was synthesized by sol gel method. The synthesized exchanger was characterized by some physico-chemical studies like powdered X-ray diffraction, Scanning electron microscopy, Thermo gravimetric-differential thermal analysis, EDAX and Fourier transform-infrared study and was also checked for its competency towards the ion exchange processes and in analytical chemistry.

Results: The prominent characteristic of Sodium lauryl sulphate supported Thorium (IV) phosphate has been its tremendously high ion exchange capacity for sodium ions (3.10 meq/g) which is almost two and half times more than the exchange capacity of Thorium (IV) phosphate (ThP), i.e., 1.3 meq/g. The material was resulted in fibrous sheet which is quite thermally, mechanically stable and poorly crystalline. The material has shown selectivity towards $Ca2^{+}$ and $Hg2^{+}$ ions.

Conclusion: The synthesized cation exchange material has been found quite thermally stable, showing drastically high exchange capacity and selectivity towards $Hg2^{+}$ and $Ca2^{+}$ metal ions which might be because of the use of an anionic surfactant, sodium lauryl sulphate while synthesis of Th (IV) phosphate which has played a key role in enhancing the exchange capacity and adsorption of specific metals as well. Therefore, based on the results obtained, the above said materials can find applications in water purification processes and also, in environmental pollution control where removal of $Hg2^{+}$ and Ca2+ is required.

Keywords:
Sodium lauryl sulphate, Surfactant, Surfactant supported cation exchanger, Thorium(IV) phosphate, Water purification, Water treatment

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Current Analytical Chemistry	NA	Aug, 2021	NA	Bentham Science	NA

Paper No: PU-SOE- Chemistry - 21

Polarizability: A Promising Descriptor to Study Chemical-Biological Interactions

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Abstract

Recently, we have defined atomic polarizability, a Conceptual Density Functional Theory (CDFT)-based reactivity descriptor, through an empirical method. Though the method is empirical, it is competent enough to meet the criteria of periodic descriptors and exhibit relativistic effect. Since the atomic data are very accurate, we have applied them to determine molecular polarizability. Molecular polarizability is an electronic parameter and has an impact on chemical–biological interactions. Thus, it plays a pivotal role in explaining such interactions through Structure Activity Relationships (SAR). In the present work, we have explored the application of polarizability in the real field through investigation of chemical–biological interactions in terms of molecular polarizability. A Quantitative Structure–Activity Relationship (QSAR) model is constructed to account for electronic effects owing to polarizability in ligand–substrate interactions. The study involves the prediction of various biological activities in terms of minimum block concentration, relative biological response, inhibitory growth concentration or binding affinity. Superior results are presented for the predicted and observed activities which support the accuracy of the proposed polarizability-QSAR model. Further, the results are considered from a biological viewpoint in order to understand the mechanism of interactions. The study is performed to explore the efficacy of the computational model based on newly proposed polarizability and not to establish the finest QSAR. For future studies, it is suggested that the descriptor polarizability should be contrasted with the use of other drug-like descriptors.

Keywords:
Polarizability, Conceptual density functional theory (CDFT), Chemical reactivity descriptor, Quantitative, structure–activity relationship (QSAR), Chemical–biological interactions, Depolarization

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Molecular Diversity	25	Mar, 2020	249-262	Springer	Q2

Paper No: PU-SOE- Chemistry - 22

Codeposition of electroless Ni-P/ZnO nano composites and evaluation of corrosion resistance of the coatings

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Abstract

Codeposition of nano ZnO with Ni-P coatings was carried out on 99% pure copper substrates. The ZnO nano particles were prepared by simple Sol-Gel method using Zinc acetate dihydrate as precursor. The particle size of the same was found to be <100 nm. The process optimization for codeposition of nano ZnO with Ni-P coatings was carried out by varying the composition of nano ZnO particles using ultrasonicator. An adherent and uniform coating of Ni-P/ZnO was obtained. Presence of ZnO in the coatings was confirmed by EDAX. Surface morphology of the coatings was studied by SEM which shows the smooth homogenous surface in Ni-P/ZnO composite coating. Corrosion resistance of the coatings was evaluated by Salt spray test and Galvanostatic Polarization method using 5% NaCl solution. Corrosion resistance of the Ni-P and Ni-P/ZnO nano composite coatings were compared. Incorporation of nano ZnO in the coatings found to enhance the corrosion resistance and microhardness of the coatings.

Keywords:
Codeposition, Sol-gel process, Electroless, TGA, Polarization, Salt spray test

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
MaterailsToday Proceding	45 (4)	Apr, 2021	3837-3840	Elsevier	not yet assigned

Paper No: PU-SOE – Mathematics -1

The Minimum Mean Hub Energy of certain graphs

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Abstract

For the last few decades, many researchers interested on the study of electron energy and which leads to study the application of graphs. In the present study, the minimum mean hub energy for a graph has been introduced and energies for some standard graphs with bounds has been established.

Keywords:
Hub Set, Hub Matrix, Minimum Mean Hub Energy of a graph

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
ADV MATH SCI JOURNAL (Open acess)	9	2020	6809-6816	math journal	Q4

Paper No: PU-SOE- Mathematics - 2

Control of buoyant flow and heat dissipation in a porous annular chamber using a thin baffle

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Abstract

This paper reports the numerical simulations on buoyant thermal transfer inside the finite porous cylindrical annular region with a thin circular baffle attached to inner cylinder. The main objective of this investigation is to provide a detailed impact of baffle on flow and heat transport rates due to the direct relevance of this problem to the design of heat exchangers. The side walls of annular enclosure are maintained at uniform, but different temperatures, while the top and bottom walls are insulated. The Brinkman-extended Darcy model is adopted for the momentum equations, and simulations of the governing PDEs are performed using the ADI and SLOR algorithms. The predictions from the present simulations detected that the size and position of baffle has predominant impact on buoyant flow and thermal transport characteristics. It has been detected that the thermal dissipation rates could be enhanced by positioning the baffle near the upper boundary, while increasing the baffle length leads to the reduction of thermal transport. The size and location of baffle emerges out as an important quantity in regulating the global thermal transfer through modifying the flow regimes in the annular geometry. Interestingly, the magnitude of flow circulation enhances with an increase in Rayleigh and Darcy numbers for any baffle length and position.

Keywords:
Annulus enclosure, Baffle, Porous, Darcy-Brinkman model, Finite difference method

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Indian Journal of Physics	32	May, 2021	NA	Springer	Q2

Paper No: PU-SOE – Mathematics - 3

Meromorphic solutions of some non-linear qq-shift difference equations

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Abstract

With the help of Nevanlinna theory, we investigate the existence of meromorphic solution of certain class of q-difference differential equations and consequently we are able to show that no transcendental meromorphic function with some conditions will satisfy such equations.

Keywords:
qq-difference differential polynomial of f(z)f(z), meromorphic function f(z)f(z), Nevanlinna theory, order of f(z)

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Tbilisi Mathematical Journal	13 (3)	Sept, 2020	53-62	NA	not yet assigned

Paper No: PU-SOE- Mathematics - 4

Degree Sequence of Graph Operator for some Standard Graphs

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4. Department of Mathematics Vijayanagara Sri Krishna Devaraya UniversityBellari, India

Abstract

Topological indices play a very important role in the mathematical chemistry. The topological indices are numerical parameters of a graph. The degree sequence is obtained by considering the set of vertex degree of a graph. Graph operators are the ones which are used to obtain another broader graphs. This paper attempts to find degree sequence of vertex–F join operation of graphs for some standard graphs.

Keywords:
Degree sequence, graph operators, standard graphs

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Applied Mathematics and Nonlinear Sciences	5(2)	Aug, 2020,	99-108	Sciendo	Q1

Paper No: PU-SOE – Mathematics - 5

Buoyant convective transport of nanofluids in a non-uniformly heated annulus

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Abstract

This paper reports the influence of non-uniform thermal conditions on buoyancydriven convection of water based nanofluids in a cylindrical annulus. Annular geometry is formed by two upright co-axial cylinders. In this analysis, two different non-uniform temperature profiles are applied at bottom boundary, while the side boundaries are kept at lower temperature and top boundary is taken as thermally insulated. For the first case, the bottom boundary is sinusoidally heated, while linear thermal profile is applied in the second case. The annular gap is filled with water based nanofluids with copper nanoparticle. Using ADI based finite difference technique, the model equations are solved for vast range of parametric values. Numerical simulation results reveal the bi-cellular flow pattern for both non-uniform thermal conditions at all range of Rayleigh numbers. Further, the heat transport rates are highly sensitive to nonuniform conditions supplied at the bottom wall. The results of this analysis could be utilized for applications involving non-uniform thermal conditions in an annular geometry.

Keywords:
Nanofluids, copper nanoparticle, co-axial cylinders, non-uniform temperature

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Journal of Physics: Conference Series	1597	2020	NA	The Electrochemical Society	not yet assigned

Paper No: PU-SOE- Mathematics - 6

The Minimum Mean Hub Energy of Certain Graphs

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Abstract

For the last few decades, many researchers interested on the study of electron energy and which leads to study the application of graphs. In the present study, the minimum mean hub energy for a graph has been introduced and energies for some standard graphs with bounds has been established

Keywords:
Hub Set, Hub Matrix, Minimum Mean Hub Energy of a graph.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Advances in Mathematics: Scientific Journal	9	2020	6809–6816	NA	not yet assigned

Paper No: PU-SOE – Mathematics - 7

Bilateral Relation for Generalized Hypergeometric Function with Sylvester Polynomial

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Abstract

In the field of special functions, bilateral generating relations play a vital role. In the present investigation, it is to obtain a bilateral generating relation of a Generalized Hypergeometric function with modified Generalized Sylvester polynomial. Some of the applications of it as special cases also discussed

Keywords:
Bilateral generating relations, Generalized Hypergeometric function, Laguerre Polynomial, Modified generalized Sylvester polynomial.

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Advances in Mathematics: Scientific Journal	9 (7)	2020	4729 – 4736	NA	NA

Paper No: PU-SOE- Mathematics - 8

Bilateral Generating Function for Genralized Hypergeometric Function

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Abstract

In the theory of special functions, bilateral generating relations plays a vital role. In the present investigation, it is to obtain a bilateral generating relation of a Generalized Hypergeometric function with Cesaro polynomial. Later some of the applications of it as special cases.

Keywords:
Generating functions, Group-Theoretic Method, Hypergeometric Polynomials, Mathematics Subject Classification

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Jour of Adv Research in Dynamical & Control Systems	12 (2)	NA	NA	JARDCS	Q3

Paper No: PU-SOE- Mathematics - 9

Optimization of thermosolutal convection in vertical porous annulus with a circular baffle

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Abstract

An enclosed annular geometry with a conducting baffle attached to one of the thermally active walls aptly represents many scientific applications. This article reports the thermosolutal convection in a vertical cylindrical porous annulus with a thin baffle attached to an inner cylinder. The vertical left and right walls of the annular space are differently heated, whereas the top and bottom walls are thermally insulated. A finite difference method based numerical technique has been adapted to solve the governing model equations. Numerical simulations are carried out for various parameter ranges in the interest of capturing the influence of thermal Rayleigh, Darcy and Lewis numbers, buoyancy ratio, baffle length and location on flow pattern, heat and mass transport. From the numerical results it is found that, the heat and mass transport can be effectively enhanced or suppressed by the appropriate choices of baffle length and location. In particular, the thermal and solute transport rates are suppressed with the length of baffle. However, transport rates can be enhanced by positioning the baffle towards top adiabatic wall. Numerical predictions made in this analysis can be utilized for the design of heat exchangers and chemical impellers.

Keywords:
Thermosolutal convection, Porosity, Annulus, Baffle

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Thermal Science and Engineering Progress	20	Dec, 2020	NA	Elsevier	Q1

Paper No: PU-SOE – Mathematics - 10

Conjecture of LU, LI AND YANG Concering Diffferential Monomials

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Abstract

This paper aims to prove the uniqueness result for differential monomial of an entire function and its higher order derivative sharing polynomials under suitable conditions. In this regard, the concepts of normal families are employed to obtain the result. Examples are provided to reinforce the sharpness of the conditions considered.

Keywords:
Viscous dissipation, Grashof number, Brinkmanna number, Darcy number, porus media

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Tbilisi Mathematical Journal	10(1)	Sept, 2020	137-143	NA	not yet assigned

Paper No: PU-SOE- Mathematics - 11

Some results on uniqueness of meromorphic functions concerning differential polynomials

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Abstract

In this paper, we study the uniqueness problem of certain differential polynomials generated by two meromorphic functions. The results of the paper extend some recent results due to Meng and Li (J Anal 28:1–6, 2019).

Keywords:
Meromorphic functions, Differential polynomials, Weighted sharing, Uniqueness

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Analysis	29	Apr, 2021	NA	Springer	not yet assigned

Paper No: PU-SOE – Mathematics - 12

Results on meromorphic and entire functions sharing CM and IM with their difference operators

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Abstract

In this paper, we study the value distribution of finite order meromorphic, entire functions and their difference operators sharing CM and IM. Our results in this paper improve and generalizes the corresponding results from Dong-Mei Wei and Zhi-Gang Huang.

Keywords:
meromorphic functions; entire functions; difference operator; uniqueness.

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Journal of Mathematical and Computational Science	11(4)	Apr, 2021	5012-5030	SCIK Publishing Corporation	NA

Paper No: PU-SOE- Mathematics - 13

A note on uniqueness of transcendental entire functions concerning differential-difference polynomials of finite order

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Abstract

In this paper, using the notions of weakly weighted sharing and relaxed weighted sharing we study the uniqueness problems of differentialdifference polynomials of transcendental entire functions that share a small function. The results of the paper extends the theorems given by Pulak Sahoo and Gurudas Biswas.

Keywords:
Entire function, Differential-Difference polynomials, Uniqueness, Small function.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Electronic Journal of Mathematical Analysis	9 (1)	Jan, 2021	248-260	Academic Press Inc.	Q1

Paper No: PU-SOE- Mathematics - 14

Results on uniqueness of product of certain type of shift polynomials

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Abstract

In this paper, using the concept of fixed point sharing with finite weight, we investigate the value distribution and uniqueness of product of certain type of difference polynomials. The results of the paper improve, extend and generalizes the results due to Renukadevi S. Dyavanal and Rajalaxmi V. Desai [19].

Keywords:
Entire function, Differential-Difference polynomials, Uniqueness, Small function.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Poincare Journal of Analysis and Applications	7 (2)	Dec, 2020	197-210	Poincare Publishers	Q4

Paper No: PU-SOE – Mathematics - 15

Uniqueness problem for differential polynomials of fermat-waring type

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Abstract

In this paper, we discuss the uniqueness problem for differential polynomials (P n(f))(k) , (Qn(g))(k) sharing the same values, where P = f d + a1f d−m + b1f d−m+1 + c1 and Q = g d + a2g d−m + b2g d−m+1 + c2 are polynomials of Fermat-Waring type. On non-Archimedian field, f and g are meromorphic functions.

Keywords:
Nevanlinna theory, non-archimedean meromorphic functions, FermatWaring polynomial.
Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Electronic Journal of Mathematical Analysis and Applications	9 (2)	July, 2021	158–165	Academic Press Inc.	not yet asigned

Paper No: PU-SOE- Mathematics - 16

Inverse domination in circular arc graphs

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Abstract

The intersection graph of a set of arcs on the circle is called a circular-arc graph. Circular-arc has one vertex for each arc in the set and an edge between every pair of vertices corresponding to arcs that intersect. Let 1 2 { , ,....., } C c c c = n be family of arcs on a circle. In this paper we are taking circular arcs such that if we remove 1 c then there will be a disconnection between left end side intersecting arc of 1 c and right end side intersecting arcs of 1 c .We are writing an algorithm to find an inverse of dominating set with respect to a minimum dominating set of a circular-arc family

Keywords:
Inverse dominating set, Inverse domination number, Circulare-arc graph.
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
European journal of Moleculur and clinical medicine	7 (8)	2020	2793-2799	Ubiquity Press	Q4

Paper No: PU-SOE- Mathematics - 17

Total coloring of quasi-line graphs and inflated graphs

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Abstract

A total coloring of a graph is an assignment of colors to all the elements (vertices and edges) of the graph such that no two adjacent or incident elements receive the same color. A claw-free graph is a graph that does not have K1,3K1,3 as an induced subgraph. Quasi-line and inflated graphs are two well-known classes of claw-free graphs. In this paper, we prove that the quasi-line and inflated graphs are totally colorable. In particular, we prove the tight bound of the total chromatic number of some classes of quasi-line graphs and inflated graphs.

Keywords:
Total coloring, claw-free graphs, circular interval graphs, quasi-line graphs, inflated graphs

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Discrete mathematics, algorithms and applications	1 (11)	Dec, 2020	NA	World Scientific Publishing Co. Pte Ltd	Q3

Paper No: PU-SOE – English- 01

Good Touch and Bad Touch: The Relevance of the Tactile in Toni Morrison's 'Love'

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Abstract

The concern with the different kinds of touches to sensitize people especially children has been a discussion in recent times. The importance of identifying the nature of a touch and deriving meaning out of it is essential to respond to it. This response can affect an individual's understanding of oneself and things around. Hence, it can arguably be considered as life-defining.

The attempt of this study is to explore the impact and relevance of the tactile in the personal journey of the characters in Toni Morrison's novel 'Love'. The focus is on the main characters 'Heed' and 'Christine' and the moment of 'touch' that redefined their relationship. The character of Junior, a wild and modern girl, is also a victim of touch and ironically is healed towards the end by Romen's caring touch of her wounded heel. Touch, therefore, becomes a weapon of power, exploitation, abuse, sexual harassment and sometimes assurance in the novel. The effort is to build a case for the characters in failing or succeeding to empower themselves as a result of the perennial impact of the touches they had experienced in the past and the present.

Keywords:
Touch, exploitation, sensitize, perennial impact, empower

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	12 (9)	2020	366-370	Science Press	Q2

Paper No: PU-SOE – English- 02

Role of Digital Language laboratory for teaching LSRW

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Abstract

Language learning is unique its scope is extensively used. It does not limit its purpose as material to procure grades in academics alone. Listening, writing, speaking & reading build up as blocks to lay the foundation of communication. Efficiency in these facets are certain to win well in career and life. Skill in communicating enables you to placements and accolades. Listening carefully, responding with clarity in pronunciation is vital.' Is a language lab useful for students?" and "How do language labs help in improving students?" are the two important concerns that need to be answered At present there is a need for the students of engineering to improve their skills in communication. This will facilitate their job opportunities. This paper aims at empowerment of students in the acquisition of certain skills which includes the (soft skills and Software Etiquette).The pupils can benefit from the language labs in independently and interactively .The role of a teacher as a facilitator completes the network with the implementation of the technical inputs .This pattern is learner centric and will certainly breathe life into the avenues of second language learning for engineering students.

Keywords:
Language skills, ELT, language and technology, language labs, Innovative Teaching, Learning Methods
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Dogo Rangsang Research Journal	10 (11)	Nov, 2020	130-134	DRS Research Journal	UGC Care Group I Journal

Paper No: PU-SOE – English- 03

Identity Crisis and the Struggle of the Minorities as seen in Mohsin Hamid's “The Reluctant Fundamentalist"

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Abstract

Mohsin Hamid’s The Reluctant Fundamentalist focus on the Identity crisis and the present day American minorities. Hate crimes have doubled and reached peak since September-11, 2001 attacks. The trend has taken a different dimension like assaults, shootings, threats of violence. According to the statistics of F.B.I, hate crimes against minorities increased around 78 percent, over the course of 2015.

The paper discusses the identity struggle of a minority Muslim in America. The character Changez is a well-educated personality, who struggles to find his own identity as his personal, social and political experience lead him to take a difficult step in his life.

Keywords:
Identity crisis, Fundamentalism, Post 9/11 scenario, otherness, hybrid.
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
GIS SCIENCE JOURNAL	7 (11)	Nov, 2020	976-981	NA	UGC Care Group-II

Paper No: PU-SOE – English- 04

Predictment of Palestinian Literature

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Abstract

Palestinian literature, which is a part of Arabic literature, has been marginalized for numerous reasons in academics. Modern Palestinian literature as a category can be traced to the British Mandate and to the establishment of Israeli State in 1948. The War of 1967 which aggravated the situation led to the continuance of Israeli Occupation. In the backdrop of these circumstances, a literature that can be identified as Palestinian has emerged and taken shape as the one lending voice to the sufferings of Palestinians. Military censorship, confiscation and banning of the books and death threats have been common experiences for Palestinian intellectuals. This paper introduces Palestinian literature and the challenges faced by the Palestinian authors in the process of writing, publishing and circulating Palestinian literature to the global market. It also focuses on the way that Palestinian writers respond to Israeli domination through literature.

Keywords:
Israeli Occupation, Censorship, Marginalization, Palestinian Literature, Arab-Israeli War.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Dogo Rangsang Research Journal	10 (12)	Dec, 2020	161-165	Dogo Rangsang Research Society	UGC Care

Paper No: PU-SOE – English- 05

Hugo's attempts to reconstruct society in the novel, Les Miserables

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Abstract

The study intends to analyze Les Miserables, a historical novel written by Victor Hugo that reflects the author's intention and vision for society. The novel depicts the miserable situation in which the lower class is placed in society and the humanity is totally neglected. Hugo is at his best attempts to bring in the ideology of socialism inorder to trigger the false consciousness of the people in society. The main protagonist, Jean Valjean in Les Miserables is a converted religious man who transforms himself from convoy to the responsible mayor. With the portrayal of another important character, Monseigneur Myriel, the bishop of Digne holds the crux of the story. Les Miserables analyses the comprehension of Hugo's ideological transformation of the ideal society. The characters like Javert and Jean Valjean are created to enhance the social relations and the ideology clashes that triggers to the normative development of society. The conflict arouses in Javert's mind and the transformation of Jean Valjean emphasizes the social change and social reconstruction. While Javert represents how the social conditions suppress the ideology of a person and what leads to his inability in accepting any possible circumstances that can contribute to changes in society. He is of the view that the juridical obligations create a negative impact of consciousness in society. In Les Miserables, with the portrayal of characters like Jean Valjean and Javert, Hugo describes the notions of literature, ideology and social construction. Thus, the research analyses the transformation of author's ideology and draws the basic necessity to reconstruct society by a deliberate attempt of criticizing it.

Keywords:
Ideology, socialism, socialist, social construction, revolutionary, false consciousness

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Dogo Rangsang Research Journal	10 (12)	Dec, 2020	119-125	Dogo Rangsang Research Society	UGC Care Group I Journal

Paper No: PU-SOE – English- 06

The East and the West Conflict in Amitav V Gosh's Novel the Calcutta

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Abstract

Though Amitav Gosh had an upbringing in the west, he is able to portray the true Indian cultural mileu in his novels. He uses his novels to display the rich hues of our country. Colonialism had made us to depend on the British for social and political needs. The imperialists enforced the western education system for us. This had a lot of adverse effects on us. The effect of this system bore its effects on writers, as they began to wield their pen for English words. The Calcutta Chromosome presents a scientific -religious sect, led by Mangala and her assistant Laakhan. This sect had been active since the colonial times. The group had meddled in the process of the discovery of plasmodium. The novel depicts the mystery represented by the sect. The author is able to weave several narrative strands, each has a different chronotypes. In this novel Mangala's sect builds a knowledge system which is alternative to that of science. But it was not the opposite of it. Both these seem to cross borders ' this adds to the momentum to the plot as it brings two different ways .One is counter science while the other is traditional science. Mangala's group goes beyond the limit between self and other. This is so central to Western epistemology. The use of silence as their method and the rhizomatic organization of its encyclopedia implies the fact that complete knowledge is unattainable. This removes the subalterns from the gaze of western epistemology. Ghosh highlights the aspect of the western scientist, Ross getting the acclaim for his discovery, while Mangala and her chromosome is kept under wraps. Ghosh deflates the pompousness of the west by deterring his credit. Murugan becomes his mouthpiece when he says so Murugan tries to establish the fact that Ross's research was controlled by two members of "dhooley bearers'. He make a reference of Lakaan and Mangala. The flair of Ghosh is made better by the fact that he never preaches. Nor does he take sides. There will be an important character who is pitching to be on the other side. This article tries to portray Gosh's views on the ideas and counter ideas, as he puts science against myth, belief against skepticism, progress/ survival against environmentalism, the rustic against the refined, the east against the west.

Keywords:
Science, malaria, Chromosome, Indian, orient, Western

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Dogo Rangsang Research Journal	11 (1)	Jan, 2021	71-75	Dogo Rangsang Research Society	NA

Paper No: PU-SOE – English- 07

Resistance in Manjula Padmanabhan's Lights out and Mahesh Dattani's bravely fought the Queen

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Abstract

Drama has been playing a major role in human expression since the time immemorial. It provides a large canvas to portray evils of society. The contemporary scholars have chosen drama as medium to express their concerns on social issues through use of plethora of techniques and props such as dialogue, agit-prop, story-telling, narration etc. Indian English Drama, has been received and relished by almost all the sectors of society, who are involved aesthetically and enthusiastically with entertainment, art and awareness. This genre of English Literature has given immense opportunities to one and all to open new horizons for our society to explore and also has swept out the deepest, darkest and ugliest truth out in the sun. Gender and categorization did not play an important role until the playwrights and novelists like Mahashweta Devi, Manjula Padmanabhan, Vijay Tendulkar, Girish Karnad and Asif Currimbhoy initiated to bring the utter purpose of literature into the limelight by writing about the subaltern condition of women and also the price they paid for their liberation. Indian English Drama has played an important role in showcasing the role of women in Indian society. The paper intends to look at the theme of resistance in Manjula Padmanabhan's Lights Out and Mahesh Dattani's Bravely Fought the Queen through the lens of a woman. The paper will bring the resistance shown by female characters in the plays. The women have always played a subservient role to man in the patriarchal society. The paper will deal with issues of gang rape, homosexuality and disability.

Keywords:
Resistance, Patriarchy, Rape, Homosexuality, Disability

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Dogo Rangsang Research Journal	11 (1)	Jan, 2021	145-150	DRS Research Journal	UGC Care Group I Journal

Paper No: PU-SOE – English- 08

Thematic Concerns in the post Apartheid Novles of Nadine Gordimer and J M Coetzee

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Abstract

South African texts published after the first democratic elections in 1994 are commonly referred to as post-apartheid literature because, despite the lingering after-effects of the former political system, this event marked the eradication of legalized racial segregation. Post-apartheid writing is marked by an abrupt shift away from a racial focus towards a wider concern with all the many and various dimensions of human existence. The end of apartheid witnessed the emergence of new social problems that writers have attempted to confront in their works. This major political shift prompts many questions. What happens to the many committed writers who used to denounce political oppression in their texts? What themes do they take up? Whether the South African writers would be able to adjust their writing to the new political climate, since the end of racial oppression implies liberation from the old racial discourse. How different will their literature be from the literature written during the apartheid period? This paper tries to explore these possibilities. The paper tries to analyze critically the different themes and topics of South African novelists-Nadine Gordimer and J M Coetzee-and a thorough study of their novels-Disgrace and The Pick Up–written during this period looking for the new dimensions and new themes that they focus on.

Keywords:
Post-apartheid, themes, racism, oppression, social evils

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
John Foundation Journal of EduSpark	3 (1)	Mar, 2021	NA	John Foundation	NA

Paper No: PU-SOE – English- 09

Aesthetizing Trauma: The Politics of Narration in Margaret Atwood's Surfacing

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Abstract

The field of trauma literature has received critical attention from Freudian and Lacanian perspectives in works of theorists like Cathy Caruth, Shoshana Felman and Geoffrey Hartman. Understanding trauma in fictions, poetry, short stories and plays under the lens of socio-cultural framework has also remained under discussion. Comparative approach for in-depth understanding of trauma in works of literature has been carried out to explain the formation of cultural identities. This paper endeavours to present how experience of trauma becomes symbolic expression through a critical reading of Margaret Atwood's 'Surfacing'. Another aim of this paper is to analyze the author's approach in representing multiplicity of aesthetic emotions through the protagonist's voice of narration. The methodology is to focus on the theoretical premises on narrative structures given by Gerard Genette in 'Narrative Discourse: An Essay in Method' and by Roland Barthes in 'An Introduction to the Structural Analysis of Narrative' to comprehend the politics of narration in 'Surfacing'. A critical study of the narrative technique of 'Surfacing' would reveal how language in symbolic ways operates in representing surplus emotions which aesthetically empowers the novel. This paper seeks to elaborate that narration of trauma emotions can be achieved through metaphorical language.

Keywords:

Trauma Fiction, Trauma Emotions Narrative Structure, Symbolic Expression.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Dogo Rangsang Research Journal	9 (2)	April, 2021	NA	Drishti: the Sight	UGC Care Group I Journal

Paper No: PU-SOE – English- 10

Use of Silence and Sound in the Novel 'Life of Pi' and its Movie Version: An Insight

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Abstract

It is known fact that both the novels and its films, adapt different modes to communicate and bring out the same story. A novel makes use of words, clauses, phrases, sentences and paragraphs which bring out the meaning in an organized order. Movie on the other hand uses the logic of image which is combined with speech, gestures, music, dialogue, colors, movemelit, costume and many others to make it more effective.

lt should be noted that a movie is not always about sound but silence also. But silence play s an important i ole to a very great extent. Silence and sound are two very different and contradictory aspects. In fact silence has always been an integral part of any films for that matter. It is true that silence has branched out over the years. In this paper priority is to make an effort to view both silence and sound as modes to understand and explore the themes and the ways in which they bring out the stop. Here both novel and its adapted version will be closely analyzed to understand the correlation of silence and its various interactions between silence and the sound, music and dialogue and how sound can co-exist with silence to make the impact more convincing. This paper is a combined study of music, sound, visuals and silence to understand their effects in inducing emotions. An effort will be made to understand the equilibrium connection between silence and sound in all forms used in the novel Life of Pi, written by Yann Martel for which he won the 'Booker Prize Award', and the film version directed by Ang Lee, which won many awards which includes 'Academy Award for Best Music and 'Academy Award for Best Visual Effects'.

Keywords:

Silence, Sound, Film, Correlation, Interaction, Text

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Dogo Rangsang Research Journal	11 (5)	May, 2021	173-177	Dogo Rangsang Research Society	NA

Paper No: PU-SOE – English- 11

Violence Inflicted Upon Women in the Narrative of Sahar Khalifeh

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Abstract

Sahar Khalifeh works herald an era when there was a political turmoil in Palestine. Israeli forces had occupied many territories of Palestine, including the West Bank. Sahar Khalifeh has been the most outspoken writer of the genre. She has been able to depict the harsh realities of Palestinian's life under the Israelites. Though most of her works are political in content, she focusses on issues of gender discrimination that is faced by the Arab women in various arenas. The main argument of this paper is the introspection into the different forms of physical violence that the women endured by being submissive and subjunctive in a male dominated society. This paper throws light on the way the writer has challenged the androcentric order which is the root cause of patriarchal domination. This hegemony had its severe repercussions on the women. This paper focuses on two Arabic novels of Sahar Khalifeh, which have been translated into English. The names of the novels are The Inheritance, The Image, the Icon and the Covenant.

Keywords:
Patriarchy, Violence, Wife beating, Honor Killing, Domestic Violence

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Sahityasetu	11 (3)	June, 2021	2249-2372	NA	NA

Paper No: PU-SOE – English- 12

Teaching Business English for Commerce Students- ATask-Based Approach

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Associate Professor & HOD, Presidency University, Bengaluru, Karnataka, India, 560064

Abstract

Globalization has made English language learning a necessity. Efficient English language communication is essential for professional development. It is one of the most needed employment skills. Though all the language skills are important, the aural and oral skills are neglected in classroom. The reasons for these remain the prescribed text book and exam pattern. Listening and speaking skills form the major part of language learning. Those are the skills which are very important in the job market. Enhancing these skills is the main aim of the English classes at all levels. Through task-based approach, the researcher expects to enhance the aural and oral skills in the Commerce students. The study explores the possibilities of tasks and text book content to practice real life communication to enhance professional English. In this frame, the tasks suitable the for the selected lessons are suggested, concentrating on task sequencing in an increasing difficulty level and to meet the demands of the language skills to be enhanced in the graduate students. The findings of the research show that the lessons in the text book could be imparted through Task Based Approach to develop the listening and speaking skills. The limited time frame for a semester is the limitation to implement the Approach to teach the lessons included in the text book. The study suggests ideas to overcome the limitation and include task-based teaching using the text book.

Keywords:
Business English, Commerce, Tasks, lessons, language, skills.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
PalArch's Journal of Archeology of Egypt/ Egyptology	18 (9)	July, 2021	393-402	PalArch Foundation	Q3

Paper No: PU-SOE – English- 13

Facilitating ESL learner's language skills using interaction based activities

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Abstract

English language learners at all proficiency levels, need to speak and understand spoken English for a variety of reasons. They engage in interactive, communicative activities in all aspects of the class—from ice-breaking activities, goal-setting to lifeskills, needs assessment, grammar, phonics, and spelling. The most important outcomes of interaction include motivation, feedback, and the ability to adapt content to a learner's needs. In addition, research on second language acquisition proposes that effective learning takes place when students are engaged in relevant tasks within a dynamic learning environment rather than in conventional teacher-led classes (Moss & Ross-Feldman, 2003). Learning is greatly improved when learning environments support learners to experience real world complexity, with support. People don't learn well by being fed with the information. They learn best by engaging in meaningful activity. The current article brings forth various activities that encourage student's interaction which in turn facilitates their language skills. The best activities are those that mirror the way the content is used in the real world

Keywords:
Communicative activities, language acquisition, dynamic learning

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of English Language, Literature and Translation Studies,	6(4)	Dec, 2020	234-238	NA	Peer reviewed

Paper No: PU-SOM - 01

How Internet of Things Can Enhance the Performance of Food Supply Chain Networks: An Analysis

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3. Associate Professor, School of Management, Presidency University, Bengaluru, Karnataka

Abstract

The paper gives an overview of how Internet of Things (IoT) is important at various levels in the Food Supply Chain Networks (FSCN). Important technological benefits of IoT in enhancing the performance of supply chain networks are covered. Various benefits of IoT in the context of changing supply chain scenarios and various cases of business operations where IoT would be beneficial are considered. Benefits of IoT in the supply chain network operations related to food supplies and various supply chain processes are compared with other information technologies. As technology evolves and matures, it becomes imperative to be integrated into ongoing operations of FSCN, thereby offering the prospects of enhancing its efficiency. Most of the conventional supply chain operational processes are getting enabled technologically, leading to increased content of information through supply chain, thereby making supply chain enriched with information. The benefits are found to be more useful in managing the logistics of Food Supply Chain (FSC). The paper observes that it is possible to conceptualize and design how IoT can be represented as a structured framework which can be integrated into the FSCN to enhance the performance of services

Keywords:
Innovations; Internet of Things; Agriculture; Statistical methods; Food; Networks; Logistics; Sensors; Supply chains

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
IUP Journal of Operations Management	19 (3)	Aug, 2020	50-63	IUP Publications	Q1

Paper No: PU-SOM - 02

Impact of Self Help Groups (SHGS) on Income and Employment Generation of Rural Microenterprises; With Special Reference to Nellore District of Andhra Pradesh.

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Abstract

One of the hindrances of the MSME (Micro Small and Medium Enterprises) sector development is that the shortage of or insufficient formal financial services. Within the case of rural microenterprises, especially women entrepreneurs availing institutional credit is one of the toughest jobs because they're excluded socially and economically by the society. The govt has been considering women as a possible human resource and implementing many welfare schemes to uplift them. The Self Help Group (SHG) Bank Linkage Programme bridging the financial gaps of poor women and ladies entrepreneurs in rural segments. SHGs are acting as an empowerment tool for rural women entrepreneurs by proving rural credit. The target of the study to seem at the impact of the Self Help Group (SHG) on income and employment generation of rural microenterprises. The study depends on the first data, collected with the assistance of a questionnaire and in-depth interviews from Self Help Group (SHG) promoted women microenterprises in rural segments of the study area. There are around 2854 micro-enterprises within the Nellore district of Andhra Pradesh. The study is based on 200 Self Help Group (SHG) promoted women microenterprises from rural segments. Statistical tools used for they are correlational analysis, confirmatory correlational analysis, and structural equation modeling (SEM) to examine the impact of Self Help Groups on microenterprises development. The findings of the study indicate a significant statistical relationship.

Keywords:
MSME, SHGs, Inclusive Growth, Women Empowerment

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Critical Reviews	7 (19)	2020	4317-4332	Innovare Academics Sciences	not yet assigned

Paper No: PU-SOM – 03

Forecasting Butyl Price: A Case of India's Tire Industry

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2. School of Management, Presidency University, Bangalore - 560 064. India

Abstract

In this work, a modest attempt was taken to forecast Butyl prices in setting market prices of tires more accurately because it is an important issue for managers of firms in the tire industry. In this context, two types of models were taken into consideration on the basis of sources of information (i.e. analogous time series or conventional time series). A linear regression model and a Box – Jenkins autoregressive integrated moving average (ARIMA) model were fitted to data on Exxon Butyl price (EBP), Russian Butyl price (RBP), and Crude oil price (RBRTE). Results showed that the ARIMA model was superior to the regression model in case of predicting Butyl prices. Marketing practitioners will benefit from the findings of this work in various aspects such as in setting tire prices more precisely. Moreover, the findings should assist managers in managing inventory costs more accurately. This study showed how a significant improvement can be achieved at a much lower cost and with a much lesser effort for forecasting Butyl prices in case of the tire industry.

Keywords:
Butyl, Prices, ARIMA, Regression, Prediction.

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Indian Journal of Marketing	50	Sept, 2020	8-18	Associated Management Consultants Private Limited	Q3

Paper No: PU-SOM - 04

Commercial Vehicle Sensors: Awareness and Impact of automated driver assisted features on customers

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Abstract

Driver information systems are the most important units of the vehicle network which helps the driver as well as the customer to aware about the vehicle sensors.Vehicle innovation is progressing at a quick pace and numerous of vehicles on the road have advanced automated driver assist features. Advance sensor-based vehicles can possibly change car business and all aspects of the network will be influenced. Instrument clusters form an integral part of these systems which are synchronized using controller area network. The colour coded tell-tales and gauges are vital in life threatening situations like brake failure, engine malfunction, etc. It is prudent that all the functionalities of a given instrument cluster are perfect to the mark including the response times, buzzer warnings, etc.Due to various varieties of mandatory and optional sensors, drivers are facing complexity to figure out their requirement in head-up displays. However, sensors in HUDs are important for the safety of passengers and maintenance of vehicle and if advance self-sufficient sensors are received in the correct way, they will give huge financial, ecological and social advantages. Thus, knowing the customer perception about the importance, frequency of usage, rating, satisfaction level of all the sensors in HUD is being required to analyze in in a proper way.Therefore, this review towards satisfaction of drivers to these sensing systems is quite significant. The real time data has been collected from the respondents by preparing structured questionnaire and the collected data is analyzed using multivariate analysis like factor analysis. It is found that the selected attributes are grouped into five component which are highly correlated and helps the respondents to identify the best sensor devices for different category of vehicle.

Keywords:
Instrument cluster, Head-Up-Display, Sensing Systems, Driver Satisfaction, Factor Analysis

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Asian Journal of Research in Marketing	9 (5)	Oct, 2020	1-15	Indian Journals	Q1

Paper No: PU-SOM – 05

An Examination of Interrelationship between Central and States Taxes in India before and after Implementation of GST: A Johansen Cointegration Approach

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Abstract

GST in India has been introduced with effect from 1st July 2017 as an integrated nation wise tax under the notion of 'one tax, one country'. Its taxing mechanism is based on a dual model where both the Centre and the States levy taxes on the same transaction, at the same rate and on the same tax base. It has brought a complete shift from origin based taxation to destination based taxation. This paper seeks to examine the interrelationship of the Central taxes with the States taxes in both pre-GST and post-GST period in India. For study purposes, data for 38 years from 1980-81 to year 2018-19 has been selected and analysed by applying Johansen-Juselius cointegration model. The results indicate a weak association between the Central and the States taxes in India in pre-GST period, which was thus providing room for tax evasion practices. However, after implementation of GST, the scattered Central and States taxes have been converted into one unified whole and an efficient taxing system has emerged which is curbing evasion practices not only in indirect taxes but also in direct taxes domain.

Keywords:
Origin based tax; Destination based tax; Dual GST; CGST; SGST; IGST; Input tax credit.

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
VISION: Journal of Indian Taxation	7 (2)	Dec, 2020	1-16	Journal Press	NA

Paper No: PU-SOM - 06

Efficiency Seeking Foreign Flows in Indian Automobile Sector

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Professor, School of Management, Presidency University, Bengaluru

Abstract

India remains the fastest growing economies and the top market for attracting FDIs in the world. The Country has also seen a sizeable inflow of foreign investments in manufacturing sector. Among the manufacturing sectors, the automobile sector tops the list of the largest attracter of foreign flows. A firm's performance is measured through key financial ratios, market performance, and efficiency. Studies focused on efficiency have benchmarked firms for its operations and cost effective performances. Firms reach level of efficiency, when they are able to produce maximum output with a given amount of input. Indian Government's new policy regime on Foreign Direct Investments has invited 100 per cent FDI in Indian Automotive sector. Capital is a key factor to the production and foreign capital, which aim at maximizing investment need and look for efficient firms. In this context, the study focuses to measure efficiency of Indian automobile firms and to relate foreign flows in those companies as a result of efficient operations. The purpose of the study is to classify the firms which are efficient from the inefficient and to test whether the efficient firms attract better foreign capital. The study has been conducted for selective automobile concerns in India for a period of last 10 years.

Keywords:
Automobile sector, Capital Investment, Efficiency, Foreign Direct Investment, Manufacturing sector.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
RVIM Journal of Management Research	12 (2)	Dec, 2020	16-22	RVIM Journals	NA

Paper No: PU-SOM – 07

Artificial Intelligence Augmentation in Blood Transfusion, Bio-Chemistry, and Hematology of Digital Pathology: A Comparative Performance Evaluation on Pathology Labs and Corporate Hospitals located in Bengaluru

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2. Research Scholar, School of Management, Presidency University Bengaluru, India
3. Research Scholar & Assistant Professor, Department of Management Studies Surana College, Bengaluru, India

Abstract

Artificial intelligence augmentation is increasingly incorporated in the medical and healthcare sphere, especially in the pathology arena of Blood transfusion, Biochemistry, and Hematology, towards detecting and analyzing diseases and disorders. Hence, it is important to understand the implications of artificial intelligence on humanity with the pathology's innovation practices. The pathology laboratories and hospitals need to incorporate artificial intelligence into specific functions and sub-functions of result-oriented specialties to create effortless healthcare activities. This study was undertaken with selected pathology laboratories and healthcare organizations in Bengaluru that have access to digital initiatives and artificial intelligence into their business process for the last three years and examine the performance on three result-oriented functions in which artificial intelligence is incorporated. This article studies on the potential competencies of artificial intelligence augmentation and builds awareness in the healthcare sector on the capabilities of augmenting the right intelligent systems enables in streamlining the activities carried out in the pathology lab and exhibits that on what organization need and how technological advancement and innovation helps in improving the organizational performance and notifies that if the performance improvement measures are followed with continuous update and maintenance, only then innovations in healthcare result in success.

Keywords:
Artificial Intelligence, Augmentation, Blood Transfusion, Biochemistry, Hematology, Pathology

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
International Journal of Engineering Trends and Technology(IJETT)	68 (12)	Dec, 2020	132-139	Seventh Sence Research Group	NA

Paper No: PU-SOM - 08

Consumer Attitude & Preferences towards Online Shopping

Dr N Srikanth Reddy, Angkita Borpatra Gohain, Dr. Neel Kamal Purohit, Archana Saikia
Assistant Professor, Presidency University, Bangalore

Abstract

As the computer literacy is increasing day-by-day, the prospect of online marketing is also increasing. Since use of internet is independent of time and geographical boundaries in which millions of people are always online throughout the world hence, they all are potential customers in the online market. Seeing this vast customer market thousands of companies jumped in to the online business but it is important for the online shopping service providers to understand that Customer buying behavior is affected by numerous factors like age, gender, education, income, social class etc. therefore it is important to study, which factors influence online shopping behavior of customers. The present study is conducted in the geographical boundary of Mumbai to know the attitude and preferences of the customers here towards online shopping. A sample of 200 customers from varied demographical characteristics like age, gender, income etc. A large portion of respondents were found to be using online shopping and attitude towards online shopping was significantly positive. The main factors for using online Consumer Attitude &Preferences towards Online Shopping 1706shopping are fast and immediate transaction, independence of geographical boundaries and time, variety of choices etc. While testing relationship between attitude towards online shopping and respondents' demographic characteristics, no significant difference was found.

Keywords:
Online Shopping, e-Retailing, Online shopping Behavior, e-Commerce

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Turkish Online Journal of Qualitative Inquiry	12 (13)	July, 2021	1705-1716	Science Research Society	Q4

Paper No: PU-SOM – 09

SA-MUDRA Foundation - Succession Blues

Dr. Pratika Mishra, Dr. Chithambar Gupta, Dr. Jayakrishna Udupa
Associate Professor, Presidency University, Bengaluru, India

Abstract

The present case enunciates the journey of a women social entrepreneur and her social enterprise 'SA-MUDRA Foundation', which deals with the problems of youth and empowers them by various programs including 24x7 Yuva Helpline number. One of the major issues in front of the entrepreneur is fund raising and a sustainable corpus for future. Another biggest challenge before her is about succession planning of the organization beyond and after her. The case would be helpful for entrepreneurship students to discuss the issues in fund raising and to understand the difficulties in succession planning.

Keywords:
Fund raising, Entrepreneurship, Social Enterprise, Youth Problems, succession planning

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
International Journal of All Research Education and Scientific Methods	9 (2)	Feb, 2021	1053-1057	IJARESM Publication, India	NA

Paper No: PU-SOM - 10

Advergames: Exploring the New Landscape in Marketing

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Assistant Professor, New Delhi Institute of Management, Delhi

Abstract

Online space is now getting cluttered with same and similar ventures providing similar solutions. It's the same set of ads on the sidebar of websites which repeatedly flash in an attempt to gain customers attention but are unable to. For digital ventures and start-ups which have to compete with big and established brands, it is essential that they go out and look for more than one ways to reach out to their target audience and build an emotional connect with them. One of the many tools which are not being heavily used by digi-preneurs is Advergames. These are online games which are used for the purpose of advertising and these are one of the upcoming tools which are used for building brand awareness. These tools have been used in the past but were focused on the younger age groups and used cartoon type characters. With changing lifestyles and preferences for leisure activities, there has been a steady trend of adults which are involved in game play. This paper explores the possibility of creating an emotional engagement and hence loyalty towards the brand using simple advergames which are focussed on age groups above 18 years. The data is collected from 352 respondents and analysed using various statistical tools to establish if the games can lead to engagement and hence loyalty.

Keywords:
Advergames, Emotional Customer Loyalty, Online games, advertising

Publication Details:

Journal Name	Vol.	Month & Year	Page No	Publisher	Scimago Ranking
Psychology and Education Journal	58 (2)	2021	7453-7462	Psychology and Education	Q4

Paper No: PU-SOM – 11

Antecedents of Work and Family Balance: Insights of Indian Women Employees in Hotel Industry

K.Thriveni Kumari
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Abstract

Women employees play an important role in family, industry and other groups. In India today women hold a strong positions in corporation field when compared to past. Indian hotel industry also shows the same way. Hotel industry is known for its long working hours culture which leads to key issues in work life balance for women employees. Although many reviews had explained about work and family balance, there is an absence of systematic analyzing about work family balance (WFB) and it had not been effectively monitored in hotel industry. The article elaborates on antecedents of WFB of female employees employed in hotels. The study describes about implications of applying WFB strategies as a part of organization practices. The data is accumulated from 272 female employees working in different hotels across India. The objectives were measured with the help of descriptive statistics, factor analysis, correlation, and multi regression analysis by applying SPSS 21.0. Structure Evaluation Model (SEM) analysis is applied through AMOS to elaborate the relationship between the variables. The results showed that antecedents have a significant and strong relationship with WFB. Moreover, demographic variables are strongly related with WFB. Since the study is limited with the data collected in limited time and areas, the results may not be generalized.

Keywords:
Antecedents, Female/Women Employees, Hotel Industry, India, Work-Family Balance (WFB).

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
International Journal of Hospitality and Tourism Systems	14 (2)	Dec, 2021	NA	Publishing India Group	NA

Paper No: PU-SOM - 12

A study on Pradhan Mantri Jan Dhan Yojanaand its contribution, towards Women Empowerment in Bengaluru Urban

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2. Professor, School of Management, Presidency University, Bengaluru

Abstract

From centuries financial exclusion kept poor masses from development process. Prof.Ramakrishna (2010) had aptly explained that financial inclusion ensures every citizen to avail financial services to meet his/her needs. Women in India are still struggling to make their place, to get equal opportunities in contrast to men in society. It has been observed that most of the Indian women are still are dependent on the male members of the family for their financial needs. Government of India along with NABARD and RBI has been taking maximum efforts of financial inclusion of the excluded section, especially women. The study has explored the motivating factors of the respondents of Bengaluru Urban India for opening bank accounts under PRADHAN MANTRI JAN DHAN YOJNA. It also covers the level of empowerment respondents have achieved after opening bank account under PRADHAN MANTRI JAN DHAN YOJNA scheme. Up to what extent Demographic analysis plays a role in influencing respondent to open account has also been analyzed. An interview schedule comprising of 15 questions has been used to collect data in three stages from a sample size of 100 respondents chosen using different nonprobability sampling techniques which subsequently has processed through IBM SPSS-20. The results have indicated the catalysts like demographic characteristics and scheme benefits. The public sector banks may incorporate the results in their strategic policy formulations to attract the potential customers and may frame course of actions to compete with the tentative private players in PRADHAN MANTRI JAN DHAN YOJNA. The study offers policy relevance, acknowledges few limitations and indicates the future research agenda.

Keywords:
Women Empowerment, Pradhan Mantri Jan Dhan Yojna, Financial inclusion, Indian Economy

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Social Science & Management Studies	7 (2)	March, 2021	66-71	IJSSMS	

Paper No: PU-SOM - 13

Elucidating the Role of Women from Nature: Nurture to Entrepreneurship

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2. Research Scholar, School of Management, Presidency University, Bengaluru, Itgalpura, Rajanakunte, Yelahanka - 560 064, Karnataka, India

Abstract

In a larger context, the French word Entrepreneurship means to start a new project or to try a new opportunity. As entrepreneurship evolved in the past centuries, it brought with it innovation in production of goods and services to serve the society world-wide, but the existing literature establishes that traditionally entrepreneurship has been a male-dominated activity. Recent technological advancements coupled with the economic boom of the 1990s witnessed a spurt of women entrepreneurs making rapid strides in this hitherto male-dominated domain. This paper elucidates what makes a woman entrepreneur. Is she a born entrepreneur or trained to become so? This study aimed to explore the nature of inherent traits and the acquired or supporting eternal variables that have led to the success of the sampled women entrepreneurs. To explore further, the following important variables from the literature review were combined into categories that reflect various traits of women entrepreneurs: risk taking ability, initiative taking ability, self-motivation, leadership ability, and entrepreneurial attitude. On studying 401 women entrepreneurs, logistic regression analysis was applied to predict the success of women entrepreneurship to comprehend the prediction of 'nature' (internal) variables, and 'nurture' (external) variables covered in the research study. There exists further scope for expanding this research across multiple geographies as this data offers fruitful preliminary insights based on a single-country exploration and that too from a sample drawn only from four metros in India.

Keywords:
Entrepreneurship, Initiative, Risk, Nature, Nurture, Women in Entrepreneurship

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
AMC Indian Journal of Entrepreneurship	4 (1)	March, 2021	34-53	Associated Management Consultants Pvt. Ltd.	

Paper No: PU-SOM - 14

Impact of Work Family Conflict on Career Development of Knowledge Workers in Indian IT Sectror: Examining Moderating Effect of Age.

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School of Management, Presidency University, Itgalpur, Rajankunte, Bengaluru 560064, India

Abstract

Work-family conflict is one of the major problems that influence career development of knowledge workersin the information technology (IT) sector. The purpose of the paper isto examine the relation between work-family conflict and career development with the moderating effect of age. The data was collected from 278 knowledge workers (IT professionals) employed in different IT companies across India. The data is analysed with descriptive statistics, correlation, and hierarchical regression through statistical package for the social sciences (SPSS) 21.0 software, AMOS for structural equation modelling (SEM) analysis, and interaction software for analyzing interaction item age. The results of the study revealed that there is a negative relation between work-family conflict and career development. In addition, the findings also supported that age moderates the relation between workfamily conflict and career development. This study is important to IT companies, which will provide useful insights in managing the employees' well-being.

Keywords:
Age, Career Development, Family Domain, IT Sector, Knowledge Workers/Techies, Well-Being, Work Domain, Work-Family Conflict

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Human Capital and Information Technology	12	Sept, 2021	37-53	IGI GLOBAL	Q3

Paper No: PU-SOM - 15

Shaping Financial Landscape in India through Financial Inclusion and its Impact on Society (with focus on the Pradhan Mantri Jan Dhan Yojna)

Dr. Prachi Beriwala,
Associate Professor, Management, Presidency University, Bengaluru, Karnataka, India

Abstract

Financial Inclusion is the timely provision or access of basic financial products to individuals and businesses especially the poor and the down trodden. It includes appropriate, affordable and timely financial products and services like banking, loans, insurance and equity. Economic security is the underlying principle behind financial inclusion without any bias or prejudice or unfair treatment and without taking into consideration the savings or the current financial position of the person. The scope of study of this paper also examines the similar situation on grossly Pan India basis taking into consideration the impact of Pradhan Mantri Jan Dan Yojna on society. Bringing underprivileged people under the financial umbrella has its own set of challenges like geography, inequalities of income and wealth, level of literacy and awareness, level of willingness and penetration and lack of governance and leadership which act as major impediments. This paper examines all such societal implications as well.

Keywords:
Financial inclusion, societal, PMJDY, financial services, micro finance

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Turkish Journal of Computer and Mathematics Education	12 (9)	Apr, 2021	1946-1957	Karadeniz Technical University	Q4

Paper No: PU-SOM - 16

Comparative Study on Water Quality Index Of Lake Vs. Adjoining Tidal Fed Shrimp Farms along Vembanad Lake, a Ramsar Site, Kerala, India.

Rosewine Joy
School of Management, Presidency University, Bengaluru, Karnataka, India

Abstract

Climate change and pollution is impacting ecosystems and life depending on same. Water bodies across world are impacted by these variability which influence the life and production process based on same. Aquaculture is one such food production system which is heavily influenced by the quality of environment for its sustainability and growth. Water quality Indexing (WQI) is an important tool applied in aquaculture to manage the water quality of the farming system. The index helps to comprise the water quality variation to one number and helps to analyse the same in an easy manner. We create four indexes for the study for each study zones, North, central and south zone from Vembanad Lake. The objective of the study is to understand how far WQI of the lake could influence the water quality index of the farm and secondly to assess how far water quality could be improve with human intervention. The methodology adopted for the study is an arithmetic weighted index method proposed by (Pesce & Wunderlin, 2000). The study point out that the water quality index of the lake has a higher influence on the water quality index of the farms. It also points out that though the water quality index of lake and farm area could be related, the water quality of the farms could be managed in the long run through various management practices.

Keywords:
Climate change, Pollution, Water ecosystem, Aquaculture, Water quality Index.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Plant Archives	20	Aug, 2020	2172-2176	Dr. R.S. Yadab	not yet assigned

Paper No: PU-SOM - 17

Digital learning platform adoption by Bangalore Private Universities and Colleges during lock down.

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Abstract

The Covid -19 pandemic has affected the lives of everyone, health experts are expressing that it is not possible to completely eradicate Covid -19 as of now. So we have to learn to live with it until vaccine comes, by taking necessary precautions at individual and community level and unruffled we can take the nation forward. Throughout Covid -19 periods, amid other sectors educational institutions are the most affected. Since the health and safety of our students is of paramount importance, we in Bangalore, along with the other parts of the country, have shut down universities, colleges and schools ever since the pandemic broke. Nevertheless, both teachers and students of these educational institutions have quickly adapted to digital platforms and have shown an extraordinarily flexibility and kept the teaching – learning process going on. The education ministry along with the higher education department has taken various measures to make the digital content available to the students through various online portals, Doordarshan TV channels, and Aakashavani radio stations. It is in this context the authors want to bring to light how use of technology has saved the academic year of the students and could complete the academic year on time and also have started the online sessions for higher classes across the various educational institutions in and thus are providing the psychological support and confidence needed to the future nation builders, which has become possible with the support, commitment, dedication and effort of the teachers. The article also examines the blended mode of learning to be adopted and the ways to do it, and throw some light on how the higher educational institutions are trying to conduct the coming academic sessions in shifts for the safety of all the stakeholders. Further it also throws some light on how teachers, are coping with the stress factor working from home and how students are adopting to the online learning with frequent distractions at home.

Keywords:
Digital platform, education, students, teachers, learning.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal for Research in Engineering Application & Management (IJREAM)	7 (2)	May, 2021	452-458	IJREAM	UGC Care

Paper No: PU-SOM - 18

Impact of Software Automation and Artificial Intelligence on Customer Relationship Management

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Abstract

Over the past decade, with the advent of digitisation, coding and development in the field of Artificial Intelligence, there is a paradigm shift from good looking, smiling, well dressed customer sales executives to affiliate marketing platforms. Not to say the COVID 19 situation has escalated this transition even faster. Leaving aside the 'millennial' and 'generation z', even the 'Baby- boomers' are also compelled to depend on digital platforms because of the current phobia of the pandemic situation. As a result physical footprints of consumers on retail industry is decreasing day by day, although the propensity of actual buying is increasing but on a digital level. Thus making it mandatory for the marketers to depend or take the aid of Artificial Intelligence and software automation for handling of digital traffic and easy flow of customer relationship management, especially when it comes to aspects like Customer Experience Management, Customer experience value, and Customer database management. This paper will highlight on the usage of these software's and Artificial intelligence by big retails giants like Mc Donalds, Levis Strauss, Dominoes, D-Mart, etc. The qualitative study conducted by taking interview of the Customer relationship managers of different retail outlets have been considered for the study to understand the impact of use of Artificial Intelligence/Software Automation on customer satisfaction along with its usage and functions, although the sample is limited to the city of Bengaluru.

Keywords:
Customer Relationship Management, Customer Experience Management, Customer Experience Value, Artificial Intelligence, Customer/Sales force Software Automation.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
CPJ Global Review	13	July, 2021	38-43	NA	NA

Paper No: PU-SOM - 19

Role of Service scape on Student Institution Choice

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Abstract

In recent years there has been increased discussion of the subjective, emotional and sociological factors influencing student choice of university. However, there is a dearth of information exploring what constitutes these feelings. This exploratory paper uses the conceptual model of the servicescape to provide insight into the emotional factors driving student choice. In-depth interviews with prospective students revealed that first impressions really do count. Students are deterred by poor physical environments and excited by enthusiastic staff and students. Most significantly, the study revealed the necessity of a restorative servicescape to provide both a sense of escape and feeling of belonging. This paper contributes to broadening the application of the servicescape model and to a greater understanding of the impact of the environment on prospective students, and creates an opportunity to inform policy by providing university marketing decision makers with a better understanding of what constitutes the university environment and what makes it appealing to prospective students.

Keywords:
Service scape, Student choice, Higher education, marketing.
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Asian Journal of Management	12 (3)	July, 2021	721-728	Gala Group Inc	not yet assigned

Paper No: PU-SOM - 20

Rural Marketing: Challenges and Opportunities

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Abstract

Many research papers and books pointed out that business opportunites are there at the bottom of the pyramid (BoP). This is true that rural income is neither stable nor high. In this landscape, selling products to the majority of poor people, with little or no access to electricity, is a huge challenge. Today rural marketing goes beyond what is typically taught in business schools. It extends beyond the traditional marketing activity of a large organization and pushes the envelope of what is the tried and true go-to-market marketing practices.

Keywords:
Service scape, Student choice, Higher education, and marketing.
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Paradign	25(1)	April, 2021	NA	Sage Publishers	not yet assigned

Paper No: PU-SOM - 21

Prospects and Problems in Emerging Pharmaceutical Market: Gulf Cooperation Council Countries

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Abstract

The purpose of this viewpoint article is to critically evaluate Gulf Cooperation Council (GCC) countries as an emerging pharmaceutical market through VUCA frame work and to identify prospects and problems. Within the literature, prospects and problems in GCC countries as an emerging pharmaceutical market are not fully addressed vis a vis VUCA environment and this is the gap the study addresses. This is an explorative qualitative study based on the author's working experience in GCC region & discussion with stakeholders like regulatory authority, channel partners and Physicians. This study may provide the subtle insights to offset the impact of VUCA business environment prevailing in GCC pharmaceutical market. This study may be used to maneuver the resources to yield competitive advantage to pharmaceutical business in GCC countries and for new entrants.

Keywords:
Competitive Advantage, Emerging Pharmaceutical Markets, GCC (Gulf Cooperation Council) Countries, Middle East, Regulatory and VUCA (Volatile Uncertain Complex Ambiguous).

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
LIBA's Journal of management	17(2)	Sep, 2020	NA	Management Matters	NA

Paper No: PU-SOM - 22

Corporate Communication through Social Media: Strategies for Managing Reputation

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Abstract

Understanding the value of corporate reputation, addressing reputational issues versus all stakeholders, appreciating the necessity of business citizenship and realizing how the digital and social turmoil is changing the whole game— these are the dynamics transforming today's business environment. Every crisis today is potentially global, social and viral in this information age. This book has provided the reader with a broad, in-depth look at the digital landscape of organizational and corporate communication with implications for reputation. Drawing upon the academic scholarship in these fields, state-of-the-art research, relevant cases and practitioner perspectives, this unique and differentiated book attempts to the best possible extent a comprehensive account of the many developments that continue to transform management communication.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Vision	1-3	2021	NA	SAGE publications	NA

Paper No: PU-SOC - 01

A Study on the Product Adaptive Strategies of Generator.

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3. President, Poornima University, Jaipur, India
3. Professor, International Institute of Business Studies (IIBS), Bengaluru, India

Abstract

Product adaptation or customization is one among the most preferred strategies that manufacturers adopt to remain contemporary and competitive in the market. Customers prefer to purchase tailored products which suits to their specific needs. This behavior is very common among institutional customers for their industrial goods needs. This article is aimed at studying the critical factors that affects product adaptation with special reference to Genset Industry in India. A survey was conducted among 254 respondents of different Genset OEMs spread across in India with a goal to know the contribution of different factors affecting product adaptation of Genset. Through multiple linear regression using SPSS, a statistical software for data analysis, it was observed that product adaptation of Genset was significantly affected by internal process of the organization, supply chain capabilities and customer preference. Hence manufacturers need to consider these three factors to decide whether predict adaptation is essential or not for their customers.

Keywords:
Product adaptation, Generator, Customer Preference, Internal Process, Supply Chain

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Indian Journal of Economics & Business	19 (2)	Sept, 2020	139-154	Ashwin Anokha Publications and Distributors	Q2

Paper No: PU-SOC - 02

Role of Employee Engagement Frame Work In Private Sector Insurance Companies.

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Assistant Professor, ICCS College of Engineering & Management, Thrissur, Kerala, India
2. Research Supervisor, HOD, School of Commerce,
Presidency University, Bengaluru, Karnataka, India
3. Director AICTE,

Abstract

The current examination study was limited to just private area insurance agencies arranged in Pathanamthitta District, Kerala, India. The investigation was exact; in this way, the quantitative examination was utilized for information social occasion and examination. The investigation was led through the review strategy. To do the examination, the organized survey procedure was utilized to increase knowledgeinto the issues investigated in the examination. For the investigation, both essential and auxiliary information was gathered, to accomplish the figured destinations. The essential information was gathered from employees working in all frameworks. The optional information was gathered from diaries, books and sites. This investigation depends on information gathered from five Private insurance agencies in Pathanamthitta locale. The rise of the Private area insurance agency has achieved huge changes in the occupation market. The dependability of the survey was tried with the Cronbach's Alpha technique utilizing factual programming. All the Descriptive examination and measurable inferential investigation were finished utilizing SPSS and P-esteem subtleties just displayed for translations. Karl Pearson's relationship coefficient is utilized to examine and decipher the information. The aftereffects of the examination demonstrate that employees are not exceptionally connected with on account of perspectives, for example, uneasiness with respect to the association culture, deficient assets uphold, resistance of-employees uphold, disappointment in the activities and conduct of the senior administration, disturbance concerning organization Human Resources strategies and techniques and upsetting chances. It is assumed that the aftereffects of the current investigation will be of significance to associations, which try to upgrade the degrees of engagement of employees' status. Further, the consequences of the examination would illuminate the segments of employee engagement and hierarchical adequacy. The result of the examination would likewise help associations a lot in detailing reasonable projects and suitable strategies to improve authoritative adequacy.

Keywords:
Private Insurance Companies, Employee Engagement, Organizations, Performance

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Psychology and Education	58 (2)	Feb, 2021	101-108	Psychology and Education	Q4

Paper No: PU-SOC - 03

Role of AI in HRM With Reference to IT Companies in Bengaluru during Covid 19

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Abstract

Artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. Human Resource Management (HRM) is the term used to describe formal systems devised for the management of people within an organization. Artificial intelligence (AI) and machine learning are playing a key role in better understanding and addressing the COVID-19 crisis. Some HR experts argued that AI may reduce job opportunities and may be a threat to manpower in future days, while others opined that implementation of AI in HRM would result in a more productive workforce especially during this pandemic situation. Focusing on the above points, the main purpose of this research is to investigate the current AI technologies being applied in the human resource practices and to know employee's perception towards implementation of AI in HR practices. The method used for data collection was online survey and the tool used was the questionnaire. Along with the focus on the participants' perception on AI the study also aims at the AI technologies being practiced in HR functions during COVID-19 situation.

Keywords:
Artificial Intelligence, Human Resource Management, Employee Engagement, Talent Acquisition, Learning and Development

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Sambodhi	44 (1)	Mar, 2021	178-183	Lalbhai Dalpatbhai Institute of Indology	UGC Care

Paper No: PU-SOC - 04

Impact of Adoption of IFRS in SMSE in India

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Abstract

The progressive country like India, now days Small and Medium Scale Enterprises (SMSEs) are contributing a remarkable share to country's economy. SMSEs now considered as backing up to different economic prospective such as unemployment, GDP, FDI, etc. The globalization era witness of significant growth in integration of economy and capital market of countries and every organization of these countries want to expansion internationally and to raise capital for expansion organizations are not limiting themselves only to domestic capital market and to lead in the market, there is obliged fairness in accounting angle to check, study and examine the genuine financial position of the organization itself and outsiders like investor, authorized body and so on. On this regards International Financial Reporting Standards (IFRS) playing significant part to make standardized financial statements which can acceptable both national and international. In view of objective of this study a comparative approach adopted. Date collected from annual reports of SMSEs which are enlisted in BSE for the period of 4 years. The financial ratios like current ratio, returns on asset and earnings per share ratio taken as measure of profitability, liquidity and market of company for this study.

Keywords:
IFRS, SMSEs, Financial position, financial reporting.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Sambodhi	44 (1)	Mar, 2021	1-11	NA	UGC Care

Paper No: PU-SOC - 05

Electric vehicles in India: current trends and future forecasts

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Abstract

As globalisation is increasing, so is the demand for oil-based energy which is ultimately resulting in the rapid fluctuation of the market prices of the crude oil due to the basic principle of economics Law of Demand. This volatility and uncertainty in crude oil's demand and prices create pressure on governments and policymakers to look at new alternatives, one of them being the adaptation of green technologies. Green alternatives seem to be the trend of the future business and markets. Many business giants are compelled to spend heavily on their R & D and come up with innovative technologies focusing mainly on green technologies. In line with the developed countries, India, as a developing economy, is all set to plunge into this new innovative market of Electric Vehicles (EVs) and aims to become a major producer of the EVs for the Indian market as well as the globally. So, this research article aims to explore the expected demand for EVs, the market share, and the contribution of the EVs and associated technologies to foreign trade.

Keywords:
Disruption; electric vehicle; green technology; Indian economy; innovation; market demand.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Electric and Hybrid Vehicles	13	Nov, 2019	NA	InderScience	Q3

Paper No: PU-SOC - 06

Key issues of organisational governance – an empirical analysis.

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Abstract

The research article studies the possibility of involvement of larger group of stakeholders including includes employees, vendors and customers in ensuring better corporate governance and providing a proper platform for the same. It analyses the merits of inclusion of these stakeholders in organisational governance in addition to management group and auditors. A survey was conducted among a sample of 70 stake holders of a manufacturing company including employees, vendors and customers. The outcome of the survey concludes that the enlarged group of stakeholder's involvements in governance process has significant positive association in ensuring better governance and enterprise risk management. It was also observed in our study that awareness of corporate governance among stakeholders is positively related with unethical practices of the organisation. Where ever the awareness is high on corporate governance, the possibility of identifying and reporting the unethical practices is high. Meanwhile, it was also found that there is a significant negative linear relationship between unethical practices in the organization and platform to report, representing that if any stake holder reports unethical practices of their organisation they don't get proper platform to report. Hence additional stake holder plays a greater role in the corporate governance of the organisation and their hidden potential should be unleashed. The company also needs to take necessary steps to provide proper secure platform for these new stake holders to report any unethical issue related to corporate governance.

Keywords:
Corporate Governance (CG), Audit Committee (AC), Enterprise Risk Management (ERM), Internal Audit (IA), Risk Based Internal Audit (RBIA), Board of Directors (BOD), Chief Audit Executive (CAE)

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Public Sector Performance	NA	NA	NA	Inderscience	Q3

Paper No: PU-SOC - 07

A study on the factors influencing segregation of house hold waste by the residents of Bengaluru city

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2. Presidency University, School of Commerce, Bengaluru - 560 064, India

Abstract

The research is aimed at finding out the various factors that are responsible with the intention to segregate solid waste in the household before disposal and the influence of the same to actually segregate solid waste. Theory of planned behaviour (TPB) was used as the base model to study the relationship between different variables of interest. Environmental consciousness and awareness were introduced in the TPB model as the independent variable affecting segregation intention and extended theory of planned behaviour was developed. As a part of the study, a sample of 140 respondents were chosen from the household of Bangalore and questions were asked related to the study. The data collected by field visit was analysed using SPSS and AMOS. The extended theory of TPB was tested by structured equation modelling using AMOS. It was observed that the variance in segregation intention is better explained by introducing environmental consciousness and awareness in TPB model, proving the model fit of the extended theory TPB.

Keywords:
Solid waste, Segregation, Environmental consciousness, Awareness, Theory of planned behaviour

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Indian Journal of Environmental Protection		2021	445-450	Kalpana Corporation	Q4

Paper No: PU-SOC - 08

Perception of Employees towards Outbound Logistics with reference to garment industry in Tirupur

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Abstract

Garment industry is prime exemplifier of global sourcing and has been facing complexities in the area of regulation policies, logistics performance, cultural differences, political and economic uncertainties, etc. Various research studies have emphasized logistics delays as most crucial link to garment exports considering the seasonality and time sensitivity of garment products. Moreover, the fierce competition of Post-MFA phase brought out the significance of lead time management, on time delivery and logistics performance. It was predicted that India will emerge as big gainer in the post MFA phase but it did not happen in the quantum which was expected. Many researchers have identified delayed delivery and logistics hindrances as crucial challenges for Indian scenario. The objective of the present research was to study outbound logistics activities and related issues and challenges of garment exports with the companies in Tirupur. The prime focus of the study was to identify the key issues and challenges of logistics activities and measure their effect on delivery lead time and cost implications with respect to Tirupur. The conclusion is that Garment supply chain represents a complex supply chain, characterized by ever increasing demand of fashionable and fresh products coupled with quality and low prices. There is fierce competition amongst suppliers and buyers are always on the lookout for the the suppliers who can meet their criteria of lower delivery lead time, price, quality and product innovation. The three main stakeholders of garment export business are: buyer (retailer/brand owner), seller (manufacturer exporter) and intermediary. Raw material suppliers, freight forwarders multimodal transporters are also important links in the garment supply chain.

Keywords:
Outbound logistics, Garment industry and Tirupur

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Turkish Journal of Computer and Mathematics Education	33 (2)	2020	1433-1443	Karadeniz Technical University	Q4

Paper No: PU-SOL – 01

A Critical Analysis of Development of Arbitration Law in India

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Abstract

Arbitration is a progressing alternative to the legal system and aims to fill up gaps that persist in the conventional court proceedings. Various legal aspects of commercial arbitration in India include, provision of a Neutral Dispute Resolution Forum against the local courts, providing parties with commercial expertise to adjudicate the tribunal, unlike courts that merely exercise general jurisdiction. The law in India provides parties with an enforceable award as opposed to jurisdictional uncertainties in litigation and the arbitration procedure is speedy avoiding the delays and appeals that always persist in the court system. In addition, the parties are not subject to public trials, thereby upholding the confidentiality of the parties. Prior to 2019, the arbitration law of the country was governed by a 1996Act. This Act was largely premised on mistrust of the arbitral process and afforded multiple opportunities to litigants to approach the court for intervention. Coupled with a sluggish judicial system, this led to delays rendering arbitrations inefficient and unattractive. A telling comment on the working of the old Act can be found in a 1981 judgment of the Supreme Court where the judge (Justice DA Desai) in anguish remarked "the way in which the proceedings under the (1996) Act are conducted and without an exception challenged in Courts, has made lawyers laugh and legal philosophers weep …‟ India (in the good company of several other nations) enacted its new Arbitration Act based on the United Nations Commission on International Trade Law Model Law (UNCITLML) on International Commercial Arbitration and the Arbitration Rules of the United Nations Commission on International Trade Law 1976. This was in January 1996. The Statement of Objects and Reasons to the Act made no bones of the inefficiency of the old legislation. It said that the same had "become outdated" and there was need to have an Act „more responsive to contemporary requirements‟. It added: "Our economic reforms may not become fully effective if the law dealing with settlement of both domestic and international commercial disputes remains out of tune.‟ Amongst the main objectives of the new Act (set out in the Statement of Objects and Reasons) are "to minimize the supervisory role of courts in the arbitral process‟ and" to provide that every final arbitral award is enforced in the same manner as if it were a decree of the Court". In this paper, the evolution of arbitration law and practice in India has been explored, including how the present arbitration system in India is still plagued with many loopholes and shortcomings, and the quality of arbitration has not adequately developed as a quick and cost-effective mechanism for resolution of commercial disputes.

Keywords:
Arbitration, Dispute Resolution, Jurisdictional Uncertainties, Confidentiality.

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Wutan Huatan Jisuan Jishu	16 (11)	Nov, 2020	184- 191	China National Publishing Industry Trading Corporation	Q4

Paper No: PU-SOL - 02

Changing Trends of International Commercial Arbitration in India

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Abstract

The amendment to the Arbitration and Conciliation Act, 1996 brings much required changes and was intended at transforming the arbitration system in India. Some major changes will have a noteworthy effect on the way of arbitrations which are conducted in India and will also bring a positive signal for India's reputation as a hub for International Commercial Arbitration (ICA). Even after major alteration the certain areas of Indian arbitration are still doubtful and need explanation. In this paper the authors mainly examine some major areas of concern viz. some opinions of stake holders of International Commercial Arbitration as well as the Indian Government‟s efforts for making India as a hub for ICA in the light of Foreign Direct Investment (FDI) policies. It may be noted that applicability of law and principles of lex arbitri under ICA and recourse against foreign award in India have also been discussed with the help of leading cases. The article also highlights the lacunas of ICA and prescribes some remarkable suggestions for improvement for making India as a hub for International Commercial Arbitration.

Keywords:
International Commercial Arbitration (ICA), Cross Border Commercial Issues, Foreign Direct Investment (FDI) and lex arbitri.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Aut Aut Research Journal	12 (1)	Jan, 2021	256-262	La Nuova Italia Editrice S.p.A	Q3

Paper No: PU-SOL - 03

Validity of Criminalizing Triple Talaq in India

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2. Head of Department-School of Law, Presidency University, Bangalore

Abstract

Triple Talaq is one of the mode of dissolving Muslim marriage which is also called Talaq-ul-Biddat. In this form of Talaq, the Muslim husband pronounces Talaq word thrice irrespective of his wife‘s physical presence. This mode of Talaq has always been a source of oppression for the Muslim women because it becomes irrevocable as soon as it is pronounced thus leaving no option for reconciliation between the parties. In order to deter Muslim husband from pronouncing Triple Talaq, the Central Government passed Muslim Women (Protection of Rights on Marriage) Act, 2019. This Act not only criminalizes Triple Talaq but also makes it punishable offence. This research paper will discuss various forms of Talaq, history of Triple Talaq, its validity as per Quran and Constitution of India, Muslim Women (Protection of Rights on Marriage) Act, 2019 and validity of criminalizing Triple Talaq.

Keywords:
Talaq, Triple Talaq, Marriage, Crime.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Shodh Sanchar Bulletin	11 (41)	Mar, 2021	55-59	NA	UGC Care

Paper No: PU-SOL - 04

The Reality of Indian Prisons Pertaining to Children of Incarcerated Mothers

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2. Head of Department-School of Law, Presidency University, Bangalore

Abstract

Women and children are seen as a vulnerable part of our society. To cater to these vulnerable groups in all walks of life should be of prime most importance by the law makers and administrators. The vulnerable are more vulnerable when they are put in a vulnerable situation. Being inside the premises of a prison is one such situation where a child being brought for the wrongdoings of his/her mother for no fault of his own must also get an equal opportunity at having a normal childhood and must be given special care and attention. The reality is however different from what we hear or see. This research aims at analyzing the prison guidelines issued by Ministry of Women & Child Development, and other state prisons and questions the absence of a codified law which can cater to these children, who are put behind bars alongside with their mothers as they have no other place they can be sent. Every child has the right to have a normal childhood but these children have less to nothing of what we call a normal childhood.

Keywords:
Child Rights, Prison, Guidelines, Childhood, Women

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Shodh Sanchar Bulletin	11(41)	Mar, 2021	60-64	Sanchar Educational & Research Foundation, Lucknow	UGC Care

Paper No: PU-SOL - 05

Indigenous People and their right to health

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Abstract

The indigenous concept of health means physical, mental, emotional as well as spiritual elements taken from individual as well as communal point of view and involves political, economic, social and cultural aspects. It is shaped by the indigenous peoples' historical experiences and various world views, and then they are expressed in the rules and norms that are applied in the community and practiced by its members. To promote health and prevent illness, as indigenous community seeks to recuperate and maintain its interior and exterior equilibrium, including the harmony between community members who are sick and the world around them.

The traditional knowledge which the indigenous people possess in terms of health are carefully structured and are complex to understand as far as their content and internal logics are concerned. They are characterized by a combination of practices and knowledge about the human body and co-existence with other human beings, with nature and with spiritual beings. Almost all aspects of health promotion are involved which are prevention of illness and treatment and rehabilitation, but differ from most western health systems in that they take an integral or holistic approach.

Many of the indigenous families have various different approaches and methods when it comes to dealing with illness. A variety of approaches and practices are there to be followed for the treatment of the ill person by using either traditional or western medicines, or a combination of the two. It may so happen in some cases that the treatment proves to be insufficient and so in such cases it becomes necessary to make a choice, which is generally made by the women in the house, who is the prime decision maker in this particular arena- who then has to take up a decision as to whether the treatment will be done further by the traditional practitioner or will a western practitioner will be called in for help and for treating the ill patient. This particular practice is very rare as most of these people believe in their traditional knowledge and are not very keen to visit the modern day doctors and hospitals for the treatment.

Keywords:
Transportation, food, accommodation, family care, medication, self-esteem, socio-cultural illness.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
AALCO (Asian- African Legal Consultative Organization) Journal of International Law	NA	Dec, 2020	191	Juris Publishing	UGC Care

Paper No: PU-SOL - 06

Traditional Knowledge and its Efficacy in Economic Growth.

Sofia Khatun, Deepa Rani Salian

Abstract

The World Intellectual Property Organisation mentions traditional knowledge as "indigenous cultural and intellectual property", customary heritage rights as well as indigenous heritage. Some innovation and creation are based on tradition referring knowledge system that is transmitting from one generation to another through people and their territory. It is necessary to protect traditional knowledge for establishing equity consideration, preserving traditional culture and practices, preventing unauthorized parties appropriation of components of traditional knowledge and promotion of its use in development. It is very much indispensable to incorporate global legal instrument so as to give effective protection to traditional knowledge, cultural expressions and genetic resources. Thus the members of the WIPO agreed upon to develop a global legal instrument for helping members outside the local community threshold to access traditional knowledge. The "Copyright Act, (1957)", was passed to protect the creations of artists such as literary sources, music and art. Moreover, there were specifications regarding the protection of traditional knowledge in Article 31 of the UNDRIP Convention. The report stated that the role of the members of the WIPO was to put emphasis on developing international legal structures such that creative inventions and works of the creators could be protected. Legal structures of IPR were designed such that traditional knowledge of the local indigenous people residing in multiple belts of India could be protected. The report highlighted the implications of traditional knowledge of Indian economic growth. Moreover, the ecological traditional knowledge of natives of the rain forests led to the development of the market economy. Some probable recommendations were also suggested by the researcher. The researcher recommended that technical advice is to be circulated among community members and representatives should be encouraged to participate in meetings organized by the WIPO agency.

Keywords:
Traditional, knowledge, IPR, indigenous, protection

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The Role of International Human Rights & 21st Century Challenges

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Abstract

Human rights are universal rights declared by the UN charter, which is required to be followed by all countries and be made available to all citizens irrespective of the kind of government or their cultural laws. However, it is seen that the modern context of authoritarianism and rightwinged government, including the theocratic states, have shown instances where human rights are violated by those nations. The rights are civil, political, social, economic and cultural, which are stated by the UN convention of human rights. The political and civil rights that are present to the citizens of a particular country the right to life, the right to form assembly, and the right to have a fair and equal trial before consists of the law. The economic rights that are available to citizens constitute the right to have free education, social security, along with the cultural right of forming family without any intervention from the government. It is also seen that the authoritarianism, repression and corruption are three aspects that reduce the following about human rights and lead to its violation in society. It is seen that the UN intervention in the authoritarian states, the theocratic states and the right-winged government helps in curtailing the occurrences about human rights violation. UN convention on the Elimination of All Forms of Discrimination against Women (CEDAW) is the core treaty imposed by the UN. Since its adoption in 1979, it has been approved and implemented in over 180 countries. Apart from the law formulated by the UN, American Convention of Human Rights was adopted in the USA in 1969. Children rights is another concerned human rights and purpose of the laws to provide basic rights to the children. Security and protection of the rights of the individual and his free access to justice are key constituents of the walk of a civilized society. Its emphasis is more in a democratic setup, based on rule of law where safeguarding human rights and assuring dignity of the individual is the responsibility of the state. Infringed enjoyment of human rights would just remain the defensive umbrella of the organised and viable instrument are made for redressal of complaints identifying with human rights. This article envisages over the international covenants on human right and its significance with the interest to make human right a viable reality in 21st century.

Keywords:

Human Rights, Human Trafficking, Challenges, Corruption, Human security

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Silicone Managers

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Abstract

The worlds Textile & Apparel market is in upheaval, unprecedented flux is the sign of the time. The digital economy has brought to the fore major issues- Issue of survival, Opportunities, Threats, Strategies, Culture & values, in the process the metamorphosis of the silicone managers will emerge. Man, with his continued quest for invention & excellence has taken or to be precise, thrown the technology far ahead, only to find himself lagging. So, the time now has come to uplift him to higher levels of decision making as technology/gadgets are enablers of work and not works themselves. Influencing factors are quick technology obsolescence, brave new world with strange rules, seamless economy, gadgets for speeding up actions, management fads, wealth vs wellness maximization, societal/environmental sensitivities, king consumer leading to manager's, depression, job hopping, quick fix solutions and knee jerk reactions without considering the economic, social & environmental actors.

Keywords:
Apparel, Textile, Silicone, Digital, Gadgets, Manager, Depression.

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