Paper No: PU-SOE- CIVIL - 01

Performance of Steel Fiber Reinforced Concrete Columns Exposed to High Temperatures Under Different Cooling Conditions

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Abstract

This paper aims to present the study conducted on steel fiber reinforced concrete columns that were exposed to temperatures up to 800ºC and cooled by two methods. The study was carried out on 34 columns of length 1200 mm and cross section of 150 mm X 150 mm, out of which 17 were RC columns with steel fibers, while the remaining 17 were made of just reinforced concrete. The columns are heated at temperatures of 100, 200, 300, 400, 500, 600, 700 and 800ºC for a duration of 3 hours at each temperature, and later cooled by two methods, namely, natural air cooling and water quenching. The samples were tested for first crack load, ultimate load and toughness, and the results are discussed

Keywords:

Concrete, Temperature, Steel fiber, Compressive strength

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Indian Concrete Journal	93(8)	Aug. 2019	22-32	ICJ	Q3

Paper No: PU-SOE- CIVIL - 02

Flexural Performance of Self Consolidating, Self-Cured Concrete Beams -Incorporating SAP

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Abstract

Self- Compacting Concrete (SCC) is a sort of Concrete that possesses high flowing, passing ability, which can be placed and compacted due to its own weight without any peripheral compaction effort, at the same time it is cohesive enough to be handled without any segregation or bleeding distinctiveness. This Research Study presents an experimental exploration Flexural behavior of Internal cured Self Compacting Concrete (ICSCC) with fine aggregate substitution by Crushed Rock Fines (CRF) at 0%& 30%, with silica fume as supplementary for cementitious material. Mix Proportions for ICSCC, controlled specimens SCC and Normal Conventional Concrete (NCC) M40 grade is arrived. For each concrete mixes 150mm X 150mm x150mm cubes and 100 X230 X 1500mm beams were casted and exposed to internal curing at ambient temperatures for 7 and 28 days. The results arrived for ICSCC mixes were paralleled with controlled specimens of SCC and NCC. Appropriate materials were selected to have a better performance to ensure efficient internal curing in the concrete mass. The Flow Properties of SCC, ICSCC mixes have been performed as per EFNARC Stds and results of flow properties were within limits. Analysis made from the experimental exploration is accomplished that the Flexural characteristics for ICSCC mixes curried at ambient temperature found acceptable.

Keywords:

Self-Curing, Silica Fume, Self-Compacting Concrete, Workability, Compressive Strength and Flexural Strength Characteristics.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Innovative Technology and Exploring Engineering	8(12)	Oct. 2019	1812-1816	Blue Eyes Intelligence Engineering & Sciences Publication	Q4

Paper No: PU-SOE- CIVIL – 03

Screening, Detection and Quantification of Solasodine in Solanum Pubescens Willd by Reversed-Phase High-Performance Liquid Chromatography Method

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Abstract

Objective: The aim of the study is to extract the solasodine with different solvents from leaf and stem bark of Solanum pubescens and to screen, detect, and quantify using reversed-phase high-performance liquid chromatography (RP-HPLC) methods. Methods: Standard solasodine marker compound and five different solvent extracts made through Soxhlet extraction from leaf and stem bark of S. pubescens were injected (10 µl) to HPLC with C18 reversed-phase column, gradient solvent eluent system, and photo-diode array detector (DAD) under ultraviolet absorbance at 205 nm with flow rate of 1.2 ml/min. a simple formula is adopted to quantify the assay % of solasodine. Results: Standard solasodine marker was detected at a retention time (RT) 21.59 min with the peak area of 5245605 at a wavelength of 205 nm. Among the ten extracted samples, solasodine was detected in leaf methanol extract (RT 21.81 min) and hydro-alcohol leaf extract (RT 21.82 min) with the peak area of 191694 and 246023, respectively. The quantified assay % of solasodine was highest in leaf hydro-alcohol extract (1.857%) followed by leaf methanol extract (1.447%). In the remaining eight extracts, solasodine was not detected. Conclusion: The present study findings are the first report with accuracy and simple assay method for extraction, screening, detection, and quantification of solasodine using RP-HPLC from S. pubescens.

Keywords:
Glycoalkaloid, Gradient solvent, Reversed-phase high-performance liquid chromatography, Solanum pubescens, Solasodine

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Green Pharmacy (IJGP)	13(4)	Oct. 2019	343	Medknow Publications	Q3

Paper No: PU-SOE- CIVIL - 04

Cytotoxicity Studies of an Ethnobotanically Selected Solanum Pubescens Willd against Selected Human Cancer Cell Lines

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Abstract

Objective: The present study was aimed to determine the cytotoxicity concentration (CTC_{50}) of different extracts made from the leaf and stem bark of an ethno botanically selected *S. pubescens* against Human liver carcinoma (Hep G2), Human colon carcinoma ($CaCO_2$) and Human breast cancer (T-47 D) cell lines.
Methods: Ethnobotanical survey was done through interviewing traditional medicinal practitioners then a potential herbal plant was selected after a thorough literature survey and its identity was confirmed. The soxhlet extraction method was adopted using five different solvents from leaf and stem bark powders of the study plant and the CTC_{50} of all the extracts were determined by 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay method.

Keywords:
S. pubescens, Cytotoxic activity, MTT assay, Hep G2, $CaCO_2$, T-47 D

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Pharmacy and Pharmaceutical Sciences	12(1)	Jan. 2020	31-35	Creative Commons License	Q2

Paper No: PU-SOE- CIVIL - 05

Social Immersion Project for Experiential Learning of Sustainable Farming Practices: A Case Study

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Abstract

Social Immersion projects (SIP) extends an excellent opportunity to the undergraduate engineering students to learn the engineering skills through experiential, participative and collaborative learning. This makes them to understand the challenges of real world and the best possible technical solutions to such social issues. It gives students a hands on experience of applying the knowledge of engineering to solve practical problems of society at large. The active participation in SIP inculcates the students with work ethics, and practical insights about environment, energy, economy, Social and safety aspects in Sustainable Development Approach (SDA). Agriculture provides impetus to social and economic growth of any country. However, water is the most important input for agriculture output and its efficiency. During this study, students have visited and interacted with the farmers of the two villages, Kukkanahalli and Puttenahalli near Bengaluru. This has provided them with insights of sustainable farming by observing and experiencing the existing practices on the field and interacting with farmers of all category, small to large holding. Keeping this in view, the students' involvement in such social immersion project creates an experiential learning platform to learn the concepts of sustainable farming.

Keywords:
Sustainable, Farming, Experiential Learning, Social Immersion Projects (SIP).

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Journal of Engineering Education Transformations	33(3)	Jan. 2020	545-550	Indo US Collaboration for Engineering Education with Rajarambapu Institute of Technology	Q4

Paper No: PU-SOE- CIVIL – 06

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 Journal of Environmental protection	40 (7)	July, 2020	769-774	Kalpana Corporation	Q4

Paper No: PU-SOE- CIVIL - 07

Groundwater hydrochemistry of Rajnandgaon district, Chhattisgarh, Central India

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Abstract

The spreading of fluorosis diseases in Central India related to high concentrations of fluoride ion (F^-) is a cause of major concern. In this work, the hydrochemistry of the aquifers related to Seonath River, in Rajnandgaon district, Chhattisgarh state, India, has been studied, focusing on the presence and sources of F^-. Hydrochemical parameters were analyzed in the post-monsoon season in 160 wells located in nine tehsils, finding F^- concentrations ranging from 0.6 to 18.5 mg L^{-1}. Seasonal variations were also studied in Chhuikhadan tehsil, in which the highest F^- values were registered, finding a noticeable enrichment in the pre-monsoon months. In many locations of the district, F^- concentrations exceeded the recommended value of 1.5 mg L^{-1}, which have led to the appearance of several health issues. Multidimensional analysis statistical methods were adopted to investigate the sources of F^-, and the mineralization of bedrock elements into the groundwater was observed to be the primary source.

Keywords:
APCS–MLR; aquifer; fluoride; PCA; Seonath River; source apportionment.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Groundwater for Sustainable Development	11	Oct, 2020	100352	Elsevier BV	Q1

Paper No: PU-SOE-CSE-01

BlockChain Based Combinatorial Grouping Auction with Reserve Price Mechanism in Cloud Computing

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Abstract

The block-chain is a growing decentralized scheme applied in many applications, such as an auction, smart contract, Health, and banking sector. The cloud service providers can sell the resource to cloud consumers using an auction. The main challenge in resource allocation using auction is to provide reliability to the users. In this paper, a blockchain-based combinatorial grouping auction with a reserve price mechanism (BCGAWRP) was proposed. The proposed scheme maximizes the total revenue and resource utilization by assuring reliability. The proposed BCGAWRP performance was assessed by simulating the cloud environment. The experimental result shows that the proposed BCGAWRP algorithm increases revenue more than the traditional combinatorial auction algorithm. Moreover, simulation studies show that reserve price is useful and provides a mechanism to achieve the trade-off between the seller's and the buyer's virtual machines.

Keywords:
Cloud computing, Block chain, Auction, Combinatorial grouping auction, Virtual machines.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Recent Advances in Computer Science and Communications (Recent Patents on Computer Science)	12(1)	Aug, 2019	1-9 (online publication)	Bentham	Q3

Paper No: PU-SOE-CSE-02

EMP-SA: Ensemble Model Based Market Prediction Using Sentiment Analysis

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Abstract

Predicting stock market trend is an extremely complicated task and calls for extensive study and insights into the context at hand. Primary requirement for any investor is to assess this trend to help invest for maximizing his returns. The advances in Machine learning and data analytics in particular have changed the way investors can approach this matter. Sentiment analysis or Opinion mining can be carried out by taking into consideration public sentiments regarding the stock market conditions and to understand the ups and down of this most volatile sector. In this paper, public sentiments from Twitter along with news feed related to the stock market conditions for predicting the nature of market is considered to analyse the stock market trend. The data is collected from twitter and various news sites to generate a gross sentiment score regarding the market. The gross sentiment score is used to find a correlation between market price and sentiments to train the proposed models for prediction using Linear and robustness regression techniques such as Ordinary Least squares (OLS), RANSAC, Theil-Sen estimator, Huber Regression and Ridge regression. Ensemble method is used to achieve reliable and better prediction accuracy instead of a single method. Ensemble method combines models and carries out majority voting among them to produce one final model to increase prediction accuracy. The obtained results reveal that public opinion does make a significant impact on market behaviour with the prediction accuracy between 65-91% depending on the dataset.

Keywords:
Ensemble method, Machine Learning, Opinion mining, Sentiment Analysis.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Electrical and Computer Engineering Journal	8	Aug, 2019	6445-6452	Institute of Advanced Engineering and Science (IAES)	Q2

Paper No: PU-SOE-CSE-03

A Novel Approach on Transport Information System for Pre-Defined Routes Using Traffic Estimation Framework and Open Layer JS

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Abstract

The need for effective transportation is a must for a country like India with multiple states and languages. But due to the complex system of public transport effective services was not considered a priority earlier. When we come to a new place, a hurdle to reach your designated place due to a lack of information on public transport is higher. This is a nationwide problem. The manual timekeeping methodology also became obsolete by the growth of public transport and with a growing population. Indian public bus transport has a huge number of 112 thousand buses with the annual growth of 5percent. To make a tracking and monitoring system for this amount of buses is completely a burden for the budget makers. The present-day GPS tracking systems need at least a twenty-five thousand rupees system per bus. This is not going to possible for present-day Indian scenario. So, we came up with a software-based vehicle tracking in pre-defined routes. This is done using various kinds of collectors with mobile applications and sensors. The role of kinematics is kept higher here than the GPS sensor data. Open-source mapping API is used to give the end-users a visualized outlook. This kind of software system reduces the economic burden for the monitoring and estimation process with 90 percent accuracy in the simulation stages.

Keywords:
Open Layer JS, Vehicle Tracking, Traffic Estimation, GPS, Public Transport

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Engineering & Technology	8(3)	Aug. 2019	230-239	Engg Journals Publications	Q4

Paper No: PU-SOE-CSE-04

Detection of Prostate Cancer Related Genes using Modified Ford-Fulkerson Algorithm in Protein-to-Protein Interaction Network

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Abstract

Prostate cancer is a malignancy cancer that affects prostate epithelial cells. Presently, prostate cancer is the second leading cause of cancer-related death in men. In this research, a new computational system was proposed for determining the prostate cancer related genes with the shortest path methodology in a Protein to Protein Interaction (PPI) network. Here, a weighted PPI network was constructed on the basis of PPI data from Search Tool for the Retrieval of Interacting Genes/Proteins (STRING) database. Totally, eighteen prostate related genes were extracted from the STRING database by using Kyoto Encyclopedia of Genes and Genomes (KEGG) pathway. Then, the shortest path between eighteen genes was identified using modified Ford-Fulkerson algorithm. Generally, the conventional Ford-Fulkerson algorithm was very effective in detecting the shortest path between the prostate cancer-related genes, but the elapsed time was high when the PPI network has more number of genes. In order to reduce the elapsed time, the modified Ford Fulkerson algorithm was developed by eliminating the invalid path in gene connection. In the experimental section, the proposed shortest path approach reduced the elapsed time up to 0.025-0.002 seconds compared to the existing shortest path methodologies.

Keywords:
Modified Ford-Fulkerson algorithm, prostate cancer, protein to protein interaction, and shortest path.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Engineering and Advanced Technology (IJEAT)	7	Aug, 2019	9384-9395	Blue Eyes Intelligence Engineering & Science Publications	Q4

Paper No: PU-SOE-CSE-05

Hybrid Optimization Scheme for Intrusion Detection Using Considerable Feature Selection

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Abstract

The intrusion detection is an essential section in network security because of its immense volume of threats which bothers the computing systems. The real-time intrusion detection dataset comprises redundant or irrelevant features. The duplicate features make it quite challenging to locate the patterns for intrusion detection. Hybrid optimization scheme (HOS) is designed for combining adaptive artificial bee colony (AABC) with adaptive particle swarm optimization (APSO) for detecting intrusive activities. The schemes are aggregated for locating improved optimization-based outcomes, and the precision during categorization is acquired using tenfold cross-validation scheme. The main objective of the proposed method is to improve the rate of precision in intrusion activities in internetwork by choosing the relevant features. Effectiveness of the hybrid categorization scheme is accessed using an NSL-KDD dataset. Single feature selection method and random feature selection method are used to assess the proposed HOS intrusion detection approaches. The effectiveness of the designed scheme is evaluated with existing machine learning schemes such as Naive Bayes, AABC, APSO, and support vector machine, which outperform the HOS.

Keywords:
Intrusion detection, AABC, APSO, Support vector machine, Hybrid optimization scheme

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Neural Computing and Applications	87	Sep. 2019	7925–7939	Springer	Q2

Paper No: PU-SOE-CSE-06

Realistic Deformation and Removal of Soft Tissues Modeling for the Simulation of Virtual Surgery

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Abstract

Most of the simulation methods for soft tissue modeling involve tetrahedral meshes which is quite complex and takes much computation time. Instead, this work attempts to make use of delaunay triangulated mesh that consists of unique mathematical properties suited for simulating soft tissues. Although, triangulated mesh is not so complex yet effective in producing elements of good quality. It even reduces computation time compared to the tetrahedral mesh by providing more geometric flexibility. In virtual surgery, it is essential to model the layers of soft tissues of human skin to perform a simulation of deformation and removal of cells. Based on this the multilayered model of skin prototype is developed in a pre-process and used for interactive modeling. This work presents a simple method for performing real-time collision detection in a virtual surgery environment. Also shows the efficient computation of collisions between the scalpel and delaunay triangulated mesh using a local collision detection function. The framework incorporates qualitative results obtained towards the simulation of surgical deformation and removal of soft tissues using appropriate algorithms. It also uses real-time texture mapping to enhance the visual realism.

Keywords:
Collision detection, Deformation, Skin, Simulation, Soft tissue

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Pharmaceutical Sciences and Research	10	March, 2019	4270-4279	KEJA	Q3

Paper No: PU-SOE-CSE-07

Efficient Hybrid Load Balancing Algorithm

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Abstract

The scarcity of the servers to cater to the demands of the traffic is one of the most important tasks of load balancing (LB). The increasing number of users at the same point of time does not provide enough room for all users. To provide a solution to this problem, the servers formulate a queue where the users are buffered for a period of time before they get connected to the further servers. If the requests are extremely high, then the load balancer completely aborts the process for every user. The problems discussed above mainly cater to the Client/Server model. This model as well as the difficulties changes for the proposed hybrid Grid model. The network is monitored by the load balancer for discontinued users as these may be cleared by the respective hosts. The balancing of the load should be as usual to the respective hosts for a single network and may later on be applied for the rest of the machines as per requirements. The server hardware requirements have been affected by the increase in decentralization. The cost of the companies and the services that they render has enormously increased and here comes the need for LB. The proposed work on hybrid load balancing solution for Grid is to design and integrate such systems and compare it with the existing ones. The system script has been developed in Java using a modular construction which makes it generic for various other network models. For the efficiency check for selecting servers from a pool, four different algorithms have been analyzed and modified.

Keywords:
Load balancing, Grid computing, Performance, Server

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
National Academy Science Letters	43	Oct. 2019	177-185	Springer	Q2

Paper No: PU-SOE-CSE-08

Combinatorial Double Auction based Meta-scheduler for Medical Image Analysis Application in Grid Environment

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Abstract

Grid computing provides more computing power to solve the financial forecasting, weather forecasting, drug design and medical image processing application. Many meta-scheduling algorithms have been proposed to schedule jobs. Considering the architecture and characteristics of the grid environments, traditional meta-scheduler algorithms cannot be applied to the grid computing properly. In this paper, we have come up with a combinatorial double auction based meta-scheduler. The aim of this meta-scheduler is to maximize the number of the job accepted. We assess the proposed meta-scheduler performance by simulating the grid environment. The experimental result shows that the proposed meta-scheduler algorithm maximize the number of the job accepted than the traditional meta-scheduler algorithm.

Keywords:
Grid computing, Meta scheduler, combinatorial auction, Medical image

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Recent Advances in Computer Science and Communications (Recent Patents on Computer Science)	12(1)	Nov. 2019	1-9 (online publication)	Bentham	Q3

Paper No: PU-SOE-CSE-09

Detection and Prevention of Types of Attacks Using Machine Learning Techniques in Cognitive Radio Networks

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Abstract

A number of studies have been done on several types of data link and network layer attacks and defenses for CSS in CRNs, but there are still a number of challenges unsolved and open issues waiting for solutions. Specifically, from the perspective of attackers, when launching the attack, users have to take into account of the factors of attack gain, attack cost and attack risk, together. From the perspective of defenders, there are also three aspects deserving consideration: defense reliability, defense efficiency and defense universality. The attacks and defenses are mutually coupled from each other. Attackers need to adjust their strategies to keep their negative effects on final decisions and avoid defenders' detection, while defenders have to learn and analyze attack behaviors and designs effective defense rules. Indeed, attack and defense ought to be considered together. the proposed methodology overcomes the problems of several data link and network layer attacks and it effects in CSS(Co-operative Spectrum Sensing) of CNRs using Machine Learning based Defense, Cross layers optimization techniques and Defence based Prevention mechanisms.

Keywords:
Cognitive Radio Networks (CRN); SSDF; DOS; WRSNN's; Cognitive Radio Wireless Sensor Node Networks (CRWSNN's);

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Innovative Technology and Research	7	Nov. 2019	9396-9400	Tirumala Publications	Not yet assigned (Google Scholar)

Paper No: PU-SOE-CSE-10

A Study on Techniques/Algorithms used for Detection and Prevention of Security Attacks

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Abstract

In this paper a detailed survey is carried out on the taxonomy of Security Issues, Advances on Security Threats and Countermeasures ,A Cross-Layer Attack, Security Status and Challenges for Cognitive Radio Networks, also a detailed survey on several Algorithms/Techniques used to detect and prevent SSDF(Spectrum Sensing Data Falsification) attack a type of DOS (Denial of Service) attack and several other Network layer attacks in Cognitive Radio Network or Cognitive Radio Wireless Sensor Node Networks(WSNN's) to analyze the advantages and disadvantages of those existing algorithms/techniques.

Keywords:
Cognitive Radio Networks (CRN); SSDF; DOS; WRSNN's; Cognitive Radio Wireless Sensor Node Networks (CRWSNN's);

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Innovative Technology And Research	7	Nov. 2019	9384-9395	Tirumala Publications	Not yet assigned (Google Scholar)

Paper No: PU-SOE-CSE-11

Ibadedup-Image Based Authentication and Deduplication Scheme in Cloud User Group

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Abstract

In recent times the cloud storage services are widely used for storage and processing. This has made the increasing demand for the mechanism or methodology which will provide the solution for reducing the use of redundant data, to achieve better space and bandwidth requirements of a storage service. Cloud computing enables all the remote workstations are light weighted where the operating system, services and user data are centralized in cloud servers and are shared by other users of the cloud. This sort of data sharing causes collusion attacks on an unsecure environment. Thus a secure protection scheme is needed to encrypt the private information. This may prove to be a problem because the distribution and storage of a key is difficult in a cloud with dynamic users. The proposed system provides distribution of key without the need for a secure communication channel using a group manager. This system also performs data De-duplication and prevents unauthorized access to a file using graphical passwords. Here the user selects an image to authenticate his identity. This image is split into 16 parts by the administrator; these 16 parts are generated randomly using a pseudo random generator technique. Then, the administrator holds onto 4 parts of the entire image to authenticate the user at time of login using Attribute Based Encryption. This helps the administrator authenticate the user and also prevents a revoked user from gaining access to a file. The Group Manager ensures the privacy of the files shared within a group by updating the user information to the database and by using RC6block cipher technique to encrypt the documents at time of storage. Thus when the user needs to download a file from a group a request is sent to the group manager and the decrypted file is then downloaded.

Keywords:
Data deduplication, Image Based Authentication, Key distribution, Privacy-preserving.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Recent Technology And Engg	8	Nov. 2019	12233-12244	Blue Eyes Intelligence Engineering & Sciences Publication	Q4

Paper No: PU-SOE-CSE-12

Multimedia Signal Processing in Cloud using Content Based Copy Detection

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Abstract

Nowadays making multimedia and multimedia altering has gotten simple because of effectively accessible handling instruments. Progressively over facilitating sites are unreservedly accessible. So clearly we experience circumstances wherein numerous recordings and pictures that are copyrighted are getting copied effectively. Such duplication isn't just unlawful yet in addition it makes an enormous misfortune unique content holder. On the off chance that at all we attempt to distinguish such copied content, process gets extremely mind boggling in light of enormous sizes and huge amount of multimedia documents present on web. So this procedure gets perplexing and computationally costly. Content based multimedia copy detection gives a powerful and improved instrument which can distinguish coordinating rate among tremendous multimedia duplicates from the content itself without having any reliance on any product. In the system of content based copy detection, marks are made from content itself before transferring on cloud like Picasa. In the proposed framework at whatever point new Multimedia article is transferred on the cloud initially its mark is made and on the off chance that the mark matches with put away database signature, at that point this will trap the site which copies copyrighted copy with no rights.

Keywords:
Cloud Computing, Multimedia, Content Based Copy Detection and Crypto steganography.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Innovative Technology and Exploring Engineering	9	Nov, 2019	2613-2615	Blue Eyes Intelligence Engineering and Sciences Publication	Q4

Paper No: PU-SOE-CSE-13

Subspace-Based Aggregation for Enhancing Utility, Information Measures, and Cluster Identification in Privacy Preserved Data Mining on High-Dimensional Continuous Data

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Abstract

Clustering is a data mining technique that has been effectively used in the last few decades for knowledge extraction. Privacy is a major problem while releasing data for clustering and therefore privacy-preserving data mining (PPDM) algorithms have been developed. Aggregation is a popular PPDM technique that has been used. However, in the last few years, certain applications require that data mining be performed on high-dimensional data. The present privacy preservation techniques perform aggregation in a univariate manner along each dimension. This affects the utility measures, information measures, and especially retention of original clusters. This paper proposes a new technique called as subspace-based aggregation (SBA). SBA categorizes the dimensions into dense and non-dense subspaces based on the density of points. Aggregation is performed separately for dense and non-dense subspaces. This approach helps to maximize utility measures, information measures, and retention of clusters. SBA is run on high-dimensional continuous datasets from UCI Machine Learning repository. SBA is compared with related work methods such as SINGLE, SIMPLE, MDAV, and PPPCA. SBA provides an improvement of 66% in utility, 400% in cluster identification, 5% in co-variance, and standard deviation.

Keywords:
Privacy preservation, privacy preserved data mining, Data privacy

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Computers and Applications	-	Nov. 2019	Published online	Taylor and Francis Ltd.	Q4

Paper No: PU-SOE-CSE-14

Link Availability Based Routing Protocol for Mobile Ad-Hoc Networks Based on Link Life Time Prediction

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Abstract

A self-configured MANET has a set of wireless devices. With no prior administration, the Mobile Nodes (MNs) communicate via the wireless links. The limited bandwidth, transmission errors, dynamic topology, energy constraints, and link stability fluctuations lead to node mobility. The links between nodes are unreliable and might break on account of such node mobility. Link breakage leads to the rerouting process at the sender node (where the link breakage occurs) or Source Node (SN). This work proposed Link availability based routing protocol (LBRP) for MANET to attain load balancing via the Multi-Path (MP) communication. The traffic data could completely pass through parallel multiple paths, which enhances the protocol efficiency. On weighing against the existing routing protocols (RPs), the LBRP chiefly considers frequent link failures and unpredictable change in topology. The simulation outcomes validate the proposed LBRP. The LBRP performs well when contrasted to the DSR, ZRP, and AODV in all the experiments. This work would serve as the groundwork for examining and optimizing certain network protocols, and could help in designing algorithms for transport control and medium access.

Keywords:
Link quality, Link availability table, Link lifetime, Path availability.

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
International Journal of Innovative Technology and Exploring Engineering (IJITEE)	9(2)	Dec. 2019	3664	Blue Eyes Intelligence Engineering & Science Publications	Q4

Paper No: PU-SOE-CSE-15

Analysis of Mobile Management Processes and Modeling

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Abstract

The primary objective of this research paper is outlaying analysis-based outcome related to service with the use of optimization techniques with the aid of mobile tech. Such studies were executed by a firm in the housing sector. The methodology-the background of the study was established with an objective of structuring business activities in an efficient manner in order to minimize cost. Hence, a suitable technique enacted in this research paper was utilized. Findings-as signified considering the current state of the firm was evaluated, what are some of the contingent processes centered on the mobile tech models and how has been the evaluation of the alternatives and how they were created. Moreover, initial limitations of the software and the framework structures were pointed out considering one processing technique. Lastly, it is portrayed how the techniques have been utilized in assessing if the implementation of these mobile technologies has been effective for the extraction of a definite objective, alongside the necessities required for the present solution to be attained. Uniqueness/value-the research paper exhibits ways in which practitioners carry out appropriate assessment of organizational processes based on the customization potential via the mobile technologies.

Keywords:
Modelling, Communication technologies, Systems analysis, Optimization techniques.

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Journal of Advanced Research in Dynamical and Control Systems	11(8)	Dec. 2019	257-262	Institute of Advanced Scientific Research	Q3

Paper No: PU-SOE-CSE-16

Optimization, Modelling and Simulation for Evolutionary Computation

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Abstract

The term evolutionary computation is a phrase used in a series of optimizations methods comprising of traits that are enthused though biological development. Rather than using one contingency plan for a moment, normally a population of unsystematic solutions is employed. Hence, the first population advances to an improved collection of solution by using three major progressions, which include recombination, mutation, and selection. Therefore, the chosen solutions, which comprise of fitness, are preferably selected since they are used for the combination so that brand new sets can be established. On the other hand, mutation is utilized in upholding diversity amid the newly shaped solutions. The focus of the paper is explaining shortly the essential qualities of the evolutionary computation (EC). In addition to this, various outcomes are shown extracted from research and various development energies based on dissimilar challenges such as visual noise minimization and the discernment of underground-unexploded weapons. Moreover, there will be examples based on how the EC can possibly be utilized within the models, and various simulations that can be used in finding a suitable leveled solution for vast number of problems. This type of technique harbors significant impending used within the simulations and the models within a merged environment. The simulation and model society is required to be vivid about these authoritative evolutionary computation-based methods in order for them to be employed in extensive disciplines so that is could provide suitable elucidations to warfighters.

Keywords:
Evolutionary computation, Genetic programming, Software tools, Optimization techniques, Modeling and Simulation

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Advanced Research in Dynamical and Control Systems	11(9)	Dec. 2019	111-115	Institute of Advanced Scientific Research	Q3

Paper No: PU-SOE-CSE-17

Computational Mining Algorithms for Future Technologies

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Abstract

Extensive analysis and research done on data mining has led to successful results such as algorithms, techniques, equipment, and various research approaches used for catering vast number of data that is purposed for certain uses which include problem solving techniques. Many application domains use data mining techniques, which are useful in creating foreseen analysis, housing, business intelligence, creating a good decision system, and used in bio-informatics. The primary aim intended for data mining is efficiently solving extensive data, extracting actionable series and acquiring perceptive understanding. Data mining is a sole part of knowledge discovery within database (KDD) activities. Triumph and enhanced decision implementation process is relied based on how fast the data can be identified and analyzed. Such intuitions can be highly be used in preparing effective actions that can be utilized within operational processes, and foreseeing a better future. The focus of the paper is outlaying an overview of certain algorithms that are suitable for solving extensive data sets. The prospected algorithms explain certain structures and techniques that have been enacted in solving big data. Additionally, the paper evaluates the common strengths and restrictions for the mentioned algorithms. Hence, the paper may guide or is an opener used by data mining researchers where algorithms can be selected and used in handling challenges that will be analyzed.

Keywords:
Data mining concept, applications, challenges, future trends.
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Advanced Research in Dynamical and Control Systems	11(7)	Dec. 2019	817-822	Institute of Advanced Scientific Research	Q3

Paper No: PU-SOE-CSE-18

Intellectual Resource Sharing Scheme in Cloud

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Abstract

Resource allocation and the executives in Cloud Computing is an exceptionally mind boggling task. This is predominantly because of the size of the cloud and the quantity of services sent in it. Since cloud clients and service suppliers are offered access to super PC level resources, their impact over the cloud's general execution is more noteworthy than at any other time. This brings up various research issues identified with the administration and execution of cloud computing frameworks in light of the end-clients childishness. In this work we explicitly ponder the general execution when egotistical service suppliers may part work between the (common) cloud and private resources. The size of current server farm and the quantity of service housed in it calls for completely dispersed administration arrangements. In this paper, we structured a light heaviness stage is offered as independent system called "Intellectual Resource Sharing scheme", which enable the shoppers and suppliers to exchange computing resources as per their necessities.

Keywords:
MRI image, CNN, Classification, Denoising Texture.
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Advanced Research in Dynamical and Control Systems	11	Dec. 2019	7-12	Institute of Advanced Scientific Research	Q3

Paper No: PU-SOE-CSE-19

Internet of Things: Quality of Services of RABBITMQ & KAFKA

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Abstract

Diverse use of various heterogeneous devices in Internet of Things is providing challenges and several issues in Quality of services related to Internet of Things. This paper provides the overview of Internet of Things (IoT) and standards. Factors affecting the quality of services in communication. Standards used for communication in Internet of Things (IoT) are discussed and reviews related to it is presented. RabbitMQ implementation of AMQP as well popular standard like Kafka is discussed. Quantitative and Qualitative differences between RabbitMQ and Kafka is presented. We have also discussed similarities and dissimilarities of Message Queue Telemetry Transport (MQTT) and Advanced Message Queuing Protocol (AMQP) protocols. The main objective of this review is to provide critical review of a functional view of IoT architecture, protocols and standards.

Keywords:
RabbitMQ, Kafka, AMQP, IOT
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Innovative Technology and Exploring Engineering	9	Dec. 2019	883-886	Blue Eyes Intelligence Engineering & Sciences Publication	Q4

Paper No: PU-SOE-CSE-20

Analysis of AI Based Face Detection Techniques

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Abstract

In this fast-moving world, computer vision has been gaining lots of importance in the field of Artificial Intelligence. Face Recognition is one among the most important field which has been gaining attention in the recent days due to its application in various fields such as Security and Surveillance applications, marketing sector, computer graphics. Face detection is a technique which is used to detect the faces in a image/video frame. This is the primary and a crucial step carried out before the Face recognition process. Some of the ways to detect human faces in a digital image is by using Haar Based Face Detection, Deep learning-based Face detector, Tiny Face detector, Kernel methods etc. In our study face detection is carried out by using OpenCV and a comparison was carried out between the Haar Cascade model and a deep learning model with the pre-defined constraints in accordance with the properties of the image and the physical distance parameters of the camera position etc. The results of face detection with both the models was analysed on different factors such as accuracy, feasibility, total number of faces detected with reference to the actual number of faces existing in the image. Conclusions were drawn to suggest the best methodology well suited for a non-cooperating scenario where testing and train conditions are different such as non-intrusive based face recognition application.

Keywords:
Deep Learning, Face Detection, Machine Learning, Face recognition, Tiny Face Detector
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Engineering Sciences	10	Dec. 2019	815-821	Elsevier Ltd	Q1

Paper No: PU-SOE-CSE-21

Deep Fusion Model Enhanced CNN for MRI Brain Image Classification System

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Abstract

Magnetic Resonance (MR) Imaging is a popular non-invasive modality for the visualization of different abnormalities in the brain due to its good soft-tissue contrast and accessibility of multispectral images. Using information from MR images, CAD systems have been developed to benefit doctors in rapid diagnosis. CAD systems can provide the diagnosis depending upon the specific attributes present in the medical images. The present study proposes a comprehensive method for the diagnosis of the cancerous region in the MRI images. Here, after image noise reduction, optimal image segmentation based on Support Vector Neural neural algorithm is utilized. Afterward, an optimized feature extraction and feature selection based on a modified region growing optimization algorithm are proposed for improving the classification accuracy of brain images. Further, it is also proposed that the input MR brain image be de-noised using a non-local Euclidean median in non-subsampled contourlet space. The classification accuracy of MRG with SVM is 74.24%, MRG with CNN is 82.67% and MRG with ANN is 62.71% and our proposed method MRG with MBCNN is 91.64%.

Keywords:
MRI image, CNN, Classification, Denoising Texture.
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Recent Technology and Engg	8	Jan. 2020	3511-3515	Blue Eyes Intelligence Engineering & Sciences Publication	Q4

Paper No: PU-SOE-CSE-22

Agent-Based Cloud Service Negotiation Architecture Using Similarity Grouping Approach

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Abstract

Challenges and issues in the field of cloud service negotiation framework optimization have been an active area of research. During service level agreement, the probability of negotiation conflict between the service consumers and providers is high. This may arise due to aggressive behavior, selfish misperception, vague preferences and uncertain goals of the negotiating participants. One of the key challenges identified in negotiation framework is optimizing the negotiation conflict among the negotiators. In order to minimize such conflicts, existing frameworks group the negotiation pairs that contain similar and non-aggressive behavioral patterns by exploiting the distance, binary, context dependent and fuzzy similarity approaches. These approaches get better success rate only if the dimensionality of negotiator attributes is low. As emerging real-time cloud service negotiation applications are characterized by negotiation attributes of high dimensionality, the existing approaches are inappropriate for these applications. In addition, the existing approaches group the negotiation pairs using distances based measure in two-dimensional negotiation attribute, whose value will vary for high-dimensional attributes. In this work, an Angle-based Similarity Grouping (ASG) approach is proposed that appropriately groups the highly cooperative negotiation pairs and thereby increases the success rate and decreases communication overhead.

Keywords:
Cloud computing, Multi-agent system, Negotiation conflict, Angle-based similarity grouping and cooperative behavior
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Wavelets, Multiresolution and Information Processing	18	Jan, 2020	1-19	World Scientific Publishing Co. Pte Ltd	Q3

Paper No: PU-SOE-CSE-23

Mitigating the Threat due to Data Deduplication Attacks in Cloud Migration using User Layer Authentication with Light Weight Cryptography

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Abstract

The widespread adoption of multi-cloud in enterprises is one of the root causes of cost-effectiveness. Cloud service providers reduce storage costs through advanced data de-duplication, which also provides vulnerabilities for attackers. Traditional approaches to authentication and data security for a single cloud need to be upgraded to be best suitable for cloud-to-cloud data migration security in order to mitigate the impact of dictionary and template attacks on authentication and data integrity, respectively. This paper proposes a scheme of user layer authentication along with lightweight cryptography. The proposed simulates its mathematical model to analyze the behavioral pattern of time-complexity of data security along with user auth protection. The performance pattern validates the model for scalability and reliability against both authentication and data integrity.

Keywords:
Cloud computing, Authentication, De-duplication, Data security, Cloud-to-Cloud data migration, Hashing, Cryptography

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
International Journal of Innovative Technology and Exploring Engineering (IJITEE)	9	Jan. 2020	2539-2545	Blue Eyes Intelligence Engineering & Sciences Publication	Q4

Paper No: PU-SOE-CSE-24

Soft Tissues Deformation and Removal Simulation Modelling for Virtual Surgery

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Abstract

Major advances in the area of virtual reality have paved the way to an important application called surgical simulators. These are safe methods to carry out surgical planning and training. Surgical simulators are expected to replace conventional surgery training methods in the near future. Achieving soft tissue deformations in real time is a challenging task in virtual surgery. The most commonly used methods for deformation simulation are finite element method and mass spring method. The proposed method makes use of Delaunay triangulated mesh model to depict multiple layers of skin. This paper presents simple method of 3D soft tissue deformation and removal simulation using visualisation toolkit. The presented framework is able to simulate: collision detection, deformation and removal of soft tissues for real time computation. Multilayered model of human skin using Delaunay triangulated approach is developed as a pre-process step. The same interactive model is considered for deformation and removal simulation approach. Necessary meshing algorithms are used based on Delaunay criteria to obtain qualitative results.

Keywords:
Collision detection; Deformation; skin; Soft tissue; scalpel.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Intelligence and Sustainable Computing	1	Jan. 2020	83-100	Inderscience	Scopus Index

Paper No: PU-SOE-CSE-25

Evolution, Challenges and Application of Intelligent ICT Education

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Abstract

Artificial intelligence (AI) aims at critically transforming the information and communication technology (ICT) sector through various technological advancements, such as machine learning, deep learning, and natural language processing. These technologies are meant to develop the process of communication, digital commerce, content, and apps. AI is also meant to initiate novel business frameworks and formulate a completely novel business opportunity as efficiencies and interfaces facilitate the engagement, which has been heretofore unintelligible. A number of industry verticals will be changed through this form of evolution, as digital and ICT technologies are critical in supporting the various aspects of industrial operations, which include sales, marketing processes, supply chains, product and service delivery, and support frameworks. For instance, substantial implication of the frameworks can be witnessed in medical and bioinformatics, including the financial service segments. Workforce automation is a field that will influence various industrial verticals, as AI significantly develops the flow of work, accelerations, and processes of the return on investment for intelligent workplace application. This paper signifies the role of AI in ICT education, including the way intelligent ICT education has significantly developed its application and challenges.

Keywords:
Artificial intelligence (AI), Deep learning (DL), Information and Communication technology (ICT), Machine Learning (ML)

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Wiley Computer Applications in Engineering Education	Special volume issue	Feb. 2020	1-10	John Wiley and Sons Inc.	Q1

Paper No: PU-SOE-CSE-26

Optimal Routing and Load Balancing based Congestion Avoidance in MANET using Improved Ad-Hoc On-Demand Distance Vector Routing

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Abstract

In a mobile ad-hoc network (MANET), there is basically no a requirement to deploy infrastructure for the nodes to communicate amongst themselves. The procedure of Congestion Control (CC) is complicated on account of the presence of MANET's exclusive characteristics. There are many existing techniques that have worked on the minimization of congestion but have left out issues, like packet loss, delay, and also more time consumption. Thus, this paper have proposed an effectual method to trounce these problems in MANET utilizing improved ad-hoc on-demand distances vector (IAODV), and this technique is called as the optimal routing and Load Balancing (LB) based Congestion Avoidance (CA). This work encompasses '7' steps. Here, the IAODV protocol generates the multipath amongst the mobile nodes (MN) within the MANET. After that, as of the network, the Traffic Load Density (TLD), maximum lifetimes, traffic load, link cost, and residual energy is extracted. Subsequently, the algorithm is utilized to select the optimal paths, and the shortest-jobs-first (SJF) execution algorithm prioritizes the chosen optimal path values. Through the optimal path, which is given the first prioritization, the packet is sent. The load density values are monitored and updated to the AODV table by the Mobile Agent (MA). On the off-chance that the available load density is above the threshold value, then the MA notify it to the protocol. If that is the case, then the protocol distributes the load to the optimal path that is given the second prioritization, and this stands as a LB process. As of the experimental assessment, it is detected that the proposed work is established to have superior performance when weighed against the existent methods.

Keywords:
Improved Ad – hoc On - Demand Distance Vector (IAODV), Shortest Job First (SJF), Weight – based Cockroach Swarm Optimization (CSO−ω) and mobile agent

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Control and Automation	13	March, 2020	110-127	Science and Engineering Research Support Society	Q4

Paper No: PU-SOE-CSE-27

Robot Controlling Using Arduino Uno

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Abstract

In recent years, robotics engineering field is an emerging field that is in great demand as it includes design and construction with various applications like vehicle assembly, packing food items, electronic industries, appliance building etc. This paper describes controlling of a robot using gestures. Making a gesture involves manoeuvre of the face, hand or any other body parts. Making a gesture changes from non-verbal physical communication that do not convey with particular messages, like proxemics, indicative displays, or joint attention displays. It allows human beings to pass on a diversity of affection and thinking, from conflicts and combat to agreement and endearment, along with kinesics towards their speech. The end user needs to put on a making device of gesture that involves a sensor. The sensing element will record the hand variation in a particular path that results in robot movement in the appropriate direction. Making the gesture device along with robot are interconnected wirelessly through radio waves. The wireless transmission qualifies the end user to enact the robot in favorable way. A transferring instrument is used in the hand that consists of accelerometer and RF transmitter using Arduino Uno. It will pass on commands to robot such that it can perform the essential tasks like turning left, right, forward, reverse and stop. All these jobs will be executed by using hand gestures.

Keywords:
Arduino, Decoder, Encoder, IC, RF, Robot

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Engineering Research and Applications	10	March, 2020	26-30	Blue Eyes Intelligence Engineering & Science	Q4

Paper No: PU-SOE-CSE-28

A Novel Scheme for Energy Conservation and Reduction in Routing Overhead of AODV for Wireless Ad-Hoc Networks

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Abstract

A collection of wireless nodes creates a self-arranged MANET. The Mobile devices make correspondence over the wireless connections with no prefixed organization. The devices in portable specially appointed systems are battery worked and with constrained energy assets. This makes energy productivity a key concern in guaranteeing framework solidness. This paper recommends an Energy Efficient Preemptive DSR to the MANET. It represents the energy management method to improve the routing protocol proficiency. The energy preservation is achieved in the MAC layer. It manages the proposed energy management approach. It clarifies the connection of directing overhead and energy protection and it manages the routing overhead decrease. It computes the accessible and required energy of correspondence node and it assesses the moderated energy level. It reproduces the expending energy in Preemptive DSR and, it contrasts the reenactment result and AODV protocol.

Keywords:
Energy Management, Reduction of Overhead, AODV, Traffic Pattern, Mobility Pattern.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Advanced Science and Technology	29	March, 2020	5281-5287	Science and Engineering Research Support Society	Q4

Paper No: PU-SOE-CSE-29

A Comprehensive Study on Design Consideration of Multi Core Processors

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Abstract

Multi core processors are designed to meet the rapidly growing computing demands with optimal power consumption. It is the most preferred choice in cluster computing because of its greater computational power and cost effectiveness. There are many works proposed on design consideration in multi core systems for optimization of power, delay etc. But many of those works need to be extended for the case of multi core systems employed in cluster computing. Multi core cluster presents many design challenges in terms of execution mode, data locality and interconnect to achieve optimality in terms of multiple parameters like delay, power consumption, fault tolerance etc. This work studies those existing solutions to identify open areas of research.

Keywords:
Multi core processor, Data locality, delay, Fault tolerance, Power consumption.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Studies in Indian Place Names (Multidisciplinary Journal)	40	March, 2020	467-474	The Place Names Society of India	Not yet Assigned

Paper No: PU-SOE-CSE-30

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
Studies in Indian Place Names(SIPN)	40	March, 2020	367-375	The Place Names Society of India	Not yet Assigned

Paper No: PU-SOE-CSE-31

A Novel Wolf Based Trust Accumulation Approach for Preventing the Malicious Activities in Mobile Ad-Hoc Network

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Abstract

Mobile Ad hoc Network is self-organized and movable in nature, it is widely used in various applications including military and private sectors. However, security is one of the key concerns in routing because of the moving nodes; thus it is usually affected by Black Hole and Grey Hole attack. These types of malicious activities are more harmful to the network channel, and once the attack is happened it is difficult to predict and mitigate. To end this problem the current research proposed a novel Grey Wolf Trust Accumulation (GWTA) Schema in wireless mesh network architecture, thus the attacks are identified by the finest function of the GWTA model. Moreover, the predicted attacked nodes are replaced to the last position of the network medium to prevent the packet loss. Furthermore, the comparison studies proved the effectiveness of the proposed model by attaining less packet drop and high throughput ratio rate.

Keywords:
Mobile ad-hoc network, Black hole attack, Grey hole attack, Wireless mesh network, Secure routing

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Wireless Personal Communications	111(4)	April, 2020	Online publication	Springer Netherlands	Q3

Paper No: PU-SOE-CSE-32

Cloud Service Selection Using DEA Based on SMI Attributes

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Abstract

Cloud computing allows on-demand access and fast network connection to a shared resource pool. Most companies are switching to Cloud due to the popularity and benefits of using Cloud Services. So finding a suitable and best cloud provider is a challenge for all users. Several ranking methods, such as AHP, TOPSIS, had been suggested to solve this problem by multicriteria decision making techniques. But, many of the works focused on a subset of the main QoS attributes for ranking. Cloud Services Measurement Initiatives Consortium (CSMIC) has released Service Measurement Index attributes for effectively comparing the Cloud services. The comparison of services provided by cloud based on SMI attributes which are qualitative as well as quantitative in nature is studied in this paper by one of the non-parametric methods called Data Envelopment Analysis (DEA) and ranked the cloud services based on the efficiency scores obtained by DEA. The cloud users can select the best suitable Cloud service using the proposed approach that best suit their QoS requirements

Keywords:
MCDM, DEA SMI, Cloud Service, QoS, CSMIC.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Engineering and Advanced Technology	9	April, 2020	850-855	Blue Eyes Intelligence Engineering & Sciences Publication	Q4

Paper No: PU-SOE-CSE-33

A Hybrid Grey Wolf and Crow Search Optimization Algorithm-Based Optimal Cluster Head Selection Scheme for Wireless Sensor Networks

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Abstract

Clustering is considered as one of the most primitive technique that aids in prolonging the lifetime expectancy of wireless sensor networks (WSNs). But, the process of cluster head selection concerning energy stabilization for the purposed of prolonging the network life expectancy still remains a major issue in WSNs. In this paper, a hybrid grey wolf and crow search optimization algorithm-based optimal cluster head selection (HGWCSOA-OCHS) scheme was proposed for enhancing the lifetime expectancy of the network by concentrating on the minimization of delay, minimization of distance between nodes and energy stabilization. The grey wolf optimization algorithm is hybridized with the crow search optimization algorithm for resolving the issue of premature convergence that prevents it from exploring the search space in an effective manner. This hybridization of GWO and CSO algorithm in the process of cluster head selection maintains the tradeoff between the exploitation and exploration degree in the search space. The simulation experiments are conducted and the results of the proposed HGWCSOA-OCHS scheme is compared with the benchmarked cluster head selection schemes with firefly optimization (FFO), artificial bee colony optimization (ABCO), grey wolf optimization (GWO), firefly cyclic grey wolf optimisation (FCGWO). The proposed HGWCSOA-OCHS scheme confirmed minimized energy consumption, improved network lifetime expectancy by balancing the percentage of alive and dead sensor nodes in the network.

Keywords:
Optimal cluster head selection, Lifetime expectancy, Grey wolf optimization, Crow search optimization, Energy stabilization, Firefly cyclic grey wolf optimisation

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Wireless Personal Communications	9	April, 2020	850-855	Springer	Q3

Paper No: PU-SOE-CSE-34

AN Efficient QoS Based Data Packet Transmission in Wireless Sensor Networks Using OREA

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Abstract

Wireless Sensor Networks (WSNs) are often used for observing physical world applications which performs the effective automation process. Sensor Networks contain numerous nodes that can sense and gather statistical data. Data gathering become obvious by sensor nodes over the sensor deployed environment. These sensor nodes function by the power source, i.e. battery. The battery has been fixed in the sensor nodes. So it is difficult to replace or remove the battery from the sensor nodes. One of the prime key design issues in the Wireless Sensor Networks is power consumption i.e. energy. When the sensed data is transmitted to the sink then sensor nodes consumes the energy from battery. Since nodes are functioning by this battery power. The proposed algorithm of Optimized Radio Energy Algorithm (OREA) provides efficient energy dissipation and data transmission to the sink is quite faster. The dimension of overall performance of a service in the WSNs is known as Quality of Service (QoS). The Quality of Service metrics traffic load and packet delivery ratio has been compared OREA with existing algorithms such as random and homogenous selection. OREA provides better QOS delivery and also prolonged battery life time in order to achieve the efficient usage of power. The simulation of MATLAB results manifested to attain the network life time has prolonged in comparison with existing algorithms.

Keywords:
Wireless sensor networks, IEEE 802.15.4, Quality of service, Energy, Sensor node, 6LoWPAN

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Wireless Personal Communications	112	April, 2020	Online publication	Springer	Q3

Paper No: PU-SOE-CSE-35

Detection of Distributed Denial of Service Attack in Cloud Computing Using the Optimization-Based Deep Networks

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Abstract

Cloud computing services provide a wide range of resource pool for maintaining a large amount of data. Cloud services are commonly used as the private or public data forum based on the demand, and the increase in usage has lead to security concerns. The information in the cloud comes under threat due to hackers, and the most common attack on the cloud data is considered as the Distributed Denial of Service (DDoS) attack. This work has concentrated on detecting the DDoS attack by developing the deep learning-based classifier. The service request from the users is collected and grouped as the log information. From the log file, some important features are selected for the classification using the Bhattacharya distance measure to reduce the training time of the classifier. Here, Taylor-Elephant Herd Optimisation based Deep Belief Network (TEHO-DBN), is developed by modifying the Elephant Herd Optimisation (EHO) with the Taylor series and the algorithm thus developed is adopted to train the Deep Belief Network (DBN) for the DDoS attack detection. From the simulation results, it can be concluded that the proposed TEHO based DBN classifier has improved performance with a maximum accuracy of 0.830.

Keywords:
Cloud computing, DDoS attack, log file, Bhattacharya distance, deep belief network

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Experimental & Theoretical Artificial Intelligence	33	April, 2020	1-20	Taylor & Francis	Q2

Paper No: PU-SOE-CSE-36

Image Classification of the Flower Species Identification using Machine Learning

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Abstract

Image classification has become one of the key use-cases for demonstrating machine learning. The proposed work will try to classify the given input image of flower species, based on the dataset provided. And it produces an output with the classification of flower in the input image. Flower identification systems are prominently used nowadays. Although modern search engines give mechanisms for visually searching for a query image containing a flower, robustness is lacking due to the intra-class variation among millions of flowers species worldwide. Therefore, a Machine Learning method using Convolution Neural Networks is used in this proposed research work to identify highly accurate flower species. The flower image extraction function is performed using a Pre-Trained Network Extraction of Complex features. On top of that, a machine learning classifier such as Logistic Regression or Random Forest is used to produce a higher precision score. This approach helps to reduce the system requirements required to conduct a Convolution Neural Networks (CNN) to compute the intensive training task.

Keywords:
Convolution Neural Networks (CNN), Logistic Regression, Random forest, Feature extraction.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Advanced Science and Technology	29	April, 2020	995-1007	Science and Engineering Research Support Society	Q4

Paper No: PU-SOE-CSE-37

Articulation Point Based Quasi Identifier Detection for Privacy Preserving in Distributed Environment

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Abstract

These days, huge data size requires high-end resources to be stored in IT organizations premises. They depend on cloud for additional resource necessities. Since cloud is a third-party, we cannot guarantee high security for our information as it might be misused. This necessitates the need of privacy in data before sharing to the cloud. Numerous specialists proposed several methods, wherein they attempt to discover explicit identifiers and sensitive data before distributing it. But, quasi-identifiers are attributes which can spill data of explicit identifiers utilizing background knowledge. Analysts proposed strategies to find quasiidentifiers with the goal that these properties can likewise be considered for implementing privacy but, these techniques suffer from many drawbacks like higher time consumption and decreased data utility. The proposed work overcomes this drawback by extracting minimum required quasi attributes with minimum time complexity.

Keywords:
Articulation point, Privacy Preserving, Quasi Identifier.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Communication Networks And Information Security (IJCNIS)	12	April. 2020	77-82	Institute of Information Technology, Kohat University of Science and Technology	Q3

Paper No: PU-SOE-CSE-38

Efficient Diagnosis of Liver Disease using Support Vector Machine Optimized with Crows Search Algorithm

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Abstract

The early and accurate prediction of liver disease in patients is still a challenging task among medical practitioners even with latest advanced technologies. The support vector machines are widely used in medical domain. It has proved its efficiency on producing good diagnostic parameters. These results can be further improved by optimizing the hyperparameters of support vector machines. The proposed work is based on optimizing support vector machines with crow search algorithm. This optimized support vector machine classifier (CSA-SVM) is used for accurate diagnosis of Indian liver disease data. The various similar state of art algorithms are taken for comparison with proposed approach to prove its efficient. The performance of CSA-SVM is found to be outstanding among all other approaches in terms of all metrics taken for comparison. It has yielded the classification accuracy of 99.49%.

Keywords:
Crow search algorithm, liver disease, sequential minimal optimization, support vector machine

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
EAI Endorsed Transactions on Energy Web	18	April, 2020	1-10	European Alliance for Innovation	Q4

Paper No: PU-SOE-CSE-39

Qualitative SMI based Cloud Service Selection using Intuitionistic Fuzzy TOPSIS

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Abstract

Cloud Computing allows access to a public resource pool on demand and easy network connection for the same. Due to the popularity and profits of using Cloud Services, many organizations are moving to Cloud .So selecting a suitable and best Cloud Provider is a challenge for all the users. Many ranking approaches had been proposed for solving this multicriteria decision making problem like AHP, TOPSIS etc. But many of the works focused on quantitative QoS attributes .But qualitative attributes are also important in the case of many application scenarios where the user may be more concerned about the qualitative attributes. CSMIC has released Service Measurement Index attributes for effectively comparing the Cloud services. The comparison of Cloud Service providers based on SMI attributes which are qualitative in nature by using a ranking approach that handles fuzziness in the dataset is the objective of this paper. The proposed approach uses the MCDM algorithm called Technique for Order Preference by Similarity to ideal Solution and uncertainty is handled by Intuitionistic fuzzy values. The qualitative SMI attributes are used as criteria for ranking the Cloud Services.

Keywords:
MCDM, fuzzy, Intuitionistic, SMI, Cloud Service.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Recent Technology and Engineering	9	May, 2020	1289-1296	Blue Eyes Intelligence Engineering & Sciences Publication	Q4

Paper No: PU-SOE-CSE-40

Latent Semantic Analysis in Automatic Text Summarization: A State of the Art analysis

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Abstract

Increasing availability of information in the web and its ease of access necessitates the need for efficient and effective automatic text summarization. Automatic text summarization condenses the source text (a single document or multiple documents) into a compact version preserving its overall meaning and information content. Till now, researchers have employed different approaches for creating well-formed summaries. One of the most popular methods is the Latent Semantic Analysis (LSA). In this paper, various prominent works to produce extractive and abstractive text summaries based on different variants of LSA algorithm are reviewed, analysed and compared.

Keywords:
Information retrieval; Automatic Text Summarization; Latent Semantic Analysis; Singular Value Decomposition.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Intelligence and Sustainable Computing	Online publication	May, 2020	Online publication	Inderscience	Q4

Paper No: PU-SOE-CSE-41

Category Classification of the Training Set Combined with Sentence Multiplication for Semantic Data Extraction Using GENI Algorithm

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Abstract

Background: Increase in the internet data has increased the priority in the data extraction accuracy. Accuracy here lies with what data the user has requested for and what has been retrieved. The same large data sets that need to be analyzed make the required information retrieval a challenging task.
Objective: To propose a new algorithm in an improved way than the traditional methods to classify the category or group to which each training sentence belongs.

Method: Identifying the category to which the input sentence belongs is achieved by analyzing the Noun and Verb of each training sentence. NLP is applied to each training sentence and the group or category classification is achieved using the proposed GENI algorithm so that the classifier is trained efficiently to extract the user requested information.

Results: The input sentences are transformed into a data table by applying GENI algorithm for group categorization. Plotting the graph in R tool, the accuracy of the group extracted by the Classifier involving GENI approach is higher than that of Naive Bayes & Decision Trees.

Keywords:
Text Classification, Semantic Association, Supervised Learning Text Classification, Semantic Association, Supervised Learning

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Recent Patents on Computer Science	13(4)	June. 2020	588-594	Bentham Sciences Publishers B.V	Q4

Paper No: PU-SOE-CSE-42

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
International Journal of Electrical and Computer Engineering	10	Aug, 2020	4322-4330	J.J. Strossmayer University of Osijek, Faculty of Electrical Engineering, Computer Science and Information Technology	Q4

Paper No: PU-EEE- 01

Performance Analysis of Reference Current Generation Methods with PI Controller for Single-Phase Grid Connected PV Inverter System

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Abstract

In this research, a novel remarkable current generating method for proficient functioning of the single stage PV inversion framework is discussed. Mostly, the genuine/responsive power conveyed to the single stage inversion system is managed for incorporating DG with electricity line. The proposed PI controller has various goals to accomplish maximum coordination among single stage PV system and DG with limited Total Harmonic Distortion (THD), enduring blunder and velocity. The result acquired with the proposed strategy in simulation is contrasted with different conventional systems to validate its superiority in terms of proficiency and precision. MATLAB simulation is embraced to verify the proposed methodology and the relative investigations have been done. The best outcome with less THD and quick responses are noted when PI combined with SRPC approach.

Keywords:
Double-line-frequency, Harmonic current, PI Controller, Power pulsation, Total Harmonic Distortion.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Green Energy	9	Dec, 2019	658-672	Taylor and Francis Ltd.	Q3

Paper No: PU-EEE- 02

Comparative Study on Performance of Document Classification Using Supervised Machine Learning Algorithms

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Abstract

This paper proposes grid system and its controlling techniques to regulate the continuous changes in operational requirements and deregulation problems. In the present scenario, the distribution energy systems play an important role in maintaining the power system reliability and stability in distribution domain. The proposed grid is a structure of PV and hybrid system. To achieve the maximum operation from the renewable sources an MPPT methods is proposed. This paper also proposes a concept for controlling of reactive power in single phase grid connected PV system. In order to achieve this reactive power control, this paper is implemented with different current regulated controllers such as conventional PI controller, PR controller, ASDM controller and Fuzzy Logic Controller. This proposed system with different controllers are tested and verified in MATLAB environment.

Keywords:
PI controller, PR controller, ASDM controller and Fuzzy Logic Controller.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Adv Research in Dynamical & Control Systems	12	Jan. 2020	1-10	Institute of Advanced Scientific Research	Q3

Paper No: PU-EEE – 03

Research on Single-Phase Grid Connected PV Systems

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Abstract

The demand for renewable vitality based power production has been increased because of many reasons such as to reduce the level of carbon emission, to minimize the consumption of non-renewable energy source and to maintain the environment pollution free. Among the available renewable resources such as hydroelectric, wind, solar, biomass and ocean, solar energy has gained much attention by researchers in the recent decades all over the world. The abundant availability and increasing global warming threat urge the researchers to develop an efficient solar energy conversion system. This survey purposefully intended to elaborate the significance of solar power system. This system consists of set of a PV array to transform sunlight into electrical power (dc). Then the converter and inverter circuits are utilized to produce stable ac power. To overcome the challenges like non-uniform insolation, temperature and partial shading effects, various artificial intelligence and optimization techniques have evolved to maximize the power output from the panel. Even with recent technological breakthrough the efficiency is still less than 20%. This survey presents the several existing solar energy conversion systems with its challenges and mitigation methods under different environmental conditions for improving the power output.

Keywords:
Hydroelectric, Wind, Solar, Biomass and Ocean, Solar energy
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Engineering and Advanced Technology	9(2)	Dec. 2019	5549-5555	Blue Eyes Intelligence Engineering & Sciences Publication	Q4

Paper No: PU-EEE – 04

A Comparative and Novel Solution for Unit Commitment Problem Using Hybridised BAT Search Approach for 10-Unit System

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Abstract

To model a most cost effective and reliable power system, the committing of generating units with least cost is done through proper selection of heuristic/meta-heuristic optimisation. For security constrained unit commitment (SCUC) problem, here the solution is formulated by defining both equality and inequality constraints of the considered system (minimum up- down times, power balance, spinning reserve etc.). In this paper, the solution is subjected to generate an optimal solution using Hybridised- BAT search algorithms for 10- unit systems. The reduced optimal cost values are compared with reviewed heuristic techniques using MATLAB platform, to assure the proposed technique's effectiveness.

Keywords:
Security constrained unit Commitment, BAT algorithm, BAT-GA algorithm, BAT- ABC algorithm, Constraints
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Advanced Science and Technology	29	Feb. 2020	2524-2535	Science and Engineering Research Support Society	Q4

Paper No: PU-EEE – 05

Trends and challenges in Grid-Tied Inverter for Photovoltaic Applications

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Abstract

Grid-Tied inverter has gained the attention of many researchers and power generation industry due to its capability of integrating distributed power generation systems using renewable energy resources with the existing centralized power generation system. Yet the inclusion of a transformer in the Photovoltaic (PV) inverter makes it bulkier, heavier and more expensive. A primary solution to the aforementioned problems is the transformerless PV Grid-Tied inverter. This paper presents a review of different transformerless, single-phase Grid-Tied inverter topologies. The objective of this paper is to study parameters such as leakage current, common-mode voltage, total harmonic distortion, and the efficiency of transformerless Grid-Tied inverters. The paper also provides a discussion on existing Grid-Tied inverter topologies, such as H5, oH5, Novel H5, H5-D, FBDC, H6D2, Hybrid H6, High-efficiency MOSFET H6, Improved H6, 3L H6, H6-A, B, High-Efficiency H6, H6-N, Improved H6, H6-active clamping, Active clamped snubber based H6, Heric, oHeric, Enhanced Heric, Heric-with mid-DC-link, Active clamping, PN-NPC, Improved FBNPC, T-Type 3L, ANPC, HBNPC, NIFB-NPCI, VNIIFBC, M-NPC, Virtual DC bus based inverter, Active Virtual Ground, Type I, Type II, Type III Common Ground, Flying Capacitor and Multilevel Common Ground. Though it is found that many topologies available in the literature, other new topologies can be proposed to improve the performance of the inverter. Furthermore, it is also noted that the performance analysis of the inverter must be carried out in the presence of junction capacitance and shoot-through problem so that new strategies can be introduced in the existing typologies to address these issues.

Keywords:

Grid-Tied Inverter, Transformer-less Inverter, Photovoltaic

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Universal Journal of Electrical and Electronic Engineering	7	Mar, 2020	155-176	Horizon Research Publishing Corporation	Q4

Paper No: PU-ECE- 01

A VDTA-Based Robust Electronically Tunable Memristor Emulator Circuit

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Abstract

In this paper, a fully-integrated tunable grounded memristor emulator circuit based on voltage differencing transconductance amplifier (VDTA) has been proposed. The proposed memristor emulator circuit utilizes two VDTA active building blocks, two grounded resistors, a grounded capacitor and a four-quadrant analog multiplier. The working concept along with the detailed derivation of the mathematical model of the circuit has been discussed numerically and analytically to validate the operation of the proposed emulator. The operations of the proposed emulator circuit, as governed by the established model, have been verified by performing simulations in Cadence Virtuoso at 45 nm technology node. Robustness analyses performed, reveal significant process-variation tolerance at deep sub-micron technology node.

Keywords:
Voltage differencing transconductance amplifier, Memristor emulator, Memductance, Robustness

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Analog Integrated Circuits and Signal Processing	104	Dec. 2019	47-59	Springer	Q3

Paper No: PU-ECE- 02

QoS-Enabled Optimized Adaptive Multipath AODV Protocol

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Abstract

MANET is an infrastructure less wireless network. The on demand routing protocol AODV provides an efficient performance in the routing process of the ad hoc networks. The distance vector is the basis of the AODV reactive routing protocol. The criterion set for selecting the route is done on the hop count basis in the AODV routing protocol. This proposed protocol OAM-AODV (Optimized Adaptive Multipath AODV Protocol) provides a more efficient optimal routing in the ad hoc network. This protocol provides optimal path selection and avoids the frequent occurrence of link break. The protocol monitors the selected optimal path and predicts the chances of link break and switch over to alternate path and continue transferring of the data from sender node to the receiver node and increase the throughput. It reduces the number of route discoveries by using the alternate paths selected from the multiple paths and reduce the number of control overhead. It decreases the time delay in transmitting packet by starting transmission of data immediately on finding the first path and then move onto the optimal route depending on the criterion set on the energy level of node, signal strength of the link and hop count and continue transmission. It reduces the packet drop ratio by switching over to alternate better optimal path before link breakage occurs by unicasting MONITOR message for monitoring each paths criterion value. Simulations are performed using the network simulator NS-2. The results obtained from the performed simulation clearly depicts that the proposed protocol performs more efficiently than the existing AODV protocol.

Keywords:
Mobile ad hoc network (MANET), AODV protocol, Signal strength

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
S N Computer Science	1	March, 2020	001-009	Springer	Not yet Assigned

Paper No: PU-ECE- 03

Design of Robust Image Watermarking Technique Based on Shearlet Transform and QR Matrix Decomposition

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Abstract

Watermarking is the method by which a watermark image related to the original cover image is embedded into the cover image. Images have become an important part in digital media. Thus it is important to secure the image data and prevent its illegal duplication. Image watermarking aims at serving this purpose. Wavelet technique is commonly used technique to embed watermark on the cover image in transform domain. The watermark data and cover image are not distorted after applying transform; hence this technique is used widely in this field. The upgraded version of wavelet technique is shearlet transform, thus upgraded version improves the presentation of multidimensional data and transform is mainly based on multidirectional and multi-resolution. The shearlet transform overcome the drawback of wavelet's edge presentation of image which is the main characteristic of shearlet and hence the host image is modelled with different texture. There are two characteristics of watermark, namely, Imperceptibility and robustness. Imperceptibility is achieved using Shearlet transform, whereas robustness and security improvement is achieved using QR decomposition. Analyzing the experiments undergone on the various attack of host image with distinct texture characteristics and thus the result shows that this technique has a good resistance to attacks and provides a efficient transparency and high robustness.

Keywords:
Image watermarking, Discrete Shearlet Transform, QR decomposition, Shearlabs, Imper-ceptibility

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Inter Disciplinary Mathematics	23(1)	April, 2020	163-174	Francis & Taylor	Q4

Paper No: PU-ECE- 04

An Efficient Secure Authentication Scheme for Personalized Healthcare System

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Abstract

Health care applications are pondered as propitious fields for wire-less sensor networks (WSN), in which patients can well be monitored utilizing wire-less medical sensor networks (WMSNs). Presently, hospitals are employing applications to admittance physical condition data of the patient. Therefore, the cost for user's uniqueness executive is increased and also the security protection is decreased. The existent works presented the authentication scheme intended for the healthcare sector, but that's techniques provides low security. To trounce the existing work loss, here, a proficient secure authentication scheme is proposed intended for personalized healthcare system using WMSN. The proposed method comprises 3 phase. Initially, perform an authentication process which consists of 3 steps, (a) registration, (b) login, (d) verification. Registration and login data are combined using Fisher-Yates Shuffled Algorithm (FYSA), thus the combined data are modified as the hash code utilizing RIPEMD hash code algorithm. Secondly, the file is securely transferred using Modified Elliptic Curve Cryptographic (MECC). Thirdly, scheduling with the cloud using parameters like speed, task cost, weight, memory, Number of the request, data size, bandwidth, along with disk space. Thus, the scheduling parameters are optimized using Modified Grey Wolf Optimization (MGWO) algorithm. Experimental outcomes of the proposed secure authentication scheme are contrasted with the existing authentication scheme centered on the encryption time, decryption time, packet delivery ratio (PDR), End-to-End delay (EED), along with throughput.

Keywords:
Fisher Yates Shuffled Algorithm (FYSA), RACE Integrity Primitive Evaluation Message Digest (RIPEMD), Modified Elliptic Curve Cryptography (MECC), Modified Grey Wolf Optimization (MGWO), Wireless Medical Sensor Network (WMSN)

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Inter Disciplinary Mathematics	23(1)	April, 2020	215-227	Francis & Taylor	Q4

Paper No: PU-ECE- 05

An Iot Based Approach to Minimise and Monitor Air Pollution Using ESP32 and Blynk Platform

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Abstract

The world population grows ever more Urban, The towns are under pressure to remain livable. The rates of air pollution in both developed and developing countries are now rising dramatically, which has been overlooked. Air quality therefore needs to be continuously tracked. The proposed system includes the design to monitor Air Pollution, by implementing it as an application in a bot(bike) to create public awareness. Air pollution is a mixture of particulate matter and gases that can exceed unhealthy concentrations, both indoors and outdoors. Its impact may range from elevated disease risk to heightened temperature. Passenger cars are a significant contributor to emissions, containing large quantities of nitrogen oxides, carbon monoxide and other pollutants. To easily monitor all the vehicles, we are developing a system called an IoT-based air pollution monitoring system, through which we can easily monitor all the vehicles. In this project, the IoT plays a critical function, the sensors mounted at the exhaust track the amount of various gases, and the value is modified to the cloud with the help of IoT. This makes each and every vehicle owner and transport workplace to watch the vehicles simply

Keywords:

Internet of Things, ESP32 controller, Gas Sensors, Blynk Platform.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	XII	June, 2020	558-566	Science Press	Q2

Paper No: PU-ECE- 06

Improving Computational Speed of the Multiplier Using Urdhva-Tiryagbhyam

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Abstract

Multiplication is one of the commonly used arithmetic operations in digital electronics. In many complex operations, it forms the central factor such as filtering, Fast Fourier Transform (FFTs)Convolutions, etc.ALU is a digital processor is an essential block, as all computational operations are performed by this method. Multipliers so far are having large area, power, and delay. Due to this reason, an efficient multiplier with a concentrated area and high -speed performance is required. In this paper, a Vedic real multiplier based on as Urdhva-Tiryagbhyam sutra of Indian Vedic mathematics proposed. The main objective of this project is to provide an efficient 4*4 multiplier, to implement a 4*4 multiplier using Vedic sutra of mathematics "Urdhva-Tiryakbhyam" in FPGA and to decrease the area and delay path of a multiplier and increase the processor speed. The obtained result given by the proposed multiplier is better than the various multipliers in terms of area and speed. The algorithm is converted to code using Verilog and implemented on FPGA.

Keywords:

Vedic mathematics: Urdhva-Tiryakbhyam, Verilog, FPGA, FFTs.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	XII	June, 2020	1581-1590	Science Press	Q2

Paper No: PU-ECE- 07

Plant Leaf Disease Detection and Soil Condition Monitoring System Using CNN and IoT

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Abstract

This paper talked about framework utilizing Convolution Neural Network (CNN) and IoT together to help farmers to monitor the crop growth and increase yield using the three main objectives listed. The first objective is helping farmer to select a crop by analyzing the soil of the given land, using algorithm designed that displays the properties of the particular soil and lists different crops for that soil type. The second objective is to detect and prevent plant disease from spreading and spoiling the yield, the algorithm designed displays whether the plant is healthy or unhealthy if unhealthy what type of disease it is so that farmer can take preventive measures on time by spaying pesticides. The third objective helps the farmer in predicting irrigation needs by monitoring soil temperature and soil moisture.

Keywords:
Hydro-culture, Convolution Neural network (CNN), internet of things (IoT), soil color detection, leaf disease detection, Soil temperature sensor, soil moisture sensor, precision agriculture.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	XII	June, 2020	136-143	Science Press	Q2

Paper No: PU-ECE- 08

Image Compression Using Neural Networks

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Abstract

Digital Communication involves sending and receiving of data bits over long distances using various communication channels. Image files are commonly sent over such Digital channels. Storage and transfer of digital images involves a very large number of bits. This presents a heavy load on the network. Hence Image Compression is commonly required. It is a subdomain of data compression. Existing traditional techniques have both lossy and lossless forms. In this paper we are discussing a Technique for Compressing Images using Artificial Neural Networks. The proposed technique uses gradient descent and genetic algorithm approaches and attempts to overcome the problem of traditional techniques and either assist or replace the traditional techniques for Image Compression.

Keywords:
Image Compression, Artificial Neural Networks, Gradient Descent, Backward learning

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	XII	June, 2020	1710-1715	Science Press	Q2

Paper No: PU-SOE-MECH-01

Damping Performance of Alumina and Zirconia-Based Plasma Sprayed Coatings

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Abstract

Alumina and zirconia coatings along with three combinations of alumina-zirconia (AZ) composite coatings are deposited on AISI304 by atmospheric plasma spraying (APS) technique. The AZ coatings are developed on the alumina rich side by varying zirconia content (e.g. 5%, 15% and 25%). To investigate the phases, X-ray diffraction technique is utilized. Scanning electron microscopy technique is used to study the microstructures. The damping behaviors are studied by dynamic mechanical analyzer (DMA). It is observed that, zirconia has much better damping property than alumina and the damping capacity (i.e. tan δ) is increased with an increase in zirconia content in AZ coatings. However, it is interesting to note that the variation of complex modulus of AZ coating showed opposite trend as it showed in damping capacity. The damping capacities of all deposited coatings show a stable response over time and frequencies up to 60 Hz.

Keywords:
Alumina-zirconia composite coatings, atmospheric plasma spraying, microstructure, damping properties

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Surface Engineering	-	Sept. 2019	Online publication	Maney & Taylor Francis	Q1

Paper No: PU-SOE-MECH-02

Compression after Impact Behaviour and Failure Analysis of Nanosilica-Toughened Thin Epoxy / GFRP Composite Laminates

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Abstract

Nanosilica particles were utilized as secondary reinforcement to enhance the strength of the epoxy resin matrix. Thin glass fibre reinforced polymer (GFRP) composite laminates of 3 ± 0.25 mm were developed with E-Glass mats of 610 GSM and LY556 epoxy resin. Nanosilica fillers were mixed with epoxy resin in the order of 0.25, 0.5, 0.75 and 1 wt% through mechanical stirring followed by an ultrasonication method. Thereafter, the damage was induced on toughened laminates through low-velocity drop weight impact tests and the induced damage was assessed through an image analysis tool. The residual compression strength of the impacted laminates was assessed through compression after impact (CAI) experiments. Laminates with nanosilica as secondary reinforcement exhibited enhanced compression strength, stiffness, and damage suppression. Results of Fourier-transform infrared spectroscopy revealed that physical toughening mechanisms enhanced the strength of the nanoparticle-reinforced composite. Failure analysis of the damaged area through scanning electron microscopy (SEM) evidenced the presence of key toughening mechanisms like damage containment through micro-cracks, enhanced fiber-matrix bonding, and load transfer.

Keywords:
GFRP composites; secondary reinforcement; nanosilica fillers; CAI behaviour; damage assessment

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials (Basel)	12(19)	Oct. 2019	3057	MDPI	Q2

Paper No: PU-SOE-MECH-03

Surface Modification of Kenaf Fiber Reinforced Epoxy based Composite

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Abstract

In day today life, the awareness to the public along with the ease in the fabrication of polymers, has let to the frequent polymer useage. Few developing industries have started using the materials that are renewable. In the present work, the mechanical behavior of short un-treated and treated (KmNO4) kenaf fiber reinforced epoxy based composites was investigated. Fabrication of composite materials were carried out with volume percentage (10 %, 20 %, 30%) of treated and un treated kenaf fibers. The polymer used as matrix was epoxy resin. The composite was fabricated by using hand layup method. The various fiber loading was performed and their properties studied. The mechanical strength like tensile, flexural and impact of the composite was analysed. The effect of treatment had showed improvement in the composite properties. It was found that KmNO4 treatment and kenaf fiber loading has enhanced the synergetical effects on the composite. These chemically surface modified composites with natural fiber reinforcement can have a chief role in the development of structural component parts. These materials may be used for light weight applications, especially in automobile sector and structural components.

Keywords:
Epoxy, Kenaf fiber, KmNO4, Mechanical strength.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Innovative Technology and Exploring Engineering (IJITEE)	9(2)	Dec. 2019	1204-1207	Blue Eyes Intelligence Engineering & Sciences Publication	Q4

Paper No: PU-SOE-MECH-04

Extraction and Characterization of Vetiver Grass (Chrysopogon Zizanioides) and Kenaf Fiber (Hibiscus Cannabinus) as Reinforcement Materials for Epoxy Based Composite Structures

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Abstract

The study deals with the mechanical characterization of vetiver grass fiber and kenaf fiber reinforced epoxy-based hybrid composites. Five types of composite laminates were developed through the hand lay-up process by varying the percentage of vetiver grass and kenaf fibers. The tensile, flexural, compression and impact tests were conducted as per ASTM. The fractured surfaces of the tested specimens were studied using a scanning electron microscope. From the results, it was shown that properties of epoxy composites were improved by hybridization with vetiver grass and kenaf fibers. The improved mechanical properties of fiber-reinforced composites were noticed in increment of percentage composition of kenaf fibers.

Keywords:
Vetiver grass (Chrysopogon zizanioides), Kenaf fiber (Hibiscus cannabinus), Epoxy, Composites, Properties

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Material Research and Technology	9(1)	Jan. 2020	773-778	Elsevier	Q2

Paper No: PU-SOE-MECH-05

Millettia Pinnata: A Study on the Extraction of Fibers and Reinforced Composites

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Abstract

In this work, the potential for using Millettia pinnata stalk for extracting cellulosic natural fibers and its subsequent use in reinforced composites was studied. The extracted fibers were characterized for its composition, mechanical, thermal stability and morphological properties. Compositional analysis showed that the fibers possessed 54% cellulose, 12% hemicellulose, 15% lignin and 11% ash. The tensile strength of the fiber was 310 MPa, which is comparable to cotton and linen. The tensile strength of the M. pinnata fiber-reinforced polypropylene composites was 17.96 MPa which was similar to other natural fiber-based composites. M. pinnata fibers appear promising for a wide range of applications including textiles and other typical composites applications.

Keywords:
Natural fibers, Biopolymers, Lignocellulosic material, Composites, Green materials

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Bioresources and Bioprocessing	3	Jan. 2020	3	Springer	Q2

Paper No: PU-SOE-MECH- 06

In Situ Synthesis of Titanium Carbide in Pure Aluminium

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Abstract

The present work reports on the mechanism of formation of TiC in pure Aluminium melt. A halide salt of Al_3TiF_6, graphite powder and pure Al were used to prepare *in situ* Al-TiC Metal Matrix Composites (MMCs). Scanning Electron Microscopy (SEM) and Energy Dispersive Spectroscopy (EDS) were used to determine the microstructural characteristics of the composite. XRD was further used to determine the phases involved in the composite for confirming the formation of TiC. Further to assess the mechanism involved in the *in situ* reactions, DTA/TGA thermograms were used to analyze the reactions between molten Al, halide salt and graphite powder. Tensile tests were conducted to study the fracture behavior of the *in situ* prepared MMCs.

Keywords:
In Situ, TiC, Microstructure, Tensile Strength, Fracture Analysis

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Materials Science and Chemical Engineering	8(1)	Jan. 2020	1-10	Scientific Research Publishing Inc	UGC Care

Paper No: PU-SOE-MECH- 07

Effect of Compression Ratio on the Performance, Combustion and Emission of a Single Cylinder Diesel Engine Using Multinblended Second Generation Biofuel

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Abstract

This work tries to unfold the impact of compression ratio to the operation, emission and combustion characteristics of a petrol engine operate on multi mixed second production bio fuel. For this investigation one canister, 4-S, water-cooled, guide injection varying compression diesel engine and another for petrol using waste cooking oil Methyl Ester (WME) by including Tyre Pyrolysis Oil (TPO) and also Cerium oxide (CeO2) have been utilized. Tests are run at different compression rates (17, 16 and 14) under various loading conditions adjusting the normal injection time at 23 CA BTDC. The fracture thermal efficiency increases along with the particular fuel consumption reduces with the rise of compression ratio. The gain in compression ratio induces increase in air pressure and heat discharge rate. The NOx emissions grow at greater compression ratio as a result of high cylinder temperature and pressure. On the flip side, Carbon monoxide (CO) and Hydrocarbon (HC) emissions are somewhat significantly less in higher compression levels.

Keywords:
Waste Cooking Oil, Tyre Pyrolsis Oil, Cerium Oxide, Compression Ratio & Emission

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)	10	Feb. 2020	133-144	TJPRC Pvt. Ltd.	Q3

Paper No: PU-SOE-MECH- 08

HVOF Sprayed Inconel 718/Cubic Boron Nitride Composite Coatings: Microstructure, Microhardness and Slurry Erosive Behaviour

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Abstract

In the present work Inconel 718 based composite coating with varying cBN were developed on SS304 substrate using high-velocity oxy-fuel (HVOF) technique. The developed coatings were subjected to microstructural, x-ray diffraction, microhardness and adhesion strength studies. The uncoated and composite coatings were subjected to slurry erosion test with varying slurry concentration (10%–40%), slurry rotational speed (500–1500 rpm) and test duration (5–25 h). Cross-sectional analysis of composite coating suggested formation of lamellar structure with good splat/splat bonding as well as with the substrate material. Both microhardness and slurry erosion resistance of Inconel 718/20%cBN coating was found to be significantly higher than that of uncoated and other composite coatings. For all slurry erosion test conditions the composite coatings were found to be superior to that of uncoated substrate. Overall composite coatings showed failure mechanism starting from plastic deformation to spalling while uncoated substrate showed deep crater with heavy ploughing.

Keywords:
Composite coatings, microstructure, microhardness, erosive behaviour

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials Research Express	6 (12)	Feb. 2020	1-10	IOP Publishing	Q2

Paper No: PU-SOE-MECH- 09

Impact of Heat Treatment on Mechanical, Wear and Corrosion Behaviour of In Situ AlB_2 Reinforced Metal Matrix Composites Produced by Liquid Metallurgy Route

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Abstract

The present investigation is carried out on Al-xAlB2 (x = 1, 3 and 5 wt%) in situ composites combined and created by methods using exothermic response between molten aluminium and mixed halide salts KBF4 and Na3AlF6 at a temperature of 800–850 °C by employing fluid metallurgy route. The base matrix and specimens of in situ composites were presented to solutionizing treatment at a temperature of 535 °C for 60 min and sought after by water extinguishing. The extinguished smothered composite specimens were presented to artificial ageing and maintained at a temperature of 175 °C for 10 h. The in situ composite specimens were presented to microstructure assessment and the result uncovered that clean and even AlB2 particulates dispersed reliably with incredible interfacial holding and detachments were noted all through the matrix by employing SEM/EDS equipment. By far, maximum of the AlB2 particles appear with different structures encompassing tube-formed, hexagonal, spherical and rectangle shapes. The XRD models uncovered the course of action of AlB2 particulates without the nearness of some other synthetic compound. The composites specimens were assessed for mechanical, wear and corrosion tests by the ASTM measures by using UTM, Pin-on-Disc and potentiodynamic corrosion testing machine. The heat-treated composites overhauled the mechanical properties, for instance, ultimate tensile strength, compression and hardness properties, and wear rate diminished with heat-treated in situ composites with increase in the wt% of AlB2 particulates pliability of the composite lessened. Tafel polarization bends by potentiodynamic equipment have brought a part of the electro compound parameters and presumes that higher erosion opposition was offered by heat-treated composites and appeared differently in relation to as-cast and untreated composites in the picked consumption media.

Keywords:
In situ, Solutionizing, Ageing, Mechanical, Wear, Corrosion

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Bio- and Tribo-Corrosion	6 (2)	Feb. 2020	33	Springer	Q2

Paper No: PU-SOE-MECH- 10

Investigation of Corrosion Behavior of SiC-Reinforced Al 6061/SiC Metal Matrix Composites Using Taguchi Technique

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Abstract

In the present work, the statistical investigation on corrosion behaviour of Silicon Carbide-reinforced Al6061 Aluminium metal matrix (AMMCs) composites using Taguchi technique has been reported. Stir casting technique was adopted for synthesizing Al/SiC composites containing 0%, 2%, and 4% weight percentages of SiC. The corrosion studies were carried out for test variables—wt% of SiC, normality of solution, and corrosion duration for the as-cast composite specimens. The specimens were tested in NaCl solutions of normality 1.0, 1.5, and 2 and the exposure period ranging from 40 to 80 days. Corrosion characteristics of the composites were statistically analyzed by employing the design of experiments approach using Taguchi technique. Influence of various parameters on corrosion behavior of composites were investigated by Signal-to-noise ratio and analysis of variance. Result of the research determines that greater corrosion resistance was obtainable by composites when compared to monolithic aluminium 6061 alloy in the chosen corrosion media. This phenomenon of decrease of corrosion rate with exposure time was attributed to possible passivation of matrix alloy with the formation of protective layer formed on the specimen exposed to NaCl protecting the base metal from aggressive environment. The corrosion morphology was studied by scanning electron microscopy (SEM).

Keywords:
Stirr casting, Corrosion, Metal matrix composites, Design of experiments, Taguchi technique

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Bio- and Tribo-Corrosion	6(31)	Feb. 2020	1-8	Springer	Q2

Paper No: PU-SOE-MECH- 11

Experimental Investigations on Mechanical and Wear Behaviour of 2014Al–Al_2O_3 Composites

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Abstract

In the existing exploration, an effort is being made to synthesize Al2O3p ceramic-reinforced 2014Al matrix composites by liquid stirring (Stir Casting) in order to contemplate the effect of Al2O3p on mechanical and wear properties of the prepared composites. The Al2O3p ceramic additional level is maintained at 9, 12 and 15 wt%. An innovative method of adding 2-stage reinforcements during liquid stirring is used throughout the course of preparation of each composite. An average particle size of 53 μm Al2O3p is used. By using scanning electron microscopy (SEM), microstructural characterization is performed for the above synthesized composites, which showed moderately uniform Al2O3p distribution with matrix grain refinement accompanied by X-Ray Diffraction (XRD) analysis. The hardness of the resultant composites is examined using Zwick micro hardness tester and the above synthesized composites are examined mechanically as per ASTM standards by means of computerized universal testing machine. With increment in wt% of Al2O3p, improvements in the value of hardness and tensile strength of the synthesized composites were seen. Percentage improvements of 28.88% (9 wt%), 43.36% (12 wt%) and 68.54% (15 wt%) in terms of hardness and 5.09% (9 wt%), 17.62% (12 wt%) and 29.03% (15 wt%) in terms of tensile strength were obtained ,respectively. The sliding wear test is carried out by using a computerized pin on a disc wear tester with counter surface as an EN31 steel disc (HRC60) and composite pin as specimens. The synthesized composites revealed the superior wear resistance property. Worn surfaces were studied with the help of SEM in order to know the wear mechanism. Overall investigation outcomes are very interesting and motivate to carry out further research work.

Keywords:
2014A1 alloy, $Al_20_{3p,}$ Ceramics, Liquid stirring, Hardness, Wear

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Bio- and Tribo-Corrosion	6	March, 2020	133-144	Springer	Q2

Paper No: PU-SOE-MECH- 12

Dry Sliding-Friction and Wear Behavior of Hot-Extruded Al6061 / Si_3N_4/ C_f Hybrid Metal Matrix Composite

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Abstract

The effects of reinforcement addition and hot extrusion on the microstructures, micro hardness, friction, and wear behavior of aluminum (Al) hybrid composite were investigated. Al6061 dispersed with electroless nickel-coated Si_3N_4 (6 wt.%) and copper-coated carbon fiber (C_f) (1 wt.%) hybrid composites was developed through stir casting followed by hot extrusion. Optical micro-structural studies confirmed that the size of reinforcements decreased, and their orientations were in the extrusion direction. The decrease in the grain size (29%) of hybrid composites was larger than that in the grain size of matrix alloys under hot-extruded conditions. The synthesized hot-extruded Al6061 hybrid composite exhibited a lower coefficient of friction (51%) and high wear resistance (39%) compared with the hot-extruded Al6061 base alloy.

Keywords:
Carbon fibers, Coefficient of friction (COF), Hot extrusion, Hybrid composite, Si_3N_4, Wear rates

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Materials Engineering and Performance	-	July, 2020	Online publication	Springer	Q2

Paper No: PU-SOE-MECH- 13

Experimental investigation on abosrption performance of nanofluids for CO_2 capture

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Abstract

Lately, absorption of carbon dioxide using nanofluids has gained more attention as this acidic gas creates global warming effect. The absorption test was conducted in a custom designed high-pressure vessel made up of stainless steel 316 L, where CO_2 and nanofluid are in direct contact at static state. The type of nanoparticles and influence of its concentration on absorption of carbon dioxide are analyzed. TiO_2 and Al_2O_3 nanofluids at 0.02–0.14wt.% concentrations are prepared by dispersing in DI water. The CO_2 absorption tests were carried out for the above-mentioned nanofluids at said concentrations with operating conditions being an initial pressure of 3 bar and initial temperature of 302K. The results show that relative absorption index (RAI) of CO_2 absorption has increased to a maximum and then decreased with increase in nanoparticle concentration. The aqueous-based TiO_2, Al_2O_3 nanofluids are found to be most effective at 0.1 and 0.14wt.%, respectively, with RAI showing 39.81% and 22.3% increase in CO_2 absorption as compared to basefluid, respectively. The absorption test has also been conducted for saline-based TiO_2 and Al_2O_3 nanofluids at 1, 2, 3 and 3.1wt.% of salt concentration. The stability of saline-based nanofluids was analyzed using turbidity meter. It was found that increase in salt concentration decreases the stability of nanofluids and also decreases the CO_2 absorption rate because of unstability of nanoparticles in salt solutions. Absorption decreased by 11.93% for TiO_2, and 5.68% for Al_2O_3, when salt concentration was increased from 1 to 3.1wt.%.

Keywords:
CO_2 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
International Journal of Air Conditioning & Refrigeration	28	March, 2020	NA	Elsevier	Q2

Paper No: PU-SOE-MECH- 14

Measurement & Multiresponse Optimisation of Turning Parameters for Magnesium Alloy using Hybrid Combination of Taguchi-GRA-PCA Technique

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Abstract

The requirement for magnesium alloys has been rising constantly over the years because of the thrust towards weight reduction in various fields that demand fuel-efficient automobile, low-priced electronics, hand-held compact devices and biodegradable medical implants. Hence machinability studies of magnesium alloys contribute significantly to use them in appropriate applications. The present work is aimed to investigate the cutting force (Fz), material removal rate (MRR), tool flank wear (V_B) and surface roughness (Ra) in turning of magnesium alloy with physical vapour deposition (PVD) coated carbide insert in dry conditions. The tests were carried out on the basis of the orthogonal array of Taguchi's L_{27}. To identify the optimal parameters setting, a combination of principal component analysis (PCA) and grey relational analysis (GRA) has been conducted. From the analysis of variance, it was revealed that depth of cut is the significant contributing parameter on this multiple performance characteristics process.

Keywords:
Cutting force, Magnesium, Optimization, Turning, GRA, PCA

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Measurement	159	July, 2020	Online publication	Elsevier	Q2

Paper No: PU-SOE-MECH- 15

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
Int. J. of Vehicle Performance (IJVP)	6 (3)	Feb, 2020	310-326	Inderscience	Q4

Paper No: PU-SOE-MECH- 16

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	Scopus Indexed

Paper No: PU-SOE-MECH- 17

Surface Integrity Assessment upon Electric Discharge Machining of die steel Using Non-Destructive Magnetic Barkhausen Noise Technique

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Abstract

Surface integrity characterization of manufactured component is very important as it significantly affects the in-service performance of the component. Till now, surface integrity was evaluated using conventional measurement technique like microhardness tester, X-ray diffraction, optical microscopy and surface roughness tester. But, this technique being laboratory based cannot be used for in-service monitoring of the surface integrity. The present study focuses on the characterization of surface integrity upon electric discharge machined sample using non-destructive magnetic Barkhausen noise technique. Electric discharge machining was performed in die-sinking mode on die steel using copper–tungsten electrode (negative polarity). Experiment was performed by selecting different levels of peak current, gap voltage and pulse on time. Surface integrity characteristics like microhardness change, residual stress, microstructural alteration and surface roughness were analysed using microhardness tester, X-ray diffraction, optical microscopy and surface roughness tester, respectively, and were then correlated with magnetic parameter like root mean square value and peak value obtained from Barkhausen noise signal. The results show a good correlation between magnetic parameter (RMS and Peak value) of Barkhausen noise with the microhardness and surface roughness of the machined sample.

Keywords:
Barkhausen noise, Electric discharge machining, X-ray diffraction, Microhardness, Surface roughness,

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Transactions of Indian institute of metals	73	Mar, 2020	967-974	Springer	Q2

Paper No: PU-SOE-MECH- 18

Monitoring of thermal damages upon grinding of hardened steel using Barkhausen noise analysis

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Abstract

Thermal damage restrict the capability of grinding in achieving the desired production rate; therefore, the present study focuses on the employment of a non-destructive Barkhausen noise (BN) technique in the assessment of thermal damages produced from grinding of hardened IS 2062 steel under dry (no lubrication) and wet (with lubrication) conditions. Optical microscopy along with microhardness measurement was utilized to reveal the microstructural and hardness alternation occurred in the ground and subsurface of sample. X- ray diffraction peak shift was measured and used for qualitative analysis of residual stress. Furthermore, surface topography was obtained by scanning electron microscope. The magnetic response from ground surface were measured in terms of Barkhausen noise (root mean square) and hysteresis loop (average permeability). The result shows very poor magnetic response from ground hardened steel due to higher carbon content. A non-linear variation is observed between peak shift and root mean square value of Barkhausen noise. However, average permeability derived from hysteresis loop shows good correlation with the peak shift with a correlation coefficient of approximately 0.8149.

Keywords:
Surface grinding, Grinding temperature, Microhardness, Residual stress, Surface topography, Magnetic Barkhausen noise

Publication Details:

Journal Name	**Vol.**	**Month & Year**	**Page No.**	**Publisher**	**Scimago Ranking**
Journal of Mechanical Science and Technology	34 (5)	Apr, 2020	2145-2151	Springer	Q2

Paper No: PU-SOE-MECH- 19

Synthesis and characterization of nano graphene and Al2O3 reinforced aluminium metal matrix composites

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Abstract

The present work explores the microstructural and mechanical properties of Aluminium (Al) Metal Matrix Composites (MMCs) fortified with Zirconium Oxide (ZrO_2) and nanographene particles. The composite material is processed by the mix fluid metallurgy course. ZrO_2 and graphene is blended in various extents in which ZrO_2 (1 wt. %) reinforcement is kept steady and graphene support is varied independently with 0.5 and 0.75 wt. %. Utilizing optical and SEM equipment, micro examination is conveyed and results uncover that uniform circulation of ceramic zirconium dioxide (ZrO_2) and graphene particles are found in the as cast Al6061 MMCs. Fourier-Transform Infrared Spectroscopy (FTIR) investigation is done to know the quality and measure of fortification present in composites and notes the energy gap (Eg) obtained as 4.05 eV. Mechanical tests according to ASTM standards were led on the composites viz., tensile strength, yield strength and % elongation to check the properties of Al based MMCs. The consequence of this work is reasoned with a noteworthy improvement in tensile and yield strength values of the processed composites however, the percentage elongation diminishes with the addition of reinforcement content in the fabricated composite.

Keywords:
Al 6061, Metal matrix composite, Stir casting, Tensile, Zirconium dioxide, Graphene etc.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Materials Research and Technology	9 (4)	June, 2020	7354-7362	Elsevier	Q1

Paper No: PU-SOE-MECH- 20

Influence of Alumina Percentage on Microstructure, Mechanical and Wear Behaviour of 2014 Aluminium-Alumina Metal Matrix Composites

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Abstract

In this study, Al2014 matrix alloy reinforced with 9, 12 and 15 wt. % of Al2O3 (88µm) particulate by novel two stage melt stirring (stir casting) practice is used to synthesize, describe and analyze mechanical and wear behavior. Level of ceramic Al2O3 is maintained at 9, 12 and 15 wt. % additionally. For each wt. %, the preheated (i.e., 250°C) Al2O3 particles were introduced in to the molten Al2014 alloy in steps of two. Produced composite is examined by SEM and XRD analysis in support of investigation for the microstructure and chemical components. Characterization of mechanical and wear studies of cast Al2014 matrix alloy and Al2014-Al2O3 particulate composites were analyzed. With increase in wt. % of Al2O3 particles, it has been observed that there is an improvement in the hardness and tensile behaviour of the prepared composites meanwhile; decrease in percentage elongation is also observed. Also, the wear rate of all composites prepared decreases with increase in sliding distance while the wear rate of the composites prepared increases with increase in load. By using Scanning Electron Microscope (SEM) the fractured surface and diverse wear mechanism for different test states of various compositions were examined.

Keywords:
Al2014 alloy Al2O3 particulates Mechanical behaviour Fractography Wear Worn morphology

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Jurnal Tribolgi	25	May, 2020	29-44	Malaysian Tribology Society	Q2

Paper No: PU-SOE-MECH- 21

Experimental study on density and thermal conductivity properties of Indian coal fly ash water-based nanofluid

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Abstract

In the present study, the effect of temperature and volume concentration on thermal conductivity and density of water-based coal fly ash nanofluid for volume concentration range of 0–0.5% in temperatures ranging from 30°C to 60°C is investigated. The fly ash nanoparticles were characterised by scanning electron microscopy (SEM) and Zeta sizer to have an average particle diameter of 11.5 nm. The maximum thermal conductivity enhancement of 11.9% when compared to water at 60°C is observed with 0.5% volume concentration at the same temperature. The experimental data indicate an increase in the value of thermal conductivity and density with an increase in fly ash nanofluid concentration. Also, the thermal conductivity of nanofluid increases with temperature while density decrease with increase in temperature.

Keywords:
Coal fly ashzeta sizerdensitythermal conductivity

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Ambient Energy		Apr, 2020	7354-7362	Taylor & Francis	Q2

Paper No: PU-SOE-MECH- 22

Efect of Reaction Holding Time on Synthesis and Characterization of AlB2 Reinforced Al6061 Metal Matrix Composites

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Abstract

In this study, Al2014 matrix alloy reinforced with 9, 12 and 15 wt. % of Al2O3 (88μm) particulate by novel two stage melt stirring (stir casting) practice is used to synthesize, describe and analyze mechanical and wear behavior. Level of ceramic Al2O3 is maintained at 9, 12 and 15 wt. % additionally. For each wt. %, the preheated (i.e., 250°C) Al2O3 particles were introduced in to the molten Al2014 alloy in steps of two. Produced composite is examined by SEM and XRD analysis in support of investigation for the microstructure and chemical components. Characterization of mechanical and wear studies of cast Al2014 matrix alloy and Al2014-Al2O3 particulate composites were analyzed. With increase in wt. % of Al2O3 particles, it has been observed that there is an improvement in the hardness and tensile behaviour of the prepared composites meanwhile; decrease in percentage elongation is also observed. Also, the wear rate of all composites prepared decreases with increase in sliding distance while the wear rate of the composites prepared increases with increase in load. By using Scanning Electron Microscope (SEM) the fractured surface and diverse wear mechanism for different test states of various compositions were examined.

Keywords:
Al2014 alloy Al2O3 particulates Mechanical behaviour Fractography Wear Worn morphology

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Bio- and Tribo-Corrosion	6	June, 2020	2198-4239	Springer International Publishing AG	Q2

Paper No: PU-SOE-MECH- 23

Effect of CeO2 nano powder as additive in WME-TPO blend to control toxic emissions from a light-duty diesel engine – An experimental study

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Abstract

In diesel engines, waste cooking oil that obtained from the restaurant has been reused efficiently by mixing alcohols for having it less viscous and dense, despite transesterification or preheating to biodiesel. This framework made an attempt to develop an alternate for diesel with Waste cooking oil Methyl Ester (WME) by adding Tyre Pyrolysis Oil (TPO) and Cerium oxide (CeO_2) as a reuse fuel. For this objective, five blends are prepared W50T50$CeO_2$100, W60T40$CeO_2$100, W70T30$CeO_2$100, W80T20$CeO_2$100 and W90T10$CeO_2$100 and analyzed regarding the emission and performance characteristics. From the result, it was obvious that this alternate blended fuel that used on the engine at the whole load spectrum has increased greenhouse emission (NO_x), whereas attains lesser emission in smoke, CO_2, CO and HC emission than diesel. By the addition of these biodiesels i.e. WME with TPO and CeO_2, the BTHE poses an improved performance on entire loads yet still maintains lower regarding diesel. Subsequently, the SFC has enhanced performance when compared over diesel fuels. Hence, the harmful emissions and fossil fuel dependence can be reduced effectively by our proposed blended biodiesel fuels, and thereby makes the environment hazards free from contaminating the land and water resources.

Keywords:
Biodiesel, Biodiesel blending, Waste cooking oil, Tyre pyrolysis oil, Cerium oxide, Transesterification

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Fuel Journal	278	May, 2020	1873-7153	Elsevier	Q1

Paper No: PU-SOE-MECH- 24

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:

KEYWORDS:

Alumina–25 wt-% zirconia coatings, Atmospheric plasma spraying (APS),Stand-off distance (SOD), Microstructure, Porosity, Surface roughness, Dynamic mechanical analyser, Damping properties

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Surface Engineering	6	June, 2020	1-7	Taylor & Francis	Q1

Paper No: PU-SOE- PET- 01

Relation between Coalbed Permeability and In-situ Stress Magnitude for Coalbed Methane Exploration in Jharia and Raniganj Coalfields, India

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Abstract

India is among the top five countries in the world in terms of proven coal reserves and coal production. As such, significant potential exists for commercial recovery of coalbed methane (CBM). Two coalfields, Jharia and Raniganj, located in eastern India are currently under development for CBM. This paper describes work done to determine coal seam properties, ambient stress conditions, and effects of depletion at these coalfields that influence CBM production. Coalbed permeability is a parameter that has a major influence on CBM production. Other influences include in-situ stress direction, gas content, and the application of suitable stimulation techniques. A robust methodology is required to determine both initial coalbed permeability and its relation to in-situ horizontal stress magnitudes. Coalbed permeability at the Jharia and Raniganj coalfields was estimated from porosity and known cleat spacing. Initial permeability of major coalbeds was correlated with effective horizontal stress, yielding satisfactory to very good exponential fit using data from Raniganj and Jharia wells. Acoustic televiewer image-logging tool measurements in a single well in the Jharia coalfield were used to infer a maximum horizontal stress orientation between N25°W and N25°E. Reservoir-pressure-dependent permeability models are presented for coalbeds under uniaxial strain condition. The coalbed permeability is dominated by the existing effective horizontal stresses normal to the cleats. Two prospective coal seams from Jharia have been identified through assessment of the response of horizontal stress to the decline of CBM reservoir pressure. Coalbed permeability increases with the drawdown of reservoir pressure and is exponentially related to the change of effective horizontal stress during reservoir depletion. The results of this study are to be used for production history matching for wells in Jharia and to determine optimal horizontal drilling directions for increased CBM production.

Keywords:
Wells, Coal, Borehole geophysics

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
The Leading Edge	38 (10)	Oct. 2019	800-807	Society of Exploration Geophysicists	Q3

Paper No: PU-SOE- PET- 02

Effect of Alkali on Alkali–Surfactant Flooding in an Upper Assam Oil Field

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Abstract

The effect of alkali on immiscible alkali–surfactant (AS) flooding is studied by injecting surfactant individually and surfactant along with alkali. First, reservoir core samples were characterized with the help of X-ray diffraction (XRD), scanning electron microscope (SEM) and thin slide analysis. Based on the clay content of the reservoir, surfactant was selected. Second, AS formulations were designed through dynamic interfacial tension (IFT) and wettability alteration analysis. Third, adsorption of surfactant on porous media was studied with or without alkali to find out the amount of surfactant adsorbed along with the isotherm mechanism. Fourth, core flooding experiments were conducted to find out the recovery efficiency after secondary brine flooding. XRD, SEM and thin slide analysis showed the presence of kaolinite, smectite, illite, silica, quartz in the rock sample. Based on the clay types, sodium dodecyl sulfate (SDS) was selected as surfactant for this study. Ultra-low dynamic IFT in the range of 10−3 was observed with SDS. Addition of alkali further reduced the IFT of the system. Initially, wettability of the reservoir under study was toward water wet, but during AS flooding it was altered to strongly water wet. Adsorption of surfactant on the porous media was reduced by the application of alkali. During secondary brine flooding, maximum recovery was found to be 49% of Initial Oil in Place. Another 14% of residual oil after secondary flooding was achieved by AS flooding.

Keywords:
Immiscible, Wettability, Formulation, Permeability, Porosity, Adsorption, Efficiency

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Petroleum Exploration and Production Technology	10	Nov. 2019	1591-1601	Springer	Q3

Paper No: PU-SOE- PET- 03

Impact of Nano-Particles on the Rheological Properties of Drilling Fluids

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Abstract

In geotechnical engineering, drilling fluid is used to aid of borehole into earth. Liquid drilling fluid is often called drilling mud. The main functions of drilling fluid is providing hydrostatic pressure to prevent formation fluids entering into the well bore, keeping the drill bit cool and clean during drilling, etc. These days bentonite a natural occurring material is used in drilling fluid. In this work we have synthesis three samples of bentonite with varying sizes, ranging from micro to Nano sizes by grinding them with Planetary Ball Mill. With the help of FTRI and XRD the functional group and the nature of particles have been determined. Here our work mainly focuses on the reactivity between the particle and the fluid, as due to Nano size the surface contact area increases. Here we have prepared a water based mud (WBM) and other polymers have also been used during the process. Here we have reduced bentonite to Nano size and then examined it while using it in the water based drilling mud. Therefore we will develop a mud made up of Bentonite Nano particles that should be mechanically strong, physically small and thermally stable in comparison to the micro sizes. After all we'll be concluding that as the surface contact area increases the reactivity also increases and hence there is a significant change in the physical properties of drilling fluid.

Keywords:
Drilling fluid, Bentonite, Nano particle, XRD, FTRI, Planetary Ball mill

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Research Journal of Engineering and Technology	7 (3)	March, 2020	5551-5556.	Engg Journals Publications	Q4

Paper No: PU-SOE- PET- 04

Evaluation of Wheat Husk as Environment Friendly Fluid Loss Additive as a Substitute of CMC(LVG) in Water based Drilling Fluid up to 100°C.

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Abstract

Filtration control is an important property of a drilling fluid particularly while drilling through the permeable formations. This property of a drilling mud is obtained or enhanced using various additives. Currently organic polymers are commonly used as additives to control filtrate loss in water based drilling mud and exhibits negative impacts on the environment when released, hence there is a tremendous need for new environmental friendly, biodegradable additives which can help in controlling filtration loss with least effect on environment and also on worker's health. This study involves the introduction of environmental friendly food waste product i.e. "wheat husk powder" (WHP) as a filtration loss additive. The effects of various concentration of WHP on physical and chemical properties of a mud such as mud weight, pH, PV, AV, YP, gel strength, filtration loss (API), BHR and AHR rheological properties were evaluated and all the results were compared with the properties of the reference mud prepared with the conventionally used filtration loss additive CMC (LVG) in order to asses and validate the effectiveness of WHP in optimizing the performance of drilling mud. The results obtained showed that WHP was behaving as a filtration loss reducer and the drilling mud prepared with WHP was thermally stable at up to 100 0C. Hence WHP is successful replacement of CMC (LVG) in aspect of cost effectiveness, filtration loss reduction, environmental friendly and thermal stability.

Keywords:
WHP - wheat husk powder, Filtration loss, Mud cake, CMC (LVG) - carboxy methyl cellulose (Low Viscous Grade), Water based mud, Natural additive.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Research Journal of Engineering and Technology (IRJET)	7 (3)	March, 2020	4899-4904	Engg Journals Publications	Q4

Paper No: PU-SOE- PET- 05

Anti-Corrosion Effect of Curcuma Longa on Petroleum Drilling Equipment in the Presence of Different Acid Environments

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Abstract

Corrosion is a common issue during drilling operations as it is mainly dealing with the borehole fluids which consists of acidic environments. Mainly, the challenge during drilling isthe failure of drilling equipmentsuch as drill pipe, drillstring and casing pipe mostlymade ofmild steelthat occurs due to the presence of hydrogen sulfide (H2S) gas that leadsto sulfide stress cracking and also reacts with formation water to form sulphuric acid (H2SO4) that eventually leads to failure or breakdown ofsteel drill pipes. Therefore, to prevent the drawbacks of corrosion need to be investigated through an additive via increasing the basic in nature by forming a protective layer on the metal surface. In this work, 'Curcuma longa' a botanical name of turmeric has been used as a natural additive for corrosion prevention on mild steel samples that measured in the presence of various acidic (hydrochloric acid; HCl and sulphuric acid; H2SO4) aqueous solutions at 0.1 M in the absence and presence of turmeric, where comparison ofthese experimental data is not available in the literature. The visual observation and scanning electron microscope (SEM) results show that the HCl+Turmeric and H2SO4+Turmeric aqueous solutions found to be reduced the corrosion rate as compared to pure acidic aqueoussolutions of HCl and H2SO4. This work provides insight to use turmeric in drilling fluid to combat the high corrosion rate, due to the presence of H2S gases which produces in the wellbore and shows the potential to maintain the necessary rheological properties.

Keywords:

Corrosion rate; Hydrogen sulfide; Sulphuric acid; Turmeric; Weight loss

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Research Journal of Engineering and Technology (IRJET)	7 (4)	April, 2020	1383-1389	Engineering Journal Publication	Q4

Paper No: PU-SOE- PET- 06

Barite Sagging: Polymer Integrated Drilling Mud Design Analysis

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Abstract

Barite sagging is defined as separating and settling of weighing particles from the drilling fluids. Barite sagging occurs as a result of large density difference in drilling fluids or after the well is left uncirculated for a long time. This is a common problem in HPHT wells leading to wellbore instability; pipe stuck and well control problems. Hence, making corrections in the existing drilling fluids can be a solution to the problem which can save additional costs in case of failure to detect barite sagging. Hence, the study was done to add a new copolymer to invert emulsion drilling fluid in preventing sagging. The analysis of sag tests conducted by [5] B. Salem et. al. 2018 at 200°F to 350°F was done on a newly formulated drilling fluid for HPHT wells. The sag tests were performed with help of vertical and decline (45°) aging cells and were conducted for rheological characteristics and electric stability of the invert emulsion drilling fluid. The results of the tests on the drilling fluid conclude that the wells could be drilled without any sag issues reducing the overall drilling operation cost by reducing the non-productive time in resolving complications due to pipe sticking, wellbore instability or well control issues.

Keywords:

Sagging, Barite, Polymers, Drilling mud, Sag test, Mud design.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Research Journal of Engineering and Technology (IRJET)	7 (4)	April, 2020	1926-1932	Engineering Journal Publication	Q4

Paper No: PU-SOE- PET- 07

Use of Bamboo Leaf Ash as an Additive to Aqueous Drilling Fluid and Study the Variation of Rheological and Filtration Loss Properties

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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. This paper deals with the possibility of using Bamboo Leaf Ash (BLA) as an additive in Water Based Drilling Fluid (WBDF). The main components of BLA include silica (SiO2), aluminum (Al2O3) and iron oxide (Fe2O3). The yield percentage of silica from bamboo leaf ash is 78%. In our study we have attempted to use BLA as an additive to WBDF comparative analysis of the rheological properties of drilling fluids with different percentage of BLA has been studied. Based on the comparative study it is observed that BLA can be used as an additive to WBDF.

Keywords:
Drilling Fluid, Rheological Properties, Bamboo leaf ash.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Research Journal of Engineering and Technology (IRJET)	7 (4)	April, 2020	2023-2033	Engineering Journal Publication	Q4

Paper No: PU-SOE- PET- 08

Use of Sodium Lignosulphonate in Aqueous Drilling Fluid System for Mud Property Enhancement

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Abstract

Sodium Lignosulphonate (SLS) is yellowish brown powder which is completely soluble in water. It is an anionic surfactant with high molecular weight polymer. It is also rich in sulfo and carboxyl group and has better water-solubility, surfactivity and dispersion capacity. Sodium Lignosulphonate is stable at high temperatures ranging from (150 °F to 250 °F) which occur in well bores during drilling. It acts as a deflocculant which prevents coagulation of bentonite and also as a stabilizer to stabilize emulsions and as thinning agent in drilling fluids. In this study SLS is used as an additive in aqueous drilling fluids and its results are compared with other drilling fluid samples of different compositions.

Keywords:
Sodium Lignosulphonate, drilling fluid, deflocculant, thinner, additive

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Research Journal of Engineering and Technology (IRJET)	7 (4)	April, 2020	2229-2234	Engineering Journal Publication	Q4

Paper No: PU-SOE- PET- 09

Validation of Apparent Viscosity Formula using Different Drilling Fluid Samples

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Abstract

A Marsh Funnel is a simple device which uses a simple technique to measure the apparent viscosity of a drilling fluid. In this experiment we will validate M.J Pitts and Faleh H. M. Almahdawis formula for apparent viscosity, i.e., μeff = ρ (t - 25) and μapp = ρ (t - 28) respectively, where μapp = apparent viscosity in centipoise, ρ = density in g/cm³, t = quart funnel time in seconds. To validate we will check the apparent viscosity of a drilling fluid using a marsh funnel and a hand crank viscometer and compare the reading gained using the above formula and the reading from the hand crank viscometer. By this method we will be able to check which of the above two formula is more accurate and suitable for checking the apparent viscosity of a drilling fluid. The drilling fluid prepared will contain different types of additives to ensure that the formula will be applicable for a variety of drilling fluids.

Keywords:
Validation, Drilling fluids, Apparent viscosity, Marsh Funnel, Viscometer

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Research Journal of Engineering and Technology (IRJET)	7 (4)	April, 2020	2235-2238	Engineering Journal Publication	Q4

Paper No: PU-SOE- PET- 10

Experimental Investigation of Rheological Properties of Drilling Fluid with Size Variation of Clay Particles.

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Abstract

Drilling fluid is one of the major component for any drilling operation. Clays act as a reactive phase in any aqueous based fluid. In the recent times the rheological and filtration loss properties has been improved by addition of nano particles in drilling fluid system. In this study different sizes of Bentonite clay particles were used to prepare drilling fluid samples. Rheological and filtration loss properties were studied and it was found that the size of clay particles has lot to do with these properties. Significant change in drilling fluid properties has been observed and it was concluded that lesser the size of the clay particles better will be the properties.

Keywords:
Drilling mud, Gel strength, Rheological properties.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Research Journal of Engineering and Technology (IRJET)	7 (4)	April, 2020	2048-2057	Engineering Journal Publication	Q4

Paper No: PU-SOE-CHE-01

Raman and ^{23}Na Solid-State NMR Studies on the Lead-Free Ferroelectrics Bi0.5 (Na1-Xkx) 0.5tio$_3$ in the Morphotropic Phase Boundary Region

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Abstract

The local structural changes, due to the substitution of the smaller Na^+ by the larger K^+ ion, in the lead-free piezoelectric ceramic compositions Bi0.5(Na1-*x*K*x*)0.5TiO3 have been studied using Raman and 23Na solid-state NMR spectroscopy. Different close compositions in the solid solution series $Bi_{0.5}(Na_{1-x}K_x)_{0.5}TiO_3$ ($0 \le x \le 0.36$, $\Delta x = 0.02$) are studied in the morphotropic phase boundary (MPB) region arising from the different crystal structures of the end members $Bi_{0.5}Na_{0.5}TiO_3$ and $Bi_{0.5}K_{0.5}TiO_3$. Close correlations between the Raman and NMR parameters with the performance parameters of the system have been observed, suggesting the role of the local structural changes in determining these parameters. Raman and ^{23}Na NMR studies showed that the onset of the MPB region is at $x = 0.16$ and the MPB region corresponds to $0.16 \le x \le 0.24$ where better performance parameters are observed.

Keywords:
Ceramics, Phase transitions, Nuclear magnetic resonance (NMR), Raman spectroscopy, Dielectrics

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials Research Bulletin	118	Oct. 2019	110506	Elsevier	Q1

Paper No: PU-SOE-CHE-02

Effect of Sodium Lauryl Sulphate on Microstructure, Corrosion Resistance and Microhardness of Electrodeposition of Ni−Co_3O_4 Composite Coatings.

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Abstract

Ni–Co_3O_4 composite coatings were electrodeposited on mild steel surface from a Watts-type bath in the presence of sodium lauryl sulfate (SLS). The dispersed Co_3O_4 particles in the presence of SLS have a greater tendency to move towards cathode and get incorporated in the coating. SLS modifies chemical composition, surface morphology and microstructure of the Ni–Co_3O_4 composite coating. The developed composite coating exhibits higher corrosion resistance and microhardness than the pure nickel coating. The loadings of bath solution with different concentrations of Co_3O_4 particles in the presence of SLS provide hydrophobic nature to the coating surface, which is much effective in enhancing the corrosion resistance of Ni–Co_3O_4 composite coating. The agglomeration of Co_3O_4 particles (>3 g/L) under high bath load condition develops defects and dislocation on the coating surface, which results in lower corrosion resistance of the deposit. The mechanical properties of the hydrophobic coatings were assessed by the linear abrasion test.

Keywords:
Nickel electrodeposition, Cobalt oxide, Composite coating, Microstructure, Corrosion resistance microhardness

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Transactions of Nonferrous Metals Society of China	29 (11)	Nov. 2019	2371-2383	Elsevier	Q1

Paper No: PU-SOE-CHE-03

Atomic Polarizability: A Periodic Descriptor

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Abstract

Atomic polarizability is an essential theoretical construct to define and correlate many physicochemical properties. It exhibits periodicity and has a relationship with other periodic descriptors. Although a number of scales are available to compute atomic polarizability, the final scale is yet to be designed. In this venture, we have invoked a new empirical approach to compute the atomic polarizability of 103 elements of the periodic table, considering the conjoint action of other periodic descriptors, namely effective nuclear charge (Z_{eff}) and absolute radii (r). The proposed approach is α=a[(r3/Zeff)e2]+bα=a[(r3/Zeff)e2]+b, where "e" represents the electronic charge, Z_{eff} is the effective nuclear charge, r is the absolute radius, and α is the polarizability. Our computed atomic polarizability follows all sine qua non of the periodicity. Our model significantly exhibits the relativistic effect too. A close agreement between our computed data and other available theoretical and experimental results demonstrates the efficacy of our proposed approach. Furthermore, we have established the polarizability equalization principle in terms of our computed data.

Keywords:
Atomic radii, Effective nuclear charge, Periodicity, Polarizability, Polarizability equalization principle

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Chemical Research	NA	Nov. 2019	1 – 8	SAGE	Q3

Paper No: PU-SOE-CHE-04

A Concise Review on the Significance of QSAR in Drug Design

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Abstract

Drug designing is a crucial step in the exploration of novel drugs which requires potent methodologies. One of such methodologies is Quantitative Structure Activity Relationship (QSAR) which is a widely used statistical tool that correlates the structure of a molecule to a biological activity as a function of molecular descriptors, thereby, playing an essential role in the drug designing. QSAR utilizes Density Functional Theory (DFT) based chemical descriptors for this purpose. The selection of such significant molecular descriptors from various available descriptors is the foremost challenge in a QSAR as structural descriptors are representative of the molecular characteristics accountable for the relevant activity. Recently, new QSAR approaches have been introduced which further enhance the study of the activities. Further, the constructed QSAR models also need to be tested and validated for their efficiency and practical usage. As the QSAR models are structure specific, they may not be universally applicable. However, because of their high precision and efficacy, they have a promising future in the world of drug design. This review briefly summarizes the role of descriptor based QSAR in drug design in conjunction with existing QSAR approaches and also the utility as well as constraints of this approach in drug design.

Keywords:
QSAR, Density Functional Theory (DFT), Quantum Chemical Descriptors, Drug Design

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Chemical and Biomolecular Engineering	4 (4)	Dec. 2019	45-51	SciencePG	Not yet Assigned (ESJI Indexed)

Paper No: PU-SOE-CHE-05

Synthesis, Phase Transformation, and Morphology of Hausmannite Mn_3O_4 Nanoparticles: Photocatalytic and Antibacterial Investigations

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Abstract

Nano structured Hausmannite (Mn_3O_4) has efficacious applications in numerous fields, such as catalytic, medical, biosensors, waste water remediation, energy storage devices etc. The potential application in wastewater treatment is due to its distinct structural features combined with fascinating physicochemical properties. Another area of interest is the oxidative properties imparted due to its reduction potential. Larger surface to volume ratio and high reactivity than the bulk form shows great progress as antimicrobial agent to control drug resistant microbial population. The distinct surface morphologies, crystalline forms, reaction conditions and synthetic methods exerts significant impact on the photo catalytic and bactericidal efficiency. Hence, the present paper focuses on a concise review of the multifarious study on synthetic methods of Mn_3O_4, growth mechanisms, structural forms, phase transformation and phase control, shape and dimensionality. The review also confers its applications towards photo catalytic and bactericidal studies.

Keywords:
Nano hausmannite, Methods of synthesis, Morphology, Phase transformation, Photo catalyst Antimicrobial activity, Materials science, Nano materials, Materials application, Materials chemistry Materials property, Chemistry, Environmental science, Biological sciences

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Heliyon	6 (1)	Jan. 2020	e03245	Elsevier	Q1

Paper No: PU-SOE-CHE-06

A Scale of Atomic Electronegativity in Terms of Atomic Nucleophilicity Index

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Abstract

Electronegativity (χ) is an important physico-chemical concept to study the chemical structure and reactivity. Although, the conundrum related to measurement of electronegativity still persists. In view of this fact, a simple yet rigorous scale of electronegativity (χ), invoking an inverse relationship with atomic nucleophilicity index (N), has been proposed for 103 elements of the periodic table. The computed data follows periodicity distinctly satisfying all the sine qua non of a standard scale of electronegativity. Further, electronegativity values display a sound similarity with the standard electronegativity scales validating the suitability of the proposed model. Molecular electronegativities of some polyatomic molecules have also been calculated using the proposed scale of electronegativity.

Keywords:
Conceptual density functional theory (CDFT), Chemical reactivity descriptor, Empirical approach, Periodicity, Electronegativity equalization principle, Silicon rule.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Foundations of Chemistry	Online published	Jan. 2020	NA	Springer	Q2

Paper No: PU-SOE-CHE-07

Structure and Electronic Properties of Au_npt (N = 1–8) Nanoalloy Clusters: The Density Functional Theory Study

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Abstract

The study of bimetallic nanoalloy clusters is of considerable interest due to its interesting electronic, optical, magnetic and catalytic properties. The geometrical structure and electronic properties of AunPt (n = 1–8) nanoalloy clusters are studied by using the density functional theory methodology. The result exhibits that the ground-state configurations of Au_nPt clusters favour planar confirmation in this molecular range. The most stable cluster is Au3Pt, which is having rhombus structure with symmetry group C2v and can be considered as building blocks for developing large clusters. The computed HOMO-LUMO energy gap of Au3Pt nanoalloy cluster is 1.741 eV. The energy gap in this particular range supports the use of bimetallic clusters as nonlinear optical devices and optoelectronic materials. The DFT-based global descriptors viz. HOMO-LUMO energy gap, electronegativity, hardness, softness and electrophilicity index are also studied. The computed HOMO-LUMO energy gap and chemical hardness exhibit a pronounced odd-even oscillation behaviour as a function of cluster size, n.

Keywords:
Density functional theory Bimetallic clusters AuPt, Structure HOMO-LUMO energy gap, Hardness Odd-even oscillation, Modeling and simulation

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Nanoparticle Research	22	Jan. 2020	35	Springer	Q2

Paper No: PU-SOE-CHE-08

A Study of Structure and Electronic Properties of Chalcopyrites Semiconductor Invoking Density Functional Theory

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Abstract

Ternary chalcopyrites, having general formula $A^IB^{III}C_2$, are of considerable research interest due to their optoelectronic applications as solar energy converters, nonlinear optical devices, light emitting diodes and detectors. In this study, an attempt has been made to correlate optoelectronic properties of $CuTiX_2$ (X = S, Se and Te) with computed Density Functional Theory based electronic descriptors. The ground state configurations and low lying isomers of $CuTiX_2$ (X = S, Se and Te) are analyzed invoking electronic structure theory. Our computed HOMO-LUMO energy gap (2.405 eV–3.197 eV) signifies $CuTiX_2$ as potential candidate for solar cell applications. $CuTiS_2$ and $CuTiTe_2$ exhibit the maximum and the minimum energy gap respectively. HOMO-LUMO energy gap maintains an expected trend with DFT based global descriptors. A close agreement between our computed results and experimental data establishes the importance of present study.

Keywords:
Density functional theory, Chalcopyrite semiconductor, Descriptors, Solar cells

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials Chemistry and Physics	241	Feb. 2020	122346	Elsevier	Q2

Paper No: PU-SOE-CHE-09

A Comparative Study of Structure, Stabilities And Electronic Properties Of Neutral And Cationic $[AuSi_n]^{\Lambda}$ And $[Si_{n+1}]^{\Lambda}$ ($\Lambda = 0, +1$; N = 1–12) Nanoalloy Clusters

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Abstract

Structure, stabilities and electronic properties of $[AuSi_n]^{\lambda}$ and $[Si_{n+1}]^{\lambda}$ ($\lambda = 0, +1$; n=1-12) nanoalloy clusters are studied invoking Density Functional Theory methodology. To understand the chemical stability of the lowest energy structure of cluster, chemical parameters like, Binding Energy, Fragmentation Energy, Second Order Difference in Energy and HOMO-LUMO energy gap are studied with the variation of cluster size. The binding energy of neutral and cationic Si_{n+1} and $AuSi_n$ clusters is gradually increasing along with the cluster size n. The second order difference in energy for pure Si_{n+1} and doped cluster $AuSi_n$ shows an interesting odd-even alternation behavior. It is found that Si_7, $AuSi_5$, $[Si_5]^+$ and $[AuSi_7]^+$ are the most stable clusters. The HOMO-LUMO energy gap of neutral and cationic $AuSi_n$ cluster is high as compare to their corresponding neutral and cationic Si_{n+1} cluster. It indicates that doping of Au atom enhances the energy gap of silicon clusters. The computed HOMO-LUMO gap of neutral and cationic $AuSi_n$ clusters are in the range of 1.35–2.94 eV, which is suitable for microelectronics, optoelectronic devices and photovoltaics applications. Density Functional Theory based descriptors viz. Electronegativity, Hardness, Softness and Electrophilicity Index are also reported. The HOMO-LUMO energy gap of pure Si and doped cluster $AuSi_n$ displays odd-even oscillation behavior as a function of cluster size, n. The close agreement between theoretical and experimental results supports and validates our computational analysis.

Keywords:
Density functional theory, Cluster Silicon Au-Si, HOMO-LUMO energy gap

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials Today Communications	22	March, 2020	100832	Elsevier	Q2

Paper No: PU-SOE-CHE-10

Theoretical Discussion on the Double Slit Experiment and Beyond: The Hückel (HMO) Connection

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Abstract

The double slit experiment involving one quantum object is described from the point of view of a Gaussian space enfolding via a Gaussian particle density function in connection with Hückel MO (HMO) theory. The relation between the double slit experiment and HMO is made in such a way that it facilitates the schematic description of multiple slit experiments, permitting the analysis of the nature of the experiment, observable in the form of a generated density function.

Keywords:
QSAR, Density Functional Theory (DFT), Quantum Chemical Descriptors, Drug Design

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Trends in Physical Chemistry	19	March, 2020	75-80	Bentham	Not yet assigned

Paper No: PU-SOE-CHE-11

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, Concepotualdensity 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	93(8)	March, 2020	NA	Springer	Q2

Paper No: PU-SOE-CHE-12

Computation of Absolute Radii of 103 Elements of the Periodic Table in terms of Nucleophilicity Index'

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Abstract

The size of an atom is a very significant parameter in associating and understanding a wide range of atomic or molecular physico-chemical properties. Considering importance of the size descriptor, an ansatz to compute absolute radius (r) in terms of nucleophilicity index (N) is proposed in the present work for atoms of 103 elements of periodic table. We have followed a very simple empirical approach to compute the absolute radii of the elements invoking regression analysis the new set of radii satisfy all the sine qua non of periodic properties. Relativistic effects are pronounced in the computed radii. A close agreement is noted on comparing the computed data with the existing scales. A strong quantitative correlation is observed with ionization potential and electronegativity for the computed data. Moreover, the absolute radius calculated in the present effort is employed in calculating internuclear bond distance, a real field descriptor, for several heteronuclear diatomic molecules. A significant agreement between the theoretically computed and experimentally determined internuclear bond distances is observed, thus corroborating the consistency of our proposed model.

Keywords:
Periodicity, Atomic radius, d-and f-block contractions, Ionization potential, Electronegativity, Relativistic effect, Internuclear bond distance.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Mathematical Chemistry	58	March, 2020	1025–1040	Springer	Q2

Paper No: PU-SOE-CHE-13

Synthesis and Ion exchange Characterization of n-Butyl acetate based Tin (IV) phosphate: A New Intercalated Hybrid Ion exchange material

Amita Somya and Vibha Upadhyay

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, Concepotualdensity 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
Research Journal of Chemistry and Environment	24 (7)	July, 2020	107-111	International Congress of Chemistry and Environment	Q4

Paper No: PU-SOE-CHE-14

Removal of color from real textile dyeing effluent utilizing tannin immobilized 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 ($R2 > 0.997$). 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 fiber, Bioadsorption, Textile wastewater, Response surface methodology, Chemical modification,

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Environmental and Energy Management	28	Apr, 2020	12011-12025	Springer	Q1

Paper No: PU-SOE-CHE-15

Studies on Polyoxyethylene octyl phenyl ether supported Thorium phosphate, a new cation exchange material

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Abstract

A new surfactant supported cation exchanger and adsorbent named, polyoxyethylene octyl phenyl ether supported thorium(IV) phosphate (TX-100ThP) has been reported along with its synthesis, physico-chemical characterization such as scanning electron microscopy, X-ray diffraction, thermogravimetric analysis–differential thermal analysis and Fourier transform infra-red study. Following the characterization, the formed product has been tested for its efficiency in ion exchange chemistry and in analytical chemistry. For the testing, adsorption of alkaline earths—Mg^{2+}, Ca^{2+}, Sr^{2+} and Ba^{2+} and transition metal ions such as Fe^{3+}, Mn^{2+}, Ni^{2+}, Cd^{2+}, Co^{2+}, Cu^{2+}, Hg^{2+} and Pb^{2+} have been explored in different acidic media and the results revealed the selectivity of synthesized material towards Hg^{2+} ions. On that basis, the material has been used to treat the binary laboratory-made samples, exploring the environmental importance of the cation exchanger in material science.

Keywords:
Surfactant, cation exchanger, thorium phosphate, adsorption

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Bulletin of Materials Science	43	July, 2020	1-7	Springer	Q2

Paper No: PU-SOE-CHE-16

Density functional study of structures, stabilities and electronic properties of $AgAu_n\lambda$ (λ= 0, ±1; n = 1-12) clusters: comparison with pure gold clusters

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Abstract

Geometrical structures, relative stabilities and electronic properties of neutral, cationic and anionic pure gold $Au_{\lambda n+1}$and Ag-doped bimetallic $AgAu_{\lambda n}$(λ=0,±1; n=1−12)clusters have been systematically investigated by using density functionaltheory methodology. The optimized structures show that planar to three-dimensional structural transition occurs at n=5for cationic clusters. Due to strong relativistic effect of Au clusters, the ground state configurations of neutral and anionicbimetallic clusters favor planar geometry till n=12. Silver atoms tend to occupy the most highly coordinated position andform the maximum number of bonds with Au atoms. The computed HOMO-LUMO energy gaps, fragmentation energies andsecond-order difference of energies show interesting odd-even oscillation behavior. The result indicates that $AgAu_5$, $AgAu^{+}_{2}$and $AgAu^{-}_{2}$are the most stable clusters in this molecular system. The DFT based descriptors of bimetallic clusters are alsodiscussed and compared with pure gold clusters. The high value of correlation coefficient between HOMO-LUMO energygaps and DFT based descriptors supports our analysis. A good agreement between experimental and theoretical data has beenobtained in this study

Keywords:
Density functional theory; bimetallic cluster; AgAu; structures; properties

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Material Science-Poland	38 (1)	Apr, 2020	97-107	Sciendo	Q3

Paper No: PU-SOE-CHE-17

A Review on nanoalloy Clusters: Theory to Applications

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Abstract

Nanoalloy clusters have attracted a lot of attention in recent times and have grown enormously in various domains, ranging from semiconductor, material sciences, biophysics, life sciences to earth sciences. In this report, we presented a review of nanoalloy clusters and their application. The background of clusters, nanoalloys and their isomers, their classification, and potential applications ranging from catalysis, optoelectronics, magnetic to bio-diagnosis are reported. Experimental techniques as well as the importance of theoretical and computational studies in nanoalloy clusters are also presented.

Keywords:
Nanoalloy clusters, optical properties, electronic properties, magnetic properties, catalysis, bio-diagnostics.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Recent Patents on Engineering	15 (5)	Jan, 2020	NA	Bentham Science	Q3

Paper No: PU-SOE-CHE-18

Physicochemical and Non-linear optical studies of Mixed Ligand Cu(I), Fe(II) and Ru(II) complexes containing triphenylphosphine and a Schiff base 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	May, 2020	100424	Elsevier	Q3

Paper No: PU-SOE-CHE-19

CdS-MoS2 core-shell nanospheres: a new electrode for lithium ion batteries

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Abstract

Simple and single step ionic liquid assisted solvothermal method is proposed for synthesis of CdS@MoS2 core–shell nanospheres. The formation of core–shell structure can be attributed to 1-triethylene glycol monomethyl ether-3-methylimidazolium methanesulfonate ionic liquid added during the synthesis. Several physicochemical techniques were exercised to validate the desired state of the obtained material. Generally, implementation of CdS as anode for lithium ion batteries is truncated by its low theoretical capacity. Herein, we introduce CdS@MoS2 core–shell nanospheres to account this issue. MoS2, a layered material with high capacity and good stability, is selected as an appropriate material to form a p-n junction by encapsulation of CdS nanospheres. For the first time, CdS@MoS2 is probed as an anode for lithium ion batteries. At very high current rate of 0.2 C, the electrode delivered a high discharge capacity of 734 mA h g−1 after 100 cycles. The excellent electrochemical properties of CdS@MoS2 core–shell nanospheres including high specific capacity and high stability are ascribed to the encapsulation of CdS nanospheres with amorphous MoS2.

Keywords:
Nanospoheres, lithium ion batteries, methylimidazolium, methanesulfonate, ionic liquid

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Materials Science: Materials in Electronics	30 (15)	July, 2019	14456–14463	Springer	Q2

Paper No: PU-SOE-CHE-20

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.

Keywords:
Absolute radius, Conceptual Density Functional Theory, effective nuclear charge, Electrophilicity Equalization Principle, electrophilicity index, nucleophilicity index, periodic descriptor

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Chemical Research	45 (1,2)	July, 2020	201-206	Sage	Q4

Paper No: PU-SOE-CHE-21

Codeposition of electroless Ni-P/ZaO 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
Materials Today Proceedings	45	Mar, 2020		Elsevier	

Paper No: PU-SOE-PHY-01

Observation of Enhanced Humidity Sensing Performance and Structure, Dielectric, Optical and DC Conductivity Studies of Scandium Doped Cobalt Chromate

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Abstract

In the present investigation, we have examined the evolution and influence of Sc^{3+} content on the structural, microstructural, UV–Visible, Dielectric, DC conductivity and humidity sensing performance of Cobalt chromate viz., $Co_{(1-x)}Sc_xCr_2O_4$ nanoparticle are synthesized by modified solution combustion method using mixture of carbamide and glucose as fuel. For sintered powder to study the Crystallinity, phase purity, Structure analysis are done by using X-ray diffractogram (XRD). The results of the XRD analysis give rise to all the samples are exhibit single phase with spinel cubic structure. Further the crystallite size was observed in nano region. The increase of the lattice parameter provides evidence for the effective substitution of Sc^{3+} at A site. The surface morphology, microstructure and elemental analysis are done by using SEM and EDS respectively. The SEM micrographs reveals that material are exhibits highly porous nature and producing agglomeration. The results of EDS confirms perfect elemental composition and there is no impurities in the samples. Particle size of both samples were estimated from particle size distribution diagram. The UV–Vis diffuse reflectance analysis were used to estimate the band gap of the samples. To understand the electrical behaviour of the samples we have done dielectric properties as a function of frequency. Dielectric measurements reveal that dielectric constant is loos tangent decreases with increasing frequency and it is constant for higher frequency side, this can be discussed using Koop's theory. For estimate the activation energy DC conductivity measurements used. The specific surface range (SSA) are analyzed by using Brunauer–Emmett–Teller (BET) measurement and were found 165 Cm^3/g STP and 40,790 Cm^3/g STP. Further the average pore diameters were found 38 and 28 nm. To explore the response of the material at different humidity levels humidity sensing measurements carried out and humidity sensing response coefficient is estimated. From this study the fundamental behaviour of the synthesized materials at different standards were evaluated for various industrial applications.

Keywords:

Ceramics, Phase transitions, Nuclear magnetic resonance (NMR), Raman spectroscopy, Dielectrics

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Materials Science: Materials in Electronics	30(18)	Aug. 2019	17202-17217	Springer	Q2

Paper No: PU-SOE-PHY-02

Silver Quantum Dot Decorated 2D-SnO_2 Nanoflakes for Photocatalytic Degradation of the Water Pollutant Rhodamine B

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Abstract

Decoration of 2D semiconductor structures with heterogeneous metal quantum dots has attracted considerable attention due to advanced optical, electrical, and catalytic properties that result from the large surface-to-volume ratio associated with these structures. Herein, we report on silver quantum dot decorated 2D SnO_2 nanoflakes for the photocatalytic abatement of water effluents, the synthesis of which was achieved through a straightforward and mild hydrothermal procedure. The photocatalysts were systematically investigated using UV–Vis, XRD, electron microscopy (SEM, HR-TEM), EDX, XPS and FTIR. The photocatalytic activity of the nanostructures was evaluated for the abatement of water pollutant rhodamine B (RhB), under light irradiation. The mild hydrothermal synthesis (100 °C) proved highly efficient for the production of large scale Ag quantum dot (QD)/SnO_2 nanoflakes for a novel photocatalytic application. The decoration of SnO_2 with Ag QDs significantly enhances the synergetic charge transfer, which diminishes the photo-induced electron-hole reunion. Moreover, the plasmonic effect from Ag QDs and 2D-SnO_2 structures acts as an electron tank to collect the photo-induced electrons, generating a Schottky barrier between the SnO_2 structures and quantum dots. Overall, this resulted in a facile and efficient degradation of RhB, with a rate double that of pristine SnO_2.

Keywords:

Silver quantum dots, 2D-SnO_2 nanoflakes, photocatalytic activity, rhodamine B

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Nanomaterials	9	Nov. 2019	1356	Multidisciplinary Digital Publishing Institute	Q1

Paper No: PU-SOE-PHY-03

Effect of Dy on Structural and Low Temperature Magnetic Properties of $Ca_{0.7}Dy_{0.3}MnO_3$

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Abstract

Investigated the structural and low temperature magnetic properties of polycrystalline single phase $Ca_{0.7}Dy_{0.3}MnO_3$ compound which was prepared by solid state reaction method. From the room temperature (RT) X-ray diffraction measurements it is confirmed that formation of single phase orthorhombic structure, with *Pnma* space group and average grain size 2 μm was verified by SEM analysis. Rietveld refinement was carried out on RT X-ray diffraction data and obtained the structural parameters, $a = 5.2811(2)$Å, $b = 7.5409$ (1)Å and $c = 5.2748(6)$ Å are well matching with previous reports. Low temperature DC magnetic measurements were carried out at 500 Oe to understand the magnetic ordering in $Ca_{0.7}Dy_{0.3}MnO_3$, which shows the transition of antiferromagnetic to paramagnetic phase. The susceptibility measurement reveals antiferromagnetic transition (T_N) at around 55 K. At low temperature below 10 K weak ferromagnetic ordering is observed. Inverse susceptibility and derivative of field cooled curve shows a clear anomaly around 55 K. Curie Weiss fitting was done on inverse susceptibility measurement and obtained the paramagnetic curie constant $\theta_p \sim -57$ K, which clearly indicates the evidence of antiferromagnetic ordering in the $Ca_{0.7}Dy_{0.3}MnO_3$ sample.

Keywords:
Structure, Magnetism, Antiferromagnetism, Multiferroic

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Chemical Data Collections	24	Dec. 2019	100288	Elsevier	Q3

Paper No: PU-SOE-PHY-04

Effect of Pr^{3+}-Doping on the Structural, Elastic and Magnetic Properties of Mn–Zn Ferrite Nanoparticles Prepared By Solution Combustion Synthesis Method

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Abstract

Ferrite nanoparticles are currently used for important applications in the field of medical particularly, target-directed medicine and cancer treatment. Keeping this in mind, in the present work we prepared Pr^{3+} doped $Mn_{0.5}Zn_{0.5}Fe_2O_4$ nanoparticles by combustion route. The crystallinity and structure were confirmed by XRD. The Elastic properties are estimated by using FTIR data and reveals that variation of elastic constants has been interpreted in terms of strength of inter-atomic bonding and electronic configuration of the cations involved in the samples. Further variation of stiffness constants, Poison's ratio, elastic constants, longitudinal and transverse wave velocity is studied with respect to Pr^{3+}content. Significant influence is observed in elastic values due to the addition of larger ionic radii of Pr^{3+} in spinel lattice. The intensity of magnetization, remanence, and coercivity was found to be decreasing with increasing Pr^{3+} concentration. Hence these samples are potential candidates for medical applications i.e. magnetic resonance imaging.

Keywords:
Ferrites, Stiffness constants, Poison's ratio, Elastic constants, Longitudinal elastic wave velocity, Transverse wave velocity

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Chemical Data Collections	24	Dec. 2019	100273	Elsevier	Q3

Paper No: PU-SOE-PHY-05

Switching Behavior of Bulk, Fast Ion Conducting, Vitreous AgI-Ag_2O-MoO_3 Solids with Inert Electrode

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Abstract

Developing efficient, fast performing and thermally stable Silver iodide-based fast ion conducting solids are of great interest for resistive switching applications, but still remain a challenge. Metallization in bulk, behavior of threshold voltage profile over composition, and corrosion reactions are few of the challenges. In this work, the switching behavior of bulk, fast ion conducting, vitreous $(AgI)_x$ -$(Ag_2O)_{25}$-$(MoO_3)_{75-x}$, for $60 \leq x \leq 40$ solids, has been investigated in order to understand the switching mechanism with the inert electrodes. By using inert electrodes, the switching becomes irreversible, memory type. The switching mechanism is the electrochemical metallization process. The inert electrodes restrain ionic mass transfer but exhibit low barrier to electron transfer allowing the cathodic metallization reaction to reach Nernst equilibrium faster. Cations involved in this process transport through the free volume within the solid structure and follows Mott-Gurney model for electric field-driven thermally activated ion hopping conductivity model. This model along with the thermal stability profile provides a narrow region within composition with better switching performance based on swiftness to reach threshold voltage and less power loss. Traces of anionic contribution to metallization are absent. Moreover, anodic oxidation involves reactions that cause bubble formation and corrosion.

Keywords:

Electrochemistry, Glass-ceramics, Ionic conductivity, Oxides, Electrochemistry

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of the American Ceramic Society	102 (12)	Dec. 2019	7244-7252	Wiley-Blackwell	Q1

Paper No: PU-SOE-PHY-06

Correlation between Non-Linear Optical Parameter and Structure of $Li_2B_4O_7$ Glasses Doped with Er^{3+}ions

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Abstract

The glass system 90 $Li_2B_4O_7$ + x Er_2O_3 + (10 x) $BiCl_3$, where $0.1 \leq x \leq 0.5$ mol%, has been synthesized by melt quenching technique. The Judd-Ofelt (JO) theory has been initiated for the precise analysis of the peak intensities. The JO parameter Ω_2, which represents asymmetry and covalency of the emission environment increases with increase in Er^{3+} ions, while Ω_4 and Ω_6 reveal the rigidity of the host medium. Radiative parameters such as τ_R, A_R, β_R, FOM, and σ_R have been calculated. The photometric studies, CIE & CCT studies confirm that, for all the investigated glasses CIE coordinated diagram is found to be white light. CCT graph which gives white light emission around 10000K. Two photon absorption coefficient (TPA) of Er^{3+} doped glasses lie in the range of 7.491 to 8.868. Glasses with highest TPA shows low Eg values indicating a large density of states of O^{2-} in highest occupied molecular orbitals.

Keywords:

Judd-Ofelt parameter, Raman study, IR study, Photoluminescence, Borate glasses

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Non-Crystalline Solids	531	Dec. 2019	119843	Elsevier	Q1

Paper No: PU-SOE-PHY-07

Exploring the Structural, Dielectric and Magnetic Properties of 5 Mol% Bi^{3}+-Substituted $CoCr_2O_4$ Nanoparticles

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Abstract

In the present work for the first time, we report in-depth structural, electrical, optical and magnetic properties of a family of cobalt chromate nanoparticles with 5 mol% Bi^{3}+ substitution of the average crystallite size of 15 nm, fabricated by a solution combustion method using urea and glucose as a fuel. $Co_{0.95}Bi_{0.05}Cr_2O_4$ shows a single phase with spinel cubic structure with a space group of Fd3m with a lattice parameter of 8.334 Å. The morphology of the family of Bi^{3}+-doped $CoCr_2O_4$ shows a highly porous nature. Transmission electron microscopy (TEM) shows samples are in nano size, i.e. 22 nm with well crystalline nature. The energy gap was estimated by using UV spectrum and found in the range of 3.86 eV. Temperature-dependent dielectric constant (ε′), dielectric loss (ε″) and loss tangent (tan δ) are explained by using Maxwell–Wagner and Koop's phenomenological theory. The evolution of magnetic behaviour was studied as a function of temperature and magnetic field to study the magnetic transitions such as paramagnetic to long-range collinear ferrimagnetism transitions, and it was found at 98 K and non-collinear ferrimagnetism at 26 K. M−H loop at 300 K nearly shows a paramagnetic phase at 98 K and it clearly suggests that samples exhibit super paramagnetic nature.

Keywords:
Chromates, Solution combustion method, Ferrimagnetism, Koop's ophenomenological theory

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Superconductivity and Novel Magnetism	33	Jan. 2020	1747–1757	Springer	Q3

Paper No: PU-SOE-PHY- 08

Synthesis, Thermal Stability and Structural Transition of Cubic SnS Nanoparticles

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Abstract

Recently identified cubic polymorph of SnS (SnS-CUB) is a promising low-cost material for solar cell applications. We report on the thermal stability, structural and optical properties of SnS-CUB nanoparticles. The average crystallite size of cubic SnS nanoparticles synthesized by wet chemical method at 20 °C is about 34.9 nm and unit cell lattice parameter a = 11.59 Å. We found that cubic phase remained structurally stable up to 400 °C even though sulfur is partially re-evaporated. The sample annealed at 450 °C contains both cubic and orthorhombic phases. When the annealing temperature is increased to 500 °C, the sample completely transforms to orthorhombic structure. Raman spectroscopy showed the formation of minor secondary phases Sn_2S_3 and SnO_2 at temperatures ≥500 °C. Three distinct regions of weight loss are observed in thermogravimetric curve (TGA) of cubic SnS nanoparticles; around 300 °C, 600 °C and 800 °C. Weight loss of 10% observed near 600 °C was due to rapid re-evaporation of sulfur from SnS. Annealing at 500 °C decreases the direct optical bandgap value 1.68 eV–1.3 eV (direct), 1.0 eV (indirect) is also an indication of the structural transition of SnS-CUB to orthorhombic SnS. Cubic SnS nanoparticles were strongly absorbing light photons in the visible wavelength range of 400 nm–700 nm. The orthorhombic SnS with an indirect bandgap of 1 eV has extended the absorption edge to 1000 nm. By combining both cubic and orthorhombic SnS, the absorption can be extended to a wide wavelength range.

Keywords:
Cubic SnS, nanoparticles, TGA, Thermal stability, Optical properties.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Alloys and compounds	820	April, 2020	153116	Elsevier	Q1

Paper No: PU-SOE-PHY- 09

Effect of Er Doping on the Ammonia Sensing Properties of Zno Thin Films Prepared by A Nebulizer Spray Technique

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Abstract

Erbium (Er)-doped ZnO thin films were deposited on glass substrates by nebulizer spray pyrolysis with different doping concentrations (0wt%, 1 wt%, 3 wt% and 5 wt%). The deposited films are polycrystalline with a hexagonal structure with a (002) predominant plane. The Erdoped ZnO films have greater surface roughness than the undoped ZnO film. The optical transmittance of the undoped ZnO film is about 80% in the visible range. The optical bandgap of the undoped ZnO thin film is 3.29 eV, which is very close to the bulk ZnO. From photoluminescence spectra, sharp UV emission is observed at 385 nm for all the prepared films. The response of the films to ammonia (NH3) vapour is high when the Er concentration is 3% or less, and for higher concentrations of Er, the response is low. All the deposited Er-doped ZnO films show short response time and recovery time with regard to NH_3.

Keywords:
Rare-earth-doped ZnO, Nebulizer spray pyrolysis, Optical bandgap, Photoluminescence, Ammonia sensing

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Physics and Chemistry of Solids	144	April, 2020	109513	Elsevier	Q2

Paper No: PU-SOE-PHY- 10

Effect of Acoustic Standing Waves on Cellular Viability and Metabolic Activity

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Abstract

Acoustic standing wave devices offer excellent potential applications in biological sciences for drug delivery, cell manipulation and tissue engineering. However, concerns have been raised about possible destructive effects on cells due to the applied acoustic field, in addition to other produced secondary factors. Here, we report a systematic study employing a 1D resonant acoustic trapping device to evaluate the cell viability and cell metabolism for a healthy cell line (Human Dermal Fibroblasts, HDF) and a cervical cancer cell line (HeLa), as a function of time and voltages applied (4–10 Vpp) under temperature-controlled conditions. We demonstrate that high cell viability can be achieved reliably when the device is operated at its minimum trapping voltage and tuned carefully to maximise the acoustic standing wave field at the cavity resonance. We found that cell viability and reductive metabolism for both cell lines are kept close to control levels at room temperature and at 34 °C after 15 minutes of acoustic exposure, while shorter acoustic exposures and small changes on temperature and voltages, had detrimental effects on cells. Our study highlights the importance of developing robust acoustic protocols where the operating mode of the acoustic device is well defined, characterized and its temperature carefully controlled, for the application of acoustic standing waves when using live cells and for potential clinical applications.

Keywords:
Acoustic field, standing waves, cell viability, cavity resonance, HeLa, Human Dermal Fibroblasts, cell manipulation

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Scientific Reports	10	May, 2020	8493	Springer Nature	Q1

Paper No: PU-SOE-PHY- 11

Synthesis, phase transformation, and morphology of hausmannite Mn3O4 nanoparticles: photocatalytic and antibacterial investigations

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Abstract

Nano structured Hausmannite (Mn_3O_4) has efficacious applications in numerous fields, such as catalytic, medical, biosensors, waste water remediation, energy storage devices etc. The potential application in wastewater treatment is due to its distinct structural features combined with fascinating physicochemical properties. Another area of interest is the oxidative properties imparted due to its reduction potential. Larger surface to volume ratio and high reactivity than the bulk form shows great progress as antimicrobial agent to control drug resistant microbial population. The distinct surface morphologies, crystalline forms, reaction conditions and synthetic methods exerts significant impact on the photo catalytic and bactericidal efficiency. Hence, the present paper focuses on a concise review of the multifarious study on synthetic methods of Mn_3O_4, growth mechanisms, structural forms, phase transformation and phase control, shape and dimensionality. The review also confers its applications towards photo catalytic and bactericidal studies.

Keywords:
Nano hausmannite, Methods of synthesis, Morphology, Phase transformation, Photocatalyst, Antimicrobial activity, Materials science, Nanomaterials, Materials application, Materials chemistry, Materials property, Chemistry, Environmental science, Biological sciences

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Heliyon	6	Jan, 2020	NA	Elsevier	Q1

Paper No: PU-SOE-PHY- 12

Manifestation of intermediate phase in Cu doped Si-Te glasses

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Abstract

Alternating differential scanning calorimetry (ADSC) analysis has been carried out on bulk $Si_{15}Te_{85-x}Cu_x$ ($1 \leq x \leq 10$) glasses to examine the thermal properties of the glassy samples in detail. The investigations on the compositional dependence of ΔH_{NR} (non- reversing enthalpy) manifests a trough between the composition $2 \leq x \leq 6$ which stands as the basis of the presence of Boolchand's Intermediate phase in that range. Additionally, anomalous behavior has been observed at the compositional dependence of various thermal parameters at $x = 9$, which stipulates the appearance of chemical threshold at the stated composition. Annealed bulk samples have been exposed to XRD studies to discern the type of formed crystalline phases. The study has reported the manifestation of Te, Si_1Te_2, Si_2Te_3, Cu_3Te_2 phases.

Keywords:
Chalcogenide glass, Boolchand intermediate phase, Chemical threshold

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Non-crystalline solids	531	Mar, 2020		Elsevier	Q1

Paper No: PU-SOE-PHY- 13

Structural, Electronic, Vibrational and Magnetic Properties of Zn^{2+} Substituted $MnCr_2O_4$ Nanoparticles

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Abstract

In the present investigation, we report the structural, vibrational, electronic and magnetic properties of $Mn_{0.5}Zn_{0.5}Cr_2O_4$ nanoparticles fabricated by the solution combustion method and complemented by Density Functional theory (DFT) calculations. X-ray diffraction (XRD), Neutron diffraction, X-ray photoelectron spectroscopy and Raman analysis confirms the formation of single-phase with spinel cubic structure. The average crystallite size was found to be 8 nm. The theoretical calculations suggest that Zn-doping on the $MnCr_2O_4$ matrix induces a unit cell contraction associated with structural distortions along both [AO_4] (A = Mn, Zn) and [CrO_6] clusters, in agreement with the experimental evidence. These structural distortions contribute to narrowing the band-gap of $Mn_{0.5}Zn_{0.5}Cr_2O_4$ from disturbed energy levels in the vicinity of Fermi level. Field dependent magnetization confirms that the samples exhibit paramagnetic nature at 300 K and antiferromagnetic nature at 3 K. In the theoretical context, the exchange coupling constant for pure and Zn^{2+} substituted $MnCr_2O_4$ materials were calculated confirming the dominant antiferromagnetic character of Cr-Cr interactions. The temperature dependent susceptibility reveals that the magnetic transition from paramagnetic phase to antiferromagnetic phase occurs at 19 K (T_N). The spin frustration factor of $Mn_{0.5}Zn_{0.5}Cr_2O_4$ is found to be 22 K. Hence, our experimental and theoretical result suggests that synthesized materials are useful for low and high frequency applications.

Keywords:

Neutron diffraction, Solution combustion method, Raman spectra, Antiferromagnetic, DFT calculations

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Magnetism and Magnetic Materials	502	May. 2020	166595	Elsevier	Q2

Paper No: PU-SOE-PHY-14

Effect of Aluminium Substitution in Magnetically Affluent Inverse Spinel Ferrites Studied Via 57Fe-Internal Field NMR

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Abstract

Ferro/ferrimagnetic materials are of fundamental interest due to their variety of applications. The structural and magnetic properties change significantly with different synthesis procedures. Here, we report the synthesis, X-Ray Diffraction (XRD), Vibrating Sample Magnetometry (VSM), and Nuclear Magnetic Resonance (NMR) studies of spinel nickel ferrites doped with non-magnetic cations like cadmium and aluminium. The spinel ferrites like $Ni_{0.7}Cd_{0.3}Fe_{2-x}Al_xO_4$ (x = 0, 0.1, 0.2) are synthesized using one step auto combustion technique. The X-ray diffraction measurements confirm the formation of these systems in pure phase. In the present study we have used the modified home-built NMR spectrometer to study ^{57}Fe NMR in these ferro magnetic materials. The difference in the Fe^{3+} bonding at the octahedral (B-site) and the tetrahedral (A-site) sites result in the different hyperfine fields yielding Internal Field (IF) NMR frequencies at two different frequencies. The substitution of the non-magnetic Al^{3+} results in increasing in the line width of the NMR spectra corresponding to the octahedral site (B-site). Further, the NMR spectra corresponding to A-site decreases (both in terms of line width and area) due to the decrease in the ferrimagnetic contribution at that site. Change in the local environment around Fe^{3+} ion present at B-site is very well observed using ^{57}Fe NMR technique.

Keywords:

Spinel ferrites, Nickel cadmium ferrite, ^{57}Fe ZFNMR, Spin echo, Hyperfine field

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Molecular Structure	1209	June, 2020	127956	Elsevier	Q2

Paper No: PU-SOE-PHY-15

Electrical Conductivity Studies on LiCl Doped Zinc Borate Glasses

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Abstract

Lithium ion conducting ternary glass system xLiCl-(100-x)[0.68B2O3:0.32ZnO] with 25≥x≥5 mol% is prepared by microwave heating method. The ion conductivity is analysed using single power law proposed by Almond-West. The electrical conductivity is studied in the temperature range of 300-400 K and over a frequency range of 100 Hz-10MHz. Cole-Cole plots of these glasses showed and semicircle with spur indicating that single transport mechanism is operating. DC conductivities follow Arrhenius law and increases with increasing LiCl content. While the DC activation barrier calculated from linear least square fit show a stepwise decrement with increasing LiCl content. The observed increase in σdc and decrease in Edc with LiCl mol% is attributed to the enhanced Li+ ion content and opening of network structure caused due to the occupation Cl- ions around Li+ ions. A.C. activation barrier and frequency independent d.c. conductivity are comparable with those obtained in temperature dependent conductivities. Concentration of Li+ ions and structural degradation play a pivotal role in the ion transport in disordered systems.

Keywords:

Impedance Spectroscopy; Activation Energy; Ion Conductivity; Power Law Exponent.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Materials Today Proceedings	22	May, 2020	2103-2108	Elsevier	Not yet assigned

Paper No: PU-SOE-MAT- 01

Navier's Slip Condition on Time Dependent Darcy-Forchheimer Nanofluid Using Spectral Relaxation Method

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Abstract

In industrial applications involving metal and polymer sheets, the flow situation is strongly unsteady and the sheet temperature is a mixture of prescribed surface temperature and heat flux. Further, a proper choice of cooling liquid is also an important component of the analysis to achieve better outputs. In this paper, we numerically investigate Darcy-Forchheimer nanoliquid flows past an unsteady stretching surface by incorporating various effects, such as the Brownian and thermophoresis effects, Navier's slip condition and convective thermal boundary conditions. To solve the governing equations, using suitable similarity transformations, the nonlinear ordinary differential equations are derived and the resulting coupled momentum and energy equations are numerically solved using the spectral relaxation method. Through the systematically numerical investigation, the important physical parameters of the present model are analyzed. We find that the presence of unsteadiness parameter has significant effects on velocity, temperature, concentration fields, the associated heat and mass transport rates. Also, an increase in inertia coefficient and porosity parameter causes an increase in the velocity at the boundary.

Keywords:
Darcy-Forchheimer flow, Nanoliquid, Navier's slip, Convective condition, Numerical solution

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Central South University	26	Aug. 2019	2000-2010	Springer	Q1

Paper No: PU-SOE-MAT- 02

Analysis of Fully Developed Mixed Convection in Open-Ended Annuli with Viscous Dissipation

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Abstract

The vertical, open-ended double-passage annular space between three vertical concentric co-axial cylinders is an important geometry representing significant number of industrial applications. For a design engineer, the knowledge of fully developed mixed convection in this geometry is very essential. Hence, in this paper, it is proposed to numerically as well as analytically investigate the fully developed mixed convective flow in the vertical annuli having two annular passages with open upper and lower boundaries by taking viscous dissipation into consideration. The prime objective of the analysis is to bring out the influences of the location of middle cylinder, known as baffle, and viscous dissipation on the fluid flow and temperature profiles as well as the associated thermal transport rates. By neglecting the viscous dissipation influences, exact solutions are determined, while the finite difference-based numerical solutions are achieved in the presence of viscous dissipation. Further, excellent agreement is obtained between the analytical and numerical solutions under limiting conditions. The roles of viscous dissipation and baffle location are meticulously brought out through the flow pattern, temperature profiles and heat transport rates.

Keywords:
Baffle, Double-passage annuli, Viscous dissipation, Fully developed flow

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Thermal Analysis and Calorimetry	-	Dec. 2019	Online publication	Springer	Q2

Paper No: PU-SOE-MAT- 03

Spreading of Microorganism in Bipolar Fuzzy System

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Abstract

In this paper, we examined the spreading of microorganism in bipolar fuzzy system and we defined the disease rate, healing rate and the sharp plague threshold of the microorganism spreading on bipolar fuzzy system and we demonstrate these ideas with example.

Keywords:
Fuzzy set, fuzzy graph, bipolar fuzzy graph, spreading of microorganism, plague threshold.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Research Journal of Pharmacy and Technology	13(1)	Jan. 2020	224-226	A&V Publishers	Not yet Assigned

Paper No: PU-SOE-MAT- 04

Mathematical Analysis of Transport of Pollutants in Three Dimensional Advection - Diffusion Equation with Radioactive Decay

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Abstract

Contaminants of the subsurface has greatly invigorating research of solute transport of pollutants phenomena in porous media. The transport of pollutant in the subsurface is explained using Advection-Dispersion Equation (A D E) has been derived from the mass balance principle. In the deterministic approach with transport parameters independent of position and time the A D E can be derived for linear and explicit solutions. Many of the solutions for solute transport using A D E are available for a more number of initial conditions and boundary conditions for one-dimensional solute transport and a less number for three-dimensional transport models. Wide variations in flow properties and transport in the field, the nature of the flow system and nonideal nature of initial conditions and boundary conditions, the functionality of analytic solution is limited method and numerical method may be needed. Still, analytic solutions remain useful for validating numerical result, sensitivity analyses to evaluate the various effects of transport parameter, providing that the initial estimate of pollution scenario, and purposes over a large time or distances where the use of numerical models becomes impractical.

Keywords:
Validating numerical result, Transport parameter, Validating numerical result, Pollution scenario

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Advanced Research in Dynamical & Control Systems	12(2)	Jan. 2020	1-13	Institute of Advanced Scientific Research	Q3

Paper No: PU-SOE-MAT- 05

Approximate Controllability of Hilfer Fractional Sobolev Type Integrodifferential Inclusions with Nonlocal Conditions

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Abstract

In this paper, we investigate approximate controllability of Hilfer fractional Sobolev type differential inclusions with nonlocal conditions. The main techniques rely on the fixed point theorem combined with the semigroup theory, fractional calculus and multivalued analysis. An example is provided to illustrate the obtained results.

Keywords:
Approximate controllability, Hilfer fractional derivative, Sobolev type differential inclusions, Semigroup theory

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Dynamical Systems and Differential Equations	10 (1)	Feb. 2020	59-80	InderScience	Q3

Paper No: PU-SOE-MAT- 06

Mathematical Analysis of Transport of Pollutants in Two Dimensional Advection Diffusion Equation with Adsorption & Radioactive Decay

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Abstract

Mathematical Model for two-dimensional transport of pollutants in uniform flow are being applied extensively in groundwater studies. Groundwater models may be divided in to two main categories, namely, solute transport models and groundwater flow models. The solute transport models are applied in connection with groundwater quality problems. The solute transport models are often extended with chemical sub-models for description of the fate of non-conservative polluting species while in some cases may be sufficient only to study the aquifer. It is often necessary to include some of the overlying layers in the hydro-geological description. This is of importance both with respect to estimation of recharge and to the assessment of the sources of groundwater pollution. Hence, a comprehensive groundwater modeling package also has to include models for the unsaturated zone as well as integrated ground water/surface water models. The impact of all physical factors and dynamic strategies which have an effect at the mass stability on groundwater which incorporates transport, diffusion, adsorption, and transformation via chemical reactions.

Keywords:
Solute transport models and Groundwater flow models

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Advanced Research in Dynamical & Control Systems	12(2)	March, 2020	24-34	Institute of Advanced Scientific Research	Q3

Paper No: PU-SOE-MAT- 07

Developing Buoyant Convection in Vertical Porous Annuli with Unheated Entry and Exit

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Abstract

The open-ended vertical double-passage annular space between three vertical concentric coaxial cylinders is an important physical configuration portraying many practical applications. Hence, in the present analysis, the developing buoyant convection in vertical double-passage annuli filled with fluid-saturated porous media is studied numerically by imposing unheated entry and unheated exit thermal boundary conditions. The numerical solutions of the mathematical model equations are found through finite difference technique. The velocity profiles in radial as well as axial directions and temperature profiles have been depicted for vast range of no dimensional numbers, baffle position, and heating and un-heating ratio. The velocity and thermal gradients decreases as heating section length decreases. Maximum velocity and heat transport occurs in a narrow annular passage rather than equal or wider passages. The presence of porosity causes a reduction in flow velocities and thermal gradients.

Keywords:
Baffle, Convection, Grashof number, unheated entry and exit
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
HEAT TRANSFER - Asian Research	49	April, 2020	2551-2576	Wiley	Q2

Paper No: PU-SOE-MAT- 08

Uniqueness and its generalization of meromorphic function concerning differential polynomials

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Abstract

Considering the generalization of uniqueness of meromorphic functions of differential monomials, we obtain that if two non-constant meromorphic functions f(z) and g(z) satisfy Ek(1, fnf(k)) = Ek(1, gng(k)), where k and n are two positive integers satisfying k ≥ 3 and n ≥ 2k+9, then either f(z) = c1ecz, g(z) = c2e−cz, where c1, c2, c are three constants, satisfying (−1)k(c1c2)nc2k = 1.

Keywords:
Uniqueness, Meromorphic function, sharing value
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
South East Asian Journal of Mathematics and Mathematical Sciences	16 (1)	Apr, 2020	123-134	Ramanujan Society of Mathematics and Mathematical Sciences	(UGC Care)

Paper No: PU-SOE-MAT- 09

Entire solution of certain type of delay-differential equations

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Abstract

The open-ended vertical double-passage annular space between three vertical concentric coaxial cylinders is an important physical configuration portraying many practical applications. Hence, in the present analysis, the developing buoyant convection in vertical double-passage annuli filled with fluid-saturated porous media is studied numerically by imposing unheated entry and unheated exit thermal boundary conditions. The numerical solutions of the mathematical model equations are found through finite difference technique. The velocity profiles in radial as well as axial directions and temperature profiles have been depicted for vast range of no dimensional numbers, baffle position, and heating and un-heating ratio. The velocity and thermal gradients decreases as heating section length decreases. Maximum velocity and heat transport occurs in a narrow annular passage rather than equal or wider passages. The presence of porosity causes a reduction in flow velocities and thermal gradients.

Keywords:
Baffle, Convection, Grashof number, unheated entry and exit
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Italian Journal of Pure and Applied Mathematics					UGC Care, Q4

Paper No: PU-SOE-MAT- 10

Computational analysis of conjugate buoyant convective transport in an annulus

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Abstract

In the present work, the convective flow and thermal pattern, associated heat transport rates of buoyant convection in an annular geometry is theoretically analyzed. The inner cylindrical wall has finite thickness and is kept at high temperature, while the outer cylindrical wall is held at low temperature. The vorticity-stream function form of model equations are solved using FDM based on ADI and SLOR techniques. The numerical simulations for various parameters are presented. In particular, this analysis focused on the effects of conjugate heat transport characteristics.

Keywords:
Conjugate heat transfer FDM Annulus
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Advances in Fluid Dynamics	NA	July, 2020	889-905	Springer	Q3

Paper No: PU-SOE-MAT- 11

Influence of thin baffle and magnetic field on buoyant convection in a vertical annulus

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Abstract

This paper numerically investigates buoyancy-driven convection in an annular cavity having differently heated cylindrical side walls and a thin baffle attached to the inner cylinder. The annular enclosure is packed with electrically conducting low Prandtl number fluid (Pr = 0.054). Along the radial or axial direction, a magnetic field of uniform intensity is applied. The finite difference method consisting of ADI and SLOR techniques is employed to solve the model equations governing the physical processes. The simulation results are presented through streamlines, isotherms, local, and average Nusselt numbers to illustrate the effects of various parameters. The simulation results explain that the Hartmann number and baffle length restrained the heat transfer rate, while the Rayleigh number and baffle location enhance the rate of heat transfer.

Keywords:
Magnetic field Annulus Baffle Finite difference method
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Advances in Fluid Dynamics	NA	July, 2020	105-119	Springer	Q3

Paper No: PU-SOE-MAT- 12

Heat source location effects on buoyant-convection of nanofluids in an annulus

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Abstract

In this paper, the impacts of the location of a thermal source on buoyant convection of nanofluids in an annular region are analyzed numerically through the finite volume technique. Five different thermal source positions along the inner cylinder of the annulus have been analyzed. The prime objective is to identify the optimal position of the source to maximize or minimize the thermal transport at different values of Ra and diverse volume fractions of the nanoparticle ranging from 0 to 10%. The location of the thermal source has a profound impact on the flow and temperature patterns as well as thermal transfer from the discrete source to the nanofluid. Further, the volume fraction of nanoparticles also controls the heat transport in the annular geometry.

Keywords:
Nanofluid Annulus Heat source Finite volume method
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Advances in Fluid Dynamics	NA	July, 2020	923-937	Springer	Q3

Paper No: PU-SOE-MAT- 13

Q-shift differential polynomial of meromorphic functions sharing 1 value

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Abstract

In this article we discuss the unicity question of a category of non-linear differential polynomial of meromorphic function and its q-shift counterpart sharing 1 value. In this process, we employ the concepts of normal families as a tool to procure our results. We generalize and improve the results obtained by X. M. Li, H. X. Yi, Y. Shi.

Keywords:
Normal families, Q-Shift differential polynomials, Value distribution, Meromorphic functions,
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Analysis	29	June, 2020	47-65	Springer	NA

Paper No: PU-SOE-MAT- 14

Meromorphic Solutions of some non-linear q-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:
Graph theory, domination, Harary graph, 05C12, 68M10, 68R10
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Tbilisi Journal of Mathematics	13(3)	2020	53-62	Tbilisi Centre for Mathematical Sciences	web of science

Paper No: PU-SOE-MAT- 15

Total Coloring of the Prismatic Graphs Dicrete Mathematics, Algorithms & Applications

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Abstract

A total coloring of a graph is an assignment of colors to all the elements of the graph such that no two adjacent or incident elements receive the same color. A graph GG is prismatic, if for every triangle TT, every vertex not in TT has exactly one neighbor in TT. In this paper, we prove the total coloring conjecture (TCC) for prismatic graphs and the tight bound of the TCC for some classes of prismatic graphs.

Keywords:
Total coloring, claw-free graphs, non-orientable prismatic graphs
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Discrete Mathematics, Algorithms & Applications	12(3)	2020	NA	World Scientific	Q3

Paper No: PU-SOE-MAT- 16

Total Coloring of Core Satellite, Cocktail Party & Modular Product Graphs

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Abstract

A total coloring of a graph G is a combination of vertex and edge colorings of G. In other words, is an assignment of colors to the elements of the graph G such that no two adjacent elements (vertices and edges) receive a same color. The total chromatic number of a graph G, denoted by $\chi\,00(G)$, is the minimum number of colors that suffice in a total coloring. Total coloring conjecture (TCC) was proposed independently by Behzad and Vizing that for any graph G, $\Delta(G) + 1 \leq \chi\,00(G) \leq \Delta(G) + 2$, where $\Delta(G)$ is the maximum degree of G. In this paper, we prove TCC for Core Satellite graph, Cocktail Party graph, Modular product of paths and Shrikhande graph.

Keywords:
Total coloring, Modular product graph, Core Satellite graph, Cocktail Party graph, Shrikhande graph.
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Applied & Engineering Mathematics	10(3)	2020	778-787	Turkic World Mathematical Society	web of science

Paper No: PU-SOE-MAT- 17

Projective Changes between Generalized (Alpha, Beta) - Metric & Randers Matrix

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Abstract

Projective change between two Finsler metrics arises from Information Geom-etry. Such metrics have special geometric properties and will play an important role in Finsler geometry. The purpose of the present paper is to find a relation to characterize the projective change between generalized (α, β) - metric $F = \mu_1\alpha + \mu_2\beta + \mu_3\frac{\beta^2}{\alpha}$ (μ_1, μ_2 and $\mu_3 \neq 0$ are constants) and Randers metric $\bar{F} = \bar{\alpha} + \bar{\beta}$, where α and $\bar{\alpha}$ are two Riemannian metrics, β and $\bar{\beta}$ are 1-forms. Further, we study such projective change when generalized (α, β) -metric F has some curvature property.

Keywords:
Finsler Space with (α, β) -Metric, Projective Change, Locally Projectively Flat, Randers Metric
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Advances in Pure Mathematics	10(5)	May,2020	312-321	Scientific Research Publishing	Web of Science Indexed

Paper No: PU-SOE-MAT- 18

Chemical Reaction Driven Ferroconvection in a Porous Medium

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Department of Mathematics, School of Engineering, Presidency University, Bangalore-560 064, INDIA

Abstract

A total coloring of a graph G is a combination of vertex and edge colorings of G. In other words, is an assignment of colors to the elements of the graph G such that no two adjacent elements (vertices and edges) receive a same color. The total chromatic number of a graph G, denoted by χ 00(G), is the minimum number of colors that suffice in a total coloring. Total coloring conjecture (TCC) was proposed independently by Behzad and Vizing that for any graph G, $\Delta(G) + 1 \leq \chi$ 00(G) $\leq \Delta(G) + 2$, where $\Delta(G)$ is the maximum degree of G. In this paper, we prove TCC for Core Satellite graph, Cocktail Party graph, Modular product of paths and Shrikhande graph.

Keywords:
Total coloring, Modular product graph, Core Satellite graph, Cocktail Party graph, Shrikhande graph.
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Advance in Fluid Dynamics	10(3)	July, 2020	363-371	Springer, Singapore	

Paper No: PU-SOE-ENGLISH - 01

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. 2019	234-238	KY Publishers	UGC Care

Paper No: PU-SOE-ENGLISH - 02

Thematic Concerns of the Post-Apartheid Novels of Nadine Gordimer and J M Coetzee

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Abstract

*S*outh 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 (International Journal of Multidisciplinary Research Studies)	2(1)	Jan-March 2020	1-9	John Foundation	UGC Care

Paper No: PU-SOE-ENGLISH - 03

Adaptability of Google Classroom for Enhancement of the Language Proficiency of Rural Engineering Students

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[b.] Assistant Professor, Department of English, Presidency University, Bengaluru (Karnataka) India

Abstract

This paper focuses on the adaptability of Google classroom teaching for the enhancement of the performance of the students' English proficiency in technical institution. The study has been conducted in the Government Engineering College, Haveri, Karnataka, with a sample size of hundred students of two branches of engineering. The concept of Preposition has been delivered to the students in both conventional and Google classroom methods. The performance of the students is evaluated by the brain storming, tests and other assessment Medias. The performance index has been set and the level of improvement has been noted. From the study it was found that there is a drastic improvement in the students' performance indices with induct of the Google classroom method. The study has also focused on the assessment of the adaptability of Google Apps for Education (GAFE) by rural/urban, male/female and Kannada/English medium samples exclusively. Moreover, the study revealed that the rural Kannada medium samples, that too the female samples have shown much improvement in Google classroom.

Keywords:

Google Apps for Education (GAFE), English Proficiency, Engineering Students, Rural Background, Medium of study, Conventional Teaching, Google Classroom, Brain Storming, Performance Index.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Literary Voice	1	March, 2020	265-272	Cosmos, ESJI,	UGC Care

Paper No: PU-SOE-ENGLISH - 04

Partition Trauma and Women: Unending Lament in Shoba Rao's "An Unrestored Women and other Stories"

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Abstract

The Partition of India has gained widespread scholarly attention as a result of its massive political, social, economic, historical and moral significance in not only the affected countries, India, Pakistan and Bangladesh but also the whole world. However, not much attention has been paid to the experiences of women during the partition particularly with regard to the violence inflicted upon them, the consequent trauma and then the inevitable reliving of those horrors in memory. This paper on Shobha Rao's collection of short stories, *An Unrestored Womenand Other Stories (2016)* attempts to analyse select fictions and female characters who were victims of Partition, including those who experienced life in refugee homes and repatriation camps, the hitherto concealed narratives.

Keywords:

Partition, Trauma, Women, Shoba Rao

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Rupkatha Journal on Interdisciplinary Studies in Humanities	12(1)	March, 2020	1-5	Sreecheta Mukherjee	Q3

Paper No: PU-SOE-ENGLISH - 05

A Journey from Oppression to Self -Discovery in Alice Walker's the Color Purple

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Abstract

Alice Walker in her fiction portrays the journey of Afro-American women and their struggle with the social discriminations of hatred, humiliation, oppression, and frustration. Women are treated as the least beings and are deprived of the basic rights. They are treated as commodities without flesh, blood and a soul. Lack of education to these women is the main reason for discrimination and they are made submissive as they are not aware of their own status in the society.This paper aims at dealing with a saga of pain, suffering, humiliation, anger, resistance, suppression, revolt and in the last self-discovery, affirmation and celebration; true salvation of body, mind and soul from every kind of male made shackles in the novel The Color Purple by Alice Walker. Through a womanist perspective, the study investigates black, female oppression as well as the possibility of independence through role models and female support.

Keywords:
Oppression, womanist, Discrimination, Humiliation, Self-discovery

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Alochana Chakra	IX	May, 2020	107-111	Chiranjib Sur	UGC Care

Paper No: PU-SOE-ENGLISH - 06

The Panorama of Cultures Reflected in Jhumpa Lahiri's *The Namesake*

Noor Fathima
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Abstract

Jhumpa Lahiri, a renowned Pulitzer prize-winning immigrant writer born to the Bengali parentage in London in 1967. Her first novel, The Namesake was published in 2003 that reflects the immigrant life experiences and identities concerning the ties and clashes between the families.

The study elaborates on the issues of displacement reverberated in the lives of the characters of the novel, The Namesake, and this tendency is shown inherent in the central character Gogol Ganguli. To live and settle in America, he assimilates the culture, nationality, and belongingness, and in due course of finding a new self- identity, otherwise called putting on fake personalities, he loses himself. Moreover, he started realizing that running away from reality will only improvise his agitations of both the Indian heritage and the American lifestyle.

The study connects extensively with the transnational world to the world of cultures and identities where the people have a choice of their own to live and settle in their lives. The people in post-colonial times opt their own life the way they want to live or abandon their home for any reason. They are truly not forced by war or colonization to aspire to live under any hegemonic condition. However, this freedom leads to the later consequences and could not possibly be controlled while they adapt an unknown culture and the new identities where the experiences are often predictable. These cultural experiences, displacement, and even diasporic communities are turned out to be the international obligation that is welcomed. The quest for identity is the fundamental question that involves the self with its interlining factors of cultures, especially for immigrants

Keywords:
Nationalism, transnational, Cross culture, Displacement, Self-identity, Diasporic communities, Cultural identity, Indian tradition

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Xi'an University of Architecture & Technology	XII(V)	May, 2020	1689-1703	Science Press	Q2

Paper No: PU-SOE-ENGLISH - 07

The Role of Peer-Tutoring in Improving the Communicative Competence among Under-Graduate Students'

Venkata Ramani. Challa
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Abstract

This paper aims to examine the use of peer tutoring on enhancing the communicative competence of ESL (English as second language) learners at under-graduate level. The study was carried out with 60 students in 2018 to 2019 Academic Year at a private University in Andhra Pradesh. The study describes the nature of activities conducted, tutor influence, English language use, and advantages of the peer tutoring program. Tutor's participant-observation and tutees responses were gathered and interpreted. The findings displayed that the peer-tutoring program was a favourable platform for student's language practice and also students learnt best from their peers. It is argued that the atmosphere surrounding the teaching and learning process plays a major role in the learning process. This paper concludes that peer-tutoring can be a powerful support program in promoting communicative competence among university students.

Keywords:

Peer tutoring, ESL learners, Communicative competence, Undergraduate level

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Purakala (Arts and Humanities)	31(55)	June, 2020	350-358	Rock Art Society of India	UGC Care

Paper No: PU-SOE-ENGLISH - 08

The Voiceless People in Shivarama Karanth's Chomana Dudi

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Abstract

It is the literature of the oppressed people, telling about their pains, agonies, disappointments, defeats, humiliations, oppressions and depressions. It also speaks about their vibrant culture, dreams, values, convictions and their struggle for annihilation of caste in order to build a casteless society. It reveals their resistant and rebellious character, their strength and stamina to live amidst all odds and their resilient nature to love life and live it happily. This novel unraveled the inhuman aspect of morbid caste system and untouchability effectively. Dalit literature in its beginning was identified as specific protest directed against everyday humiliations that individual dalits and dalits as a community face. Chomana Dudi narrates the story of Choma, a bonded laborer, who was struggling to make the both ends meet, every day. He has two sons and a daughter, who were also working along with him.

Every night Choma would start his drumming and he would find pleasure in it. Choma's only dream is to till his own land, someday. Karanth is unique in his perspective of social justice and liberation in the context of a global situation marked by systematic oppression of an overwhelming majority of the people. He is committed to the emergence of a new society, free from external intrusion, domination, exploitation, social and political marginalization. He envisions an egalitarian social system and a new economic order.

Keywords:

Dalit Literature, subaltern, oppressed, voiceless people.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
LangLit (An International Peer-Reviewed Open Access Journal)	6(3)	June, 2020	210-216	Adarsh Mahavidyalaya, Osmanabad Maharastra	UGC Care

Paper No: PU-SOE-ENGLISH - 09

Twice It Happened

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Abstract

Gita Viswanath's novel Twice It Happened tells the story of two women – Chitra Nagamma and her maternal aunt, Nagamma – of two generations belonging to the same family. The plot of the novel is divided into two sections with each section telling the story of two protagonists. The story unfolds with the death of Nagamma and the writer makes use of a deft narrative technique in telling the story of Nagamma through Jyothi, who receives letters from Chitra about her life.

Keywords:
Café Dissensus Everyday, the blog of Café Dissensus magazine.
Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Café Dissensus Everyday	NA	**May, 2020**	NA	Care Dissenus	NA

Paper No: PU-SOC- 01

"Promoter" as an Agency in Decline of "Market Orientation" Across Small Scale Enterprises in Andhra Pradesh: Study on Three Selected Districts

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[b]. School of Economics, University of Hyderabad, Telangana, India

Abstract

The study emphasizes the exploration of the influences that "promoter" of the small-scale unit exerts in shaping the loss of market orientation in regional perspective. The small-scale firm-based "inefficiencies" have been measured with aid of the factors "promoter's entrepreneurial orientation," "faulty resource based planning," "inefficient managerial control," and "improper capacity utilization." The factors were shortlisted after extensive review of the existing literature, theoretical frameworks, and the conceptual notes with regard to the phenomenon of the market orientation decline or industrial sickness across the small-scale units. The study across promoters of 300 sick industrial units observed the incidence of the sizable and quantifiable impact of the promoter in shaping the prospects for small-scale unit-based survival.

Keywords:
Promoter's entrepreneurial orientation, Faulty resource based planning, Inefficient managerial control, Improper capacity utilization

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal Public Affairs	9	Feb. 2020	Online publication	Wiley-Blackwell	Q3

Paper No: PU-SOC- 02

"Relevance of Skill Development in Economic Development in India: A Conceptual Analysis"

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Abstract

Human Resource has a direct impact on the economic growth of any particular organisation. When the human resource is well-trained and is aware of the work needed to be performed from their side, as a result of it there is an increase in the outcome of the organisation. Hence, it leads to economic development. This paper attempts a study of skill development strategies, shortcomings and importance for economic development in relevance to Andhra Pradesh state.

Keywords:
Skill development, Economic growth, Human resource

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Alochana Chakra Journal	IX	Feb. 2020	2592-2598	Chiranjib Sur	UGC Care

Paper No: PU-SOC- 03

Pertinance of Employee Engagement Actions in Organizations

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Abstract

The reason for this paper tries to discover the Relevance of Employee Engagement process in associations. Endeavors have been made here to center upon the basic job of employees for the suitability, maintainability and in general seriousness of the association, and along these lines, the noteworthiness of employee engagement as the most important resource for each association. The develop employee engagement is based on the establishment of prior ideas like occupation fulfillment, employee responsibility and Organizational citizenship conduct. Employee engagement is more grounded indicator of positive hierarchical execution plainly demonstrating the two path connection among manager and employee contrasted with the three before develops: work fulfillment, employee duty and authoritative citizenship conduct. Drawn in employees are sincerely joined to their association and exceptionally engaged with their activity with an incredible eagerness for the achievement of their manager, going additional mile past the business legally binding understanding.

Keywords:
Employee, Engagement, Organization, Career Development, Leadership

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Alochana Chakra	9(4)	April, 2020	1442-1452	Chiranjib Sur	UGC Care

Paper No: PU-SOC- 04

Relevance of Employee Engagement Process in Organisations.

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[c.]. Presidency University, Bengaluru, E Mail-bbpfatem@gmail.com

Abstract

The reason for this paper tries to discover the Relevance of Employee Engagement process in associations. Endeavors have been made here to center upon the basic job of employees for the suitability, maintainability and in general seriousness of the association, and along these lines, the noteworthiness of employee engagement as the most important resource for each association. The develop employee engagement is based on the establishment of prior ideas like occupation fulfillment, employee responsibility and Organizational citizenship conduct. Employee engagement is more grounded indicator of positive hierarchical execution plainly demonstrating the two path connection among manager and employee contrasted with the three before develops: work fulfillment, employee duty and authoritative citizenship conduct. Drawn in employees are sincerely joined to their association and exceptionally engaged with their activity with an incredible eagerness for the achievement of their manager, going additional mile past the business legally binding understanding.

Keywords:
Employee, Engagement, Organization, Career Development, Leadership

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Raning
INFOKARA	9	April, 2020	75-84	Wiley-Blackwell	UGC Care

Paper No: PU-SOM- 01

Performance of Indian Cement Industry: Drivers, Models and Empirics

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Abstract

A firm's performance depends on efficient management of economic resources. Performance is usually a function of firm-specific economic factors and macroeconomic factors. In other words, an efficient allocation, management and manipulation of these factors is required to enhance profitability. This study attempts to identify some factors to understand how and to what extent these factors influence the profitability of the Indian cement industry. Seven hypotheses were framed. Panel data of 146 firms were gathered over a period of 22 years, spanning from 1996 to 2017. Thereafter, a Fixed Effect Regression (FER) model was fitted to the data. Results suggested that both firm-specific (e.g. size of firm; age of firm; fixed asset turnover) and macroeconomic variables (e.g. GDP; inflation; export intensity) made a significant impact on profitability of this industry. The findings of this study should assist managers as well as policy makers to frame sustainable policies of this mature industry. This research fulfills a need for a study that shows the degree of contribution of firm-specific and macroeconomic factors to profitability of the Indian cement industry.

Keywords:
Profitability, panel data, fixed effect model, cement industry, India

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Global Economy Journal (GEJ)	19(2)	Aug.2019	001-019	World Scientific Publishing Co. Pte. Ltd	Q3 Listed under ABDC (B)

Paper No: PU-SOM- 02

An Empirical Study of Benchmarking Marketing Efforts

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Abstract

Shareholder value is non-negotiable in business. Marketing managers' should devise a marketing mix to create shareholder value. This work takes a modest attempt to devise and suggest a simplistic approach for managers of how to benchmark marketing efforts to maximise shareholder value. A quantitative research approach was taken into consideration. Four hypotheses were framed. Data on sales, advertising, and price were gathered from ten brands in a category over ten year. Thereafter, a hybrid regression model was fitted to data. Results reveal that the actual-points and the optimal-points of price and advertising are not equal in all nine cases in the pair-wise analyses. Findings of this research should guide managers to benchmark right price-point and right advertising-expenditures-point which indeed will maximise shareholder value of brand in question. This paper contributes to marketing because it highlights the role of marketing efforts in shareholder value creation and maximisation.

Keywords:
Advertising, Brands, Price, Benchmarking, Shareholder value, India

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Business Forecasting and Marketing Intelligence	5(2)	Sept. 2019	223-240	Inderscience Enterprises Ltd	Listed under ABDC (C)

Paper No: PU-SOM- 03

Human Resource Accounting with Reference to Indian Industries

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Abstract

Human resource is major resource in companies. Human resource accounting is important to record in book accounts in every organization. This research paper contains the human resource accounting in Indian industries. The researcher is considered 48 respondents to analyze the results and Chi-square test tool was used to analyze the result. The gender consideration was used for major analyses of human resource accounting.

Keywords:
Human Resource Accounting, Indian Human Resource Practices, model, Human assets, Human Efficiency

Publication Details:

Journal Name	Vol.	Month &Year	Page No.	Publisher	Scimago Ranking
Indian Journal of Research	9(1)	Sept.2019	19 - 35	Paripex	Not yet Assigned

Paper No: PU-SOM- 04

Analysis of Key Barriers in Retirement Planning an Approach Based on Interpretive

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[b.] School of Management, IMS Unison University, Dehradun, India
[c.] Department of Management, Birla Institute of Technology, Mesra, Ranchi, India

Abstract

Purpose – The purpose of this paper is to holistically study barriers in the path of implementation of retirement planning, as the need is increasing with decrease in mortality. The proper retirement planning can be one of the most important tools to control financial expenses on healthcare and welfare on old age population in government budgets.
Design/methodology/approach – The paper is a blend of theoretical framework and practical application and uses interpretive structural modeling (ISM) analysis to draw linkage and impact of identified barriers in the path of achievement of goals of retirement planning. The study has used three different research phases: identification of barriers from the literature, interviews with experts of industry at second stage and designing an ISM impact matrix cross-reference multiplication model. The identification phase led to the selection of 15 factors from past literature and by suggestion from industrial experts.
Findings – This study seeks to identify which barrier is acting as the most dominant one for the mass adoption of retirement planning and this result is helpful for policymakers to remove the dominant barrier. The result of this analysis can make retirement planning easy by elimination of highlighted barriers on the basis of their importance in the path of achievement of retirement goals. In the ISM level diagram, barriers such as marital status, number of financial dependents at the bottom, gender, income level, educational level, financial literacy, financial dependency, policy regulation, terms and conditions, goal clarity and psychological and cultural factors are on the top. Barrier of macroeconomic and bureaucratic impediments are also very important factors for achievement of retirement goal of an individual, but they cannot be controlled directly by the associated members of industry.
Originality/value – The concern for providing sufficient retirement resources is growing with the increase in life expectancy for human beings. Such requirement has attracted views from not only academicians but also policymakers. This paper is one of the preliminary attempts to identify barriers in implementation of retirement planning and rank them according to their importance.

Keywords:
Financial analysis, Decision analysis

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Modelling in Management	14(4)	Oct. 2019	972-986	Emerald Publishing Limited	Q2

Paper No: PU-SOM- 05

Impact of Foreign Aid on Economic Growth and Poverty Alleviation in India

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Abstract

This paper empirically investigates the impact of foreign aid on economic growth and poverty alleviation in India using annual data over the period 1975/76 to 2016/17. We employ the Autoregressive Distributed Lag (ARDL) approach advocated by Pesaran et al (2001), which is more appropriate for studies with small samples and the variables are fractionally integrated. Empirical evidence validates that foreign aid has a significant positive impact on economic growth in the short-run and not in the long-run. Results further confirm that aid does not have significant impact on poverty alleviation both in the shortrun and long-run. Therefore, the study concludes that foreign aid is a notable factor of economic growth in the short-run, while in the long-run, it has negligible effect. Moreover, the aid does not exert any significant effect on alleviation of poverty in India during the study period.

Keywords:
Foreign aid, Economic growth, Poverty Alleviation, ARDL Approach

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
The Empirical Economics Letters	18 (9)	Nov, 2019	957 - 968	EEL (SSRN)	Listed under ABCD

Paper No: PU-SOM- 06

Book Review: Strategies for Achieving Sustained High Economic Growth- The Case of Indian States

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Abstract

In this book, Strategies for achieving sustained high economic growth- The Case of Indian States is a significant work in the field of sustained economic growth for India. This book contributes to the area of state-level analysis of economic growth and has shown an alternative approach to achieve sustainable growth. In India, the agriculture sector has its own significance from a policy perspective for a various reason. In 1980, the rate of growth of Indian per capita income at over 4 percent has raised the hope that persistent problem of poverty could be overcome in near future if there is a proper balance of growth across regions and across the sector in India. India has a federal structure with sharing the responsibilities for development and governance jointly as well as separately. In this book they have identified there is a considerable amount of variation across the states. To get a sustained high rate of economic growth, the relationship between states and central government policies is also an important factor to be considered and impact of inter-linkages between economics and sectors that can help to achieve more balanced economic growth across the region in India. The book is divided into 7 chapters which includes, Introduction, Growth Experience of Indian States: Similarities and Divergence, Learning from sectoral Linkages: Agriculture and Economy, State Agriculture in the National Economy Setting, Explaining Variations in Agricultural Productivity Across Indian States: The role of Human Capital and Infrastructure, Investment Pattern and Response to Economic Reforms at the State Level and Policy Conclusions.

Keywords:
Agriculture and Economy, State Agriculture in the National Economy Setting, Explaining Variations in Agricultural Productivity across Indian States.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
South Asian Journal of Management	26(3)	Nov. 2019	202-205	AMDISA	Listed under ABCD

Paper No: PU-SOM- 07

Digital Design Thinking and Innovation- A Neurostrategic Prospective

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Abstract

This paper investigates opportunities of digital technology for design thinking and innovation from a neurostrategic competitive advantage prospective. By using the empirical epistemological systematic analysis based on Kuhn scientific revolution models, this study suggests, by a scientific analysis in the journal from 2010 until now. The conclusion is that digital technology tools are showing sign of future success in management science but there is still much confusion and misinterpretation about what would be behavioral and neuroscientific research that can help design thinking and innovation. As a novelty, this research will propose a discussion to define a probable model for an organization to get a sustainable competitive advantage by using the digital technology in the area of design thinking and innovation with the help of neurostrategic concept.

Keywords:
Design Thinking; Neurostrategy; SMAC; Behavioral Strategy; Strategic Innovation.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
European Journal of Business and Management	11(1)	Nov, 2019	60-69	IISTE	EBSCO,(US) Indexed

Paper No: PU-SOM- 08

An Empirical Study of Income Diversification and its Impact on Profitability of Banks

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Abstract

Objectives: The paper is studying diversification in income of Indian banks and impact of income diversification on profitability and sustainability of industry, mainly in environment shift of recent financial crisis. Statistical analysis: The study is a multivariate regression analysis to find diversification score on the secondary data for Indian banking industry for sample period of 10 years, from 2006 to 2015. Score of diversifications are calculated at two stages as DS (1), DS (2) to find share of non-traditional income in total income and categorization in non-traditional income respectively. The impact on the different income categories ; Share of Non-Interest Income(SNI), Share of fee Based Income (S FI), Share of Other Income(S OT), are tested against selected control variables. F-test used to test hypothesis as direct association with two set of variables. Further criterion scores techniques (SIC), (AIC) and (HQIC) are use as model improvement to test goodness of fit of the model.
Findings: The study found that income shift of new business lines helps banks to improve their profitability by dint of many barriers in implementation. The growth trend of such income is not stable during whole study period, majorly due to global financial crisis. In the library of literatures, the share of non-interest based income activities and fee based income sources has been more distinct for Private and Foreign banks, even though SBI and Its associate's banks are not far behind them. The role of the study to highlight the path for banks adopting new Non-interest income streams to enhance profitability and continuity in profitability. As reported, diversification in non-interest income sources may have positive impact on overall profitability and risk-adjusted performance along with improvement in stability of banking system. Other non-interest incomes are more changeable in compare to Fee based income generated by fee, commission and brokerage activity. By dint of many good effect of diversification banks, mainly in Indian context should take appropriate majors while diversification of its income.
Application/Improvements: The study provide a complete understanding about the positive effect of income diversification on profitability of banks but the decision makers should take appropriate majors, while taking diversification decision.

Keywords:
Diversification Indexes, Profitability, Bank, Profitability, Multivariate Analysis.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Recent Technology and Engineering	8(4)	Nov. 2019	11575-11585	Blue Eyes Intelligence Engineering & Sciences Publication (BEIESP)	Q4

Paper No: PU-SOM- 09

Return and Volatility Spillover Effects in Leading Cryptocurrencies

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Abstract

As Cryptocurrencies are emerging as a new class of investment assets, understanding their price and volatility dynamics has begun to gather momentum, especially the volatility can influence investment decisions. Most of previous literature concentrates primarily on several aspects of Bitcoin and endeavoring to generalize them for the whole cryptocurrency markets. In this study, we attempted to examine the return and volatility spillover effects across a wide range of cryptocurrency markets, i.e. eight major cryptocurrencies (determined by market capitalization) using a Vector Error Correction approach and Diagonal BEKK Multivariate GARCH model. We found the evidence of interdependencies and volatility co-movements among the various pairs of cryptocurrency markets. However, the study suggests that there exists a limited window of opportunity for the short-term portfolio diversification benefits from the selected large-cap cryptocurrency markets.

Keywords:

Cryptocurrencies, connectedness, volatility spillovers, diagonal BEKK model

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Global Economy Journal (GEJ)	19(3)	Dec. 2019	001-021	World Scientific Publishing Co. Pte. Ltd.	Q3 Listed under ABDC (B)

Paper No: PU-SOM- 10

Impact of Trade Liberalisation on Formal–Informal Interlinkages in India: Does Sectoral Labour Mobility Matter?

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Abstract

Existing study argues that labour market flexibility accompanied by trade liberalisation helped in building complementary relationship between formal and informal sectors in India. However, no direct relation is established between the labour market flexibility and trade liberalisation with respect to inter- and intra-sectoral movement of labour. The present study enquires whether the extent of labour mobility between and within formal–informal sectors affects the formal–informal growth linkages due to the tariff cut on traded goods, as a part of trade liberalisation in India. The findings based on static CGE analysis indicate that in absence of labour market segmentation (i.e. in absence of both wage rigidity and skill specificity) with full mobility of labour, formal sector growth is higher vis-à-vis the growth of those activities under segmented labour market with full mobility of labour. Amongst growing informal sector activities, output growth is lower in absence of segmented labour market with full mobility of labour. Finally, restricted labour mobility leads to largest expansion of formal activities, but further exacerbates the growth of informal activities. The study reveals that improvement in functional income distribution is mixed across households, depending on the degree of labour mobility, which implies labour market adjustment is costly due to structural reforms, that pitches for government intervention.

Keywords:

Formal-informal interlinkages, Trade liberalization, Segmented labour market, Labour mobility, Static CGE model

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Economic Structures	9(1)	Dec. 2019	1 - 29	Springer	Q2

Paper No: PU-SOM- 11

Impact of Socioeconomic Characteristics on Determinants Influencing Overall Usage Behavior of PMJDY Financial Inclusion Program in India

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Abstract

Pradhan Mantri Jandhan Yojana (PMJDY) is a dream project on the financial inclusion program by the government of India for inclusive growth of the economy. This program aims to provide basic banking account and financial services to every households in the country. The study is an endeavor to explore the awareness of various banking services rendered to the account holders of Pradhan Mantri Jandhan Yojana Account (PMJDY). Further the researcher has investigated to find the effect of the demographic characteristics on the determinants of overall usage behavior. An exploratory research design has been adopted for the current study with the help of structured questionnaire administered on the account holders of PMJDY in the rural area of Tamilnadu. Factor analysis is used to extract the factors that could affect the usage behavior of the account holders. Besides a bivariate Pearson correlation is also run to find any significant of association between the distance of the bank and the operation of the bank account. One way analysis of variance was deployed to understand the differences among the various groups of the socio economic characteristics like Age, Gender, Income, and Occupation. Results indicate only Monthly income and Marital groups of the customers like married, unmarried and divorced have different perceptions towards the factors affecting overall usage behavior. Thus the findings of the study will help the banking authorities, and the financial service providers to understand at the grass root level of this scheme and enhance the banking services for the economic upliftment of the rural population in India.

Keywords:
Financial Inclusion, Pradhan Mantri Jandhan Yojana account (PMJDY), Economic Development, Financial Services, Financial Literacy

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Our Heritage	67(2)	Dec. 2019	1687-1713	Think-India	Not yet Assigned

Paper No: PU-SOM- 12

Doing Business Rankings: Reforms Must Focus on Ground Realities for Trade Facilitation

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Abstract

The latest Doing Business (DB) 2020 report places India 63rd among 190 countries, 14 places ahead of its position the previous year. While reforms in the areas of enterprise promotion and reducing red tape are always necessary, reform measures exclusively to attain a higher rank might jeopardise the priorities of that sector. The real success of a higher rank in DB could be in the form of hard infrastructure and last-mile connectivity rather than reducing a few certifications and office visits, making DB reforms go beyond just serving a higher rank.

Keywords:
Doing Business, trade facilitation, governance, development policy

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Economic and Political Weekly	55 (2)	Jan. 2020	Engage Edition	Sameeksha Trust	Not yet Assigned

Paper No: PU-SOM- 13

An Analysis of Financial Performance of Selected Commercial Banks in India

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Abstract

The present study attempts to evaluate the financial performance of selected Indian commercial banks for the period from 2012/13 to 2016/17. The study comprises 16 commercial banks, 11 representing public sector and 5 from private sector, and the financial performance of these banks are analysed using the financial ratios. The study shows that the financial performance of private sector banks is relatively better than the public sector banks throughout the study period. Besides, the study examines the impact of liquidity, solvency and efficiency on the profitability of the selected Indian commercial banks by employing the panel data estimations, viz. the Fixed Effect and Random Effect models. The empirical results from the panel data estimations revealed that the liquidity ratio and solvency ratio, and the turnover ratio and solvency ratio are found to have positive and significant impact on the profitability of selected public sector and private sector banks, respectively, bearing testimony to the fact that profitability is a function of those ratios.

Keywords:
Financial Performance, Profitability, Solvency, Liquidity, Commercial Banks

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Studies in Indian Place Names	40(40)	March, 2020	658-675	The Place Names Society of India	Not yet Assigned

Paper No: PU-SOM- 14

Efficiency of Supply Management Practices with Special Reference to Retail Sector in Bengaluru

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Abstract

Retail Supply Chain Management refers to the process of managing the entire supply chain of retail organization. The main factor which differentiates retail supply chain management with other supply chain management is the volume of product movement and the fast moving nature of products of the retail industry. Supply chain management is very important to every organization in the retail industry, it has to be monitored closely and maintained properly. This research study helps to know about the supply chain management practices followed by retail sectors with special reference to perishable products like fruits and vegetables. It helps to know the benefits which can be obtained by effectively managing the inventory and supply chain of fruits and vegetables. This study gives a bird-view on the efficiency of supply chain management practices maintained at Big Bazaar, Bangalore.

Keywords:
Retail Supply Chain Management, Efficiency of Supply chain, Retail organization, Competitive Advantage.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
ACME Intellect International Journal Research in Management, Social Science and Technology	26(26)	April, 2019	1-14	ACME	Q2

Paper No: PU-SOM- 15

Effectiveness of E-Marketing in the Success of Digital Entrepreneurship: A Conceptual Model

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Abstract

E-marketing, Online marketing, Internet marketing - all refer to the advertisement and marketing techniques which use emails, messages, web-resources etc. as their strategy for business. This paper describes about how the trend has changed from traditional entrepreneurship to digital entrepreneurship. Implementation of E-marketing and its strategies have boosted the business of every entrepreneur and which have become the need of Digital entrepreneur.
There is a decent increase in the growth of the e-market in last several years which have attracted the attention of both academicians and corporate practitioners. There have been many studies related to E-marketing. But most of the studies have mainly been focusing on and about the big giants (entrepreneurs), a very little attention has been paid to how this new technology can be used to benefit the small and newly established entrepreneurs. The scope of this research is to shed light on how and what new digital entrepreneurs predict and perceive about e-market usage. The results and findings of this conceptual model will help in bridging the gap in the existing literature and will provide the researches and practitioners the valuable insights about the importance of E-marketing for new entrepreneurs.

Keywords:
E-marketing, Digital marketing, Digital entrepreneurship, Entrepreneurship, e-market, New business.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Emerging Technologies and Innovative Research	6(5)	May, 2019	58-62	JETIR	Q4

Paper No: PU-SOM- 16

The Financial Inclusions and Factors for Widening Financial Gap- An Impact Analysis

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Abstract

As the bulk of the population, mainly from rural areas, is still not participated in the comprehensive economic growth, the notion of financial inclusion (FI) becomes a big problem for the policy makers of the country. FI supports in formation of improved and better sustainable economy in the country. It supports in the empowerment of women, weaker and underprivileged sections of society with the task of building self-sustainable and well informed society. The study has used three different research phases: identification of factors from the literature, interviews with experts of industry and designing a DMTOP framework. The identification phase led to the selection of twenty five factors from past literatures and by suggestion from industrial experts. Further the selected factors are divided into seven different dimensions. The framework was used to understand impact of identified factors on urban and rural facilities separately. This study seeks to identify the impact contribution of factor towards FI; the results are very helpful for policy makers to achieve objectives of FI. The framework has seven dimensions with different impact value on the urban and rural facilities. The factors are showing an overall impact percentage of 51.62 and -6.45 as on existing urban and rural facilities respectively.

Keywords:
Financial Inclusion (FI), Factors, Decision Making Threat and Opportunity (DMTOP).

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Pacific Business Review International	11(12)	June, 2019	66-77	Pacific University	Not yet Assigned

Paper No: PU-SOM- 17

An Empirical Study on Quality of Services Provided to Customers by Commercial Bank with Reference to Bangalore District.

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Abstract

Retail Banking is also known as consumer banking refers to offering of banking products to retail customers or individuals, rather than to companies, corporations or other banks typically for non-entrepreneurial purposes. In retail banking the focus is on the individual. It includes services given to savings and checking accounts, transactional accounts, mortgages, personal loans, debit cards and credit cards. In addition offering services to the individuals, they also have added a team of financial advisors with broadened product offerings and investment services such as wealth management, brokerage accounts, private banking and retirement planning. Additionally, retail banking also includes providing of debit and credit cards, utility services, depository services and other para-banking products and services viz. insurance products, capital market products etc. to retail customers. Thus, retail banking services broadly correspond to the banking services provided intermediate phase of evolution of banking. Internet finance banking is quickly catching up and the banks have started offering services through internet and mobile applications. Banks required to put immediate attention to educate the bank customers towards digitization and its use. Commercial Banks must offer ample opportunities for both type of customers that is Digital Deniers and Digital Generation customers to anticipate changes in customer attitudes. The mass retail banks of today would also have to plan a transit path for the class banking and gradually to entrepreneurial banking.
Quality of services offered by the banks is going to be another key differentiator. In ultimate analysis, providing better services to the customers would be the key to generating larger revenue for the banks.

Keywords:
Retail Bank, Consumer Banking, Retail Customers, Quality of Services.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Emerging Technologies and Innovative Research	6(7)	June, 2019	1-12	JETIR	Q4

Paper No: PU-SOM- 18

An Empirical Study on Customer Awareness of Retail Banking Services of Commercial Banks in Bangalore District

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Abstract

Retail banking has emerged as a buzzword in the Indian Banking Systems. It encompasses various retail deposit schemes, retail lending, issues and managing credit cards and debit cards, dealing with insurance products, providing Demat services, etc. Retail banking services takes care of the banking needs of the individual customers. The origin of modern commercial bank in India can be traced to the 18th century. It all began with the establishment of Bank of Hindustan in 1770 in Calcutta under European management. It was liquidated in 1830-32. The Indian banking industry is comprised of commercial banks, regional rural banks, co-operative banks, small finance banks and payment banks. This study mainly determinesthe customer awareness of retail banking practices of commercial banks. Also it analyse and examines the factors which influence the customer awareness of retail banking practices in Bangalore district. It is found that the retail banking services offered is mainly loans and advances, deposits and technology driven services which are highly satisfactory. These services offered by banks are found to be enhancing the quality of services and its efficient delivery. Banks required to put immediate attention to educate the bank customers towards digitization and its use. Retail banking must offer ample opportunities for both type of customers that is Digital Deniers and Digital Generation customers to anticipate changes in customer attitudes.

Keywords:
Retail Bank, Customer awareness, Quality of Services, Efficient delivery.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Emerging Technologies and Innovative Research	6(6)	June, 2019	112-122	JETIR	Q4

Paper No: PU-SOM- 19

An Empirical Study on Financial Performance of Commercial Banks with Reference to NPA in Bangalore Region

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Abstract

The origin of modern commercial bank in India can be traced to the 18th century. It all began with the establishment of Bank of Hindustan in 1770 in Calcutta under European management. It was liquidated in 1830-32. The Indian banking industry is comprised of commercial banks, regional rural banks, co-operative banks, small finance banks and payment banks. India's commercial banks were nationalized in two phases 14 in 1969 and six in 1980. Upon completion of nationalization, close to 90 percent of the banking sector in terms of credit had been cornered by government owned banks. This study mainly determines the advances and total assets of commercial banks. Also it analyse and examines the movement of non-performing assets of public and private sector scheduled commercial banks. It is found that gross NPAs and net NPAs have grown almost at the same pace till 2008. Thereafter the growth of net NPAs has outpaced the growth of gross NPAs and the public sector commercial banks, have the difference between the two CAGRs which was much higher in their growth perspective.

Keywords:
Commercial Bank, Nationalization, Non-Performing Assets

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Emerging Technologies and Innovative Research	6(7)	July, 2019	281-302	JETIR	Q4

Paper No: PU-SOL- 01

Role of Artificial Intelligence in Cyber Security

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Abstract

Artificial Intelligence (AI) is a buzz word in the cyber world. It is still a developing science in multiple facets according to the challenges thrown by 21st century. Use of AI has become inseparable from human life. In this day and age one cannot imagine a world without AI as it has much significant impact on human life. The main objective of AI is to develop the technology based activities which represents the human knowledge in order to solve problems. Simply AI is study of how an individual think, work, learn and decide in any scenario of life, whether it may be related to problem solving or learning new things or thinking rationally or to arrive at a solution etc. AI is in every area of human life, naming a few it is into gaming, language processing, speech recognition, expert system, vision system, hand writing recognition, intelligence robots, financial transactions and what not, every activity of human life has become a subset of AI. In spite of numerous uses, AI can also used for destroying the human life, that is the reason human inference is required to monitor the AI activities. Cyber crimes has become quite common and become a daily news item. It is not just a problem faced in one country, it is across the world. Without strong security measures, AI is meaningless as it can be easily accessible by others. It has become a big threat for governments, banks, multinational companies through online attacks by hackers. Lot of individual and organizational data is exploited by hackers and it becomes a big threat to the cyber world. In this connection research in the area of AI and cyber security has gained more importance in the recent times and it is ever lasting also as it is a dynamic and sensitive issue linked to human life.

Keywords:
Artificial Intelligence, Cyber Security, Online attacks, Hackers, Human life

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
International Journal of Innovative Technology and Exploring Engineering (IJITEE)	9 (1)	Nov, 2019	4678-4630	Blue Eyes Intelligence Engineering and Sciences Publication	Q4

Paper No: PU-SOL- 02

The Use of Data Collected Under the Aadhar Scheme in the Criminal Justice System in India

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Abstract

Technology may have moved on, but unfortunately so have its surrounding privacy issues- it is saddening to note that a significant technological advancement such as Aadhar has been significantly curbed due to its alleged ineligibility of use in the criminal justice system. This Paper explores the scope of use of Aadhar biometric data by the criminal justice system in its judicially circumscribed scope. Through a doctrinal analysis of secondary data, it can be concluded that although the privacy concerns surrounding the use of Aadhar data in the criminal justice system hold little water in the face of far more blatant exceptions to individual privacy, such use may be potentially subject to challenge on the grounds of the purposes of the Aadhar Act's nature as a welfare legislation. This paper explores the current use of technology in the Indian criminal justice system, its governing legislations, the potential use of Aadhar data for forensic purposes, why the same is correct and even welcome and possible ways to make it unambiguously clear that such use becomes constitutionally valid.

Keywords:
Aadhaar, Biometric, Welfare, Legislation, Forensic

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Journal of Legal Studies and Research (National)	6(1)	Feb, 2020	163-173	The Law Brigade (Publishing) Group	Not yet Assigned

Paper No: PU-SOL- 03

Impact of Labour Laws on Indian IT Industry – Gap Analysis, Policy Making and Suggestions for Improvement

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Abstract

Labour market institutions play a pivotal role in the formation and implementation of laws and regulations to protect the workers' rights and interests. Ironically, as most of them are applicable only to organized form of employment and majority of the workers are devoid of their benefits. In India, workers of the Information Technology industry who represent one of the most sophisticated form of workplace are also devoid of the benefits of many labour laws due to the exemption of the industry from applicability of significant labour laws. This paper attempts to examine the nature of labour regulations in India and their prospective applicability to the Information Technology industry. Secondary objective is to examine conditions of work in the industry and discuss their variation across gender and other socio-demographic characteristics. The concept of decent work has been used to examine the actual working conditions of workers in the IT industry. Data has been collected from 272 IT employees using snowball sampling method and the results have been used to discuss the deficiencies in the work conditions given the existing labour regulations

Keywords:
Labour laws, employment, Information Technology, IT Industry, workers' rights.

Publication Details:

Journal Name	Vol.	Month & Year	Page No.	Publisher	Scimago Ranking
Studia Rosenthaliana (Journal for the Study of Research)	12(5)	May, 2020	175-187	Van Gorcum	Not yet assigned