Scopus

Documents

1) Krishnamoorthi, M., Malayalamurthi, R.

Engine characteristics analysis of chaulmoogra oil blends and corrosion analysis of injector nozzle using scanning electron microscopy/energy dispersive spectroscopy
(2018) *Energy*, 165, pp. 1292-1319. Cited 20 times.

DOI: 10.1016/j.energy.2018.10.112

Department of Mechanical Engineering, Government College of Technology, Coimbatore, Tamil Nadu 641013, India

Abstract
This work describes the performance, combustion and emission behavior of chaulmoogra oil blend and neat diesel in the variable compression ratio, variable speed compression ignition engine with exhaust gas recirculation (EGR). Exergy analysis was employed to investigate availability shares involved in the research engine. Artificial neural network (ANN) modeling and particle swarm optimization (PSO) are adopted with response surface methodology (RSM) in order to investigate the engine performance fuelled with ternary blend (65% diesel+25% chaulmoogra oil+10% diethyl ether) and neat diesel. In this work, compression ratio (CR) is varied from 14.5 to 20.6, engine speed varied from 1500 to 2400 revolution per minute (rpm) and EGR varied from 0 to 30%. The optimized condition was observed as 10% EGR, 18.1CR and 1672 rpm with respect to lesser exhaust emissions and enhanced thermal efficiency. Maximum brake thermal efficiency of 29.12% was observed 10% EGR rate and maximum exergy efficiency of 52.64% was observed for the ternary blend at the optimized engine condition. The results conclude that the RSM-ANN-PSO provide better the engine performance modeling with acceptable accuracy. The corrosion and wear analyses were done on the fuel injector nozzle and cylinder gaskets using scanning electron microscopy (SEM) and energy dispersive spectroscopy (EDS). © 2018 Elsevier Ltd

Author Keywords
ANN; Chaulmoogra oil; Compression ratio; EGR; RSM-PSO; SEM/EDS

ISSN: 03605442
CODEN: ENEYD
2-s2.0-85055986441

2) Subashree, P.[a] , Thenmozhi, R.[b]

Experimental study of hybrid rubberized composite slabs
(2018) *Archives of Civil Engineering*, 64 (4), pp. 22-29. Cited 3 times.

DOI: 10.2478/ace-2018-0060

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Abstract
Rubberized concrete is made up of scrap tyre rubbers where the fine aggregate is partially replaced by it, as the waste rubber is being a threat to the environment. It is estimated that only 4% of the waste tyre is used in the application of civil engineering and also there is shortage of fine aggregates. The primary objective of this study is to investigate the preliminary concrete properties of M25 and M30 concretes. The fine aggregate is replaced by pre-treated crumb rubber with 10, 15 and 20 % of total weight. Various tests are conducted on the rubberized concrete specimens such as compressive strength, split tensile strength, flexural strength and slump test. The investigation is carried out to determine the impact load

behavior of hybrid rubberized composite slabs. In addition 0%, 1%, 1.5%, and 2% of replacement of rubber fibers for total weight of coarse aggregate is also made. The specimen of size 300 mm x 300 mm x 50 mm thickness is subjected to drop hammer test to find its performance against the impact loads. The number of blows for the first crack and complete failure of slab was found and the characteristics were studied.

Author Keywords
Crumb rubber; Ductility Index; Energy absorption; Impact test; Rubberized concrete slab

ISSN: 12302945
CODEN: ACIEE
2-s2.0-85066632262

3) Sabarish, R.[a] , Suriyanarayanan, N.[a] , Kalita, J.M.[b] , Sarma, M.P.[b] , Wary, G.[b] , Kheraj, V.[c] , Deshmukh, S.G.[c]

Influence of molar concentration and temperature on structural, optical, electrical and X-ray sensing properties of chemically grown nickel-bismuth-sulfide (Ni x Bi 2-x S 3) thin films
(2018) *Materials Science- Poland*, 36 (4), pp. 675-684. Cited 2 times.

DOI: 10.2478/msp-2018-0072

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Abstract
In this report, ternary semiconducting Ni x Bi 2-x S 3 (x = 0.2 M and 0.5 M) thin films were synthesized in situ for the first time by a chemical bath deposition technique at different bath temperatures (60 °C, 70 °C and 80 °C). The effects of concentration and deposition temperature on the deposited films were studied by combining the results of structural, morphological, optical and electrical analyses. The growth of Ni x Bi 2-x S 3 films with good crystalline nature and interconnected grain arrangement takes place due to increasing the concentration of Ni 2+ ions in bismuth sulfide matrix. EDS result confirmed the stoichiometry of Ni x Bi 2-x S 3 formation. Wettability test demonstrated that the surface of the film was hydrophilic in nature. The optical absorption spectra revealed that the bandgap E g of the x = 0.5 M film deposited at 70 °C was about 1.36 eV. Current-voltage (I-V) characteristics of the x = 0.5 M film deposited at 70 °C were studied under X-ray radiation and dark condition. An X-ray detection sensitivity analysis showed that the detection sensitivity is optimum when the bias voltage applied across the film is low (~0.9 V). These findings reveal that the film with x = 0.5 M deposited at 70 °C can be used as an efficient low cost X-ray sensor.

Author Keywords
activation energy; chemical bath deposition; photoluminescence; sensor; ternary compounds; X-ray

ISSN: 20831331
2-s2.0-85060032912

4) Veerasamy, V.[a] , Abdul Wahab, N.I.[a] , Ramachandran, R.[b] , Mansoor, M.[a c] , Thirumeni, M.[d] , Othman, M.L.[a]

High impedance fault detection in medium voltage distribution network using discrete wavelet transform and adaptive neuro-fuzzy inference system
(2018) *Energies*, 11 (12), art. no. 3330, . Cited 28 times.

DOI: 10.3390/en11123330

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Abstract
This paper presents a method to detect and classify the high impedance fault that occur in the medium voltage (MV) distribution network using discrete wavelet transform (DWT) and adaptive neuro-fuzzy inference system (ANFIS). The network is designed using MATLAB software R2014b and various faults such as high impedance, symmetrical and unsymmetrical fault have been applied to study the effectiveness of the proposed ANFIS classifier method. This is achieved by training the ANFIS classifier using the features (standard deviation values) extracted from the three-phase fault current signal by DWT technique for various cases of fault with different values of fault resistance in the system. The success and discrimination rate obtained for identifying and classifying the high impedance fault from the proffered method is 100% whereas the values are 66.7% and 85% respectively for conventional fuzzy based approach. The results indicate that the proposed method is more efficient to identify and discriminate the high impedance fault from other faults in the power system. © 2018 by the authors.

Author Keywords
Adaptive neuro-fuzzy inference system (ANFIS); Discrete Wavelet Transform (DWT); Fuzzy logic system (FLS); High impedance fault (HIF)

ISSN: 19961073
2-s2.0-85059291928

5) Thirunavukkarasu, A.[a] , Muthukumaran, K.[b] , Nithya, R.[a]

Adsorption of acid yellow 36 onto green nanoceria and amine functionalized green nanoceria: Comparative studies on kinetics, isotherm, thermodynamics, and diffusion analysis
(2018) *Journal of the Taiwan Institute of Chemical Engineers*, 93, pp. 211-225. Cited 39 times.

DOI: 10.1016/j.jtice.2018.07.006

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Abstract
In this study, the green nanoceria (GN) was synthesized from Prosopis juliflora (Sw.) leaves extract, then amine functionalized to GN–NH2 (AGN) with epichlorohydrin and ammonium hydroxide. The synthesized GN and AGN were characterized by FT-IR, zeta potential, XRD, BET model and.HR-TEM. Sequentially, Acid Yellow 36 (AY36) was adsorbed onto the GN and AGN in aqueous solutions in batch trials by varying the pH, initial adsorbate concentration and contact time. Further, the equilibrium kinetics, isotherm, thermodynamics, and diffusion analysis were probed for the experimental data. In the ambient temperature and at acidic pH of 2, the maximum removal efficiency of AY36 is 73.3 and 92.9% for GN and AGN respectively. The kinetic data exhibited good correlation coefficient (r2> 0.99) for the pseudo-second-order and elovich models with marginal error values signifying the chemisorption type of adsorption process. Moreover, the equilibrium data suggesting the monolayer coverage of adsorbate as it fits well with the Langmuir isotherm model (r2> 0.99) and the maximum adsorption capacities of GN and AGN are 16.39 and 26.95 (mg/g), respectively. The energy functions of chemical thermodynamics revealed the adsorbate transport across the phase boundary is of spontaneous and endothermic. Diffusional models demonstrated that the intra-particle diffusion controls the rate and dominates the external boundary layer diffusion. Further, the study proposed the electrostatic interactions or surface complexation might facilitate the AY36 adsorption onto AGN. The potential restorative ability of the adsorbents was proved by desorption studies and thus identifies them as effective adsorbents for the removal of AY36 from aqueous solutions. © 2018 Taiwan Institute of Chemical Engineers

Author Keywords
Acid yellow 36 adsorption; Amine functionalization; Green nanoceria; Prosopis juliflora

ISSN: 18761070
2-s2.0-85050700659

6) Ramachandran, R.[a] , Madasamy, B.[b] , Veerasamy, V.[c] , Saravanan, L.[a]

Load frequency control of a dynamic interconnected power system using generalised Hopfield neural network based self-adaptive PID controller
(2018) *IET Generation, Transmission and Distribution*, 12 (21), pp. 5713-5722. Cited 55 times.

DOI: 10.1049/iet-gtd.2018.5622

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Abstract
A novel generalised Hopfield neural network (GHNN) based self-adaptive proportional–integral–derivative (PID) controller for load frequency control (LFC) is designed for a two-area interconnected power system with nonlinearities of generator rate constraint and governor dead band. The control problem is conceptualised as an optimisation problem with an objective function as an area control error in terms of the PID controller parameters. The differential equations governing the behaviour of the GHNN were solved to obtain the controller parameters Kp, Ki and Kd. To test the feasibility and robustness of the proposed controller, the system is tested in the presence of randomness in load demands, imprecisely modelled system dynamics, nonlinearities in the system model and uncertainties in the system parameter variations. The proposed method is simulated using Matlab R2014b/Simulink and the results obtained have shown that the propounded controller performance is superior to the integral, PID and fuzzy-based proportional–integral controllers. In addition, the Lyapunov stability analysis of the overall closed-loop system was carried out and the controller is implemented in real-time digital simulator run in hardware-in-the-loop to validate the effectiveness of the proposed method. Furthermore, the proposed controller is applied to the three-area power system to test its adaptability. © The Institution of Engineering and Technology 2018.

ISSN: 17518687
2-s2.0-85065250142

7) Kala, R., Deepa, P.

Intuitionistic Fuzzy C-Means Clustering Using Rough set for MRI Segmentation
(2018) *Proceedings of the 2018 International Conference on Current Trends towards Converging Technologies, ICCTCT 2018*, art. no. 8550853, . Cited 1 time.

DOI: 10.1109/ICCTCT.2018.8550853

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Abstract
Medical image segmentation needs higher segmentation accuracy due to the occurrence of noises in the images. Fuzzy sets theories are able to handle the vagueness and uncertainty through membership functions in image segmentation. Rough sets theory (RST) is to deal with uncertainty and incompleteness. It focuses on the feature selection based on classification. In real applications, it may be impossible to obtain complete information of a given pattern set due to artifacts. Uncertain information will cause lacking of information for a pattern set in various recognition and classification algorithms. This paper proposes a method to segment the magnetic resonance images with and without noises powerfully. The proposed method uses the intuitionistic fuzzy c-means algorithm for segmenting cerebro spinal fluid (CSF), white matter (WM) and gray matter (GM) tissues in the MRI. Intuitionistic fuzzy image representations are done by using non-membership value, hesitation along with the membership value for the MR image. The membership value and nonmembership value have been obtained using fuzzy trapezoidal membership and fuzzy complement function respectively. Further, intuitionistic fuzzy roughness measures and fuzzy c-means clustering determines the initial cluster centroids by considering lower and upper approximation and updates the euclidean distance between the pixels. The proposed method have been implemented and analyzed with performance metrics for the synthetic and real MR images. Experimental results reveal a superior degree of segmentation on both synthetic and real MR images compared to existing methods. © 2018 IEEE.

Author Keywords
Fuzzy c means; Fuzzy set; Intuitionistic fuzzy set; Rough set

ISBN: 9781538637012
2-s2.0-85059933055

8) Kumar, V.[a] , Ramachandran, R.[b]

Modelling and performance analysis of UPQC with digital kalman control algorithm under unbalanced distorted source voltage conditions
(2018) *Journal of Power Electronics*, 18 (6), art. no. JPE 18-6-20, pp. 1830-1843. Cited 2 times.

DOI: 10.6113/JPE.2018.18.6.1830

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Abstract
In this paper, the generation of a reference current and voltage signal based on a Kalman filter is offered for a 3-phase 4wire UPQC (Unified Power Quality Conditioner). The performance of the UPQC is improved with source voltages that are distorted due to harmonic components. Despite harmonic and frequency variations, the Kalman filter is capable enough to determine the amplitude and the phase angle of load currents and source voltages. The calculation of the first state is sufficient to identify the fundamental components of the current, voltage and angle. Therefore, the Kalman state estimator is fast and simple. A Kalman based control strategy is proposed and implemented for a UPQC in a distribution system. The performance of the proposed control strategy is assessed for all possible source conditions with varying nonlinear and linear loads. The functioning of the proposed control algorithm with a UPQC is scrutinized and validated through simulations employing MATLAB/Simulink software. Using a FPGA SPATRAN 3A DSP board, the proposed algorithm is developed and implemented. A small-scale laboratory prototype is built to verify the simulation results. The stated control scheme for the UPQC reduces the following issues, voltage sags, voltage swells, harmonic distortions (voltage and current), unbalanced supply voltage and unbalanced power factor under dynamic and steady-state operating conditions.

Author Keywords
Active power filter; Distortions; Imbalance voltage; Kalman filter; Phase locked loop (PLL); Synchronous reference frame (SRF); Unified power quality conditioner (UPQC)

ISSN: 15982092
2-s2.0-85057380443

9) Subanantharaj Palammal, J., Senthilkumar, P.K.

Behavioural analysis of vertical and batter pile groups under vertical and lateral loading in sand
(2018) *Arabian Journal of Geosciences*, 11 (22), art. no. 706, . Cited 16 times.

DOI: 10.1007/s12517-018-4032-2

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Abstract
Laboratory model tests were carried out to study the behaviour of vertical piles and batter pile groups under vertical and lateral load. The model pile groups were made up of mild steel rod of 8-mm diameter. Parameters such as degree of batter and different length to diameter ratios of 7.50, 15.00 and 22.50 were considered in this study. The size of the model tank was 1000 mm × 1000mm × 800 mm. Experiments were performed on 3 × 3 model pile groups with a row of batter piles both positive and negative in addition to vertical pile groups with batter angle 0° in sandy soil subject to vertical and lateral loads. It was observed that the behaviour of vertical pile groups and group of piles with batter piles were similar but it showed substantial variation in the capacity of pile groups. Results indicated that the load–settlement relationships were non-linear for all model pile groups both under vertical and lateral loading. Numerical FEM analysis using ABAQUS/CAE 6.11 was also used to compare and validate the load carrying capacity of pile groups obtained from the experimental model tests.

Author Keywords
Batter piles; FEM; Lateral load; Load–settlement; Vertical load

ISSN: 18667511
2-s2.0-85057107647

10) Mohamed Shameer, P.[a] , Nishath, P.M.[b]

Investigation and enhancement on fuel stability characteristics of biodiesel dosed with various synthetic antioxidants
(2018) *Energy and Environment*, 29 (7), pp. 1189-1207. Cited 9 times.

DOI: 10.1177/0958305X18772415

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Abstract
Nearly 350 species of biodiesel feedstocks have been identified by many researchers for the past few decades. Unlike petroleum diesel, the biodiesel degrades rapidly and deterioration of its quality occurred while contacting with atmospheric oxygen. This main drawback of instability of fuel properties limited the commercial use of biodiesel in the global fuel market. To inhibit this oxidative degradation of biodiesel, the antioxidants are used. Comparing to other antioxidants, the synthetic antioxidants (phenolic) are more efficient. This study investigates the effects of commercially available and cheap synthetic antioxidants (TBHQ – tert-butylhydroxyquinone, PY – pyrogallol, PG – propyl gallate, BHT – butylated hydroxytoluene, and BHA – butylated hydroxyanisole) at 1000 ppm concentration on the fuel stability of Calophyllum inophyllum biodiesel. The discrepancy in antioxidant activity has been characterized using Fourier transform infrared spectroscopy by analyzing the O–H and C–H molecular chains prevalence in the infrared spectrum region of 3000–3700 cm−1 and 2800–3000 cm−1. TBHQ at 1000 ppm dosed with C. inophyllum biodiesel improves the oxidation stability by 42.56%, storage stability by 36.57%, and thermal stability by 41.02% when compared to those of pure biodiesel (B100) without any antioxidant. The rank of antioxidants effectiveness with pure biodiesel is obtained as TBHQ > PG > PY > BHT > BHA. © The Author(s) 2018.

Author Keywords
Antioxidant; biodiesel; Fourier transform infrared; oxidation stability; storage stability; thermal stability

ISSN: 0958305X
CODEN: EENVE
2-s2.0-85056621677

11) Paramasivam, B.[a] , Kasimani, R.[a] , Rajamohan, S.[b]

Characterization of pyrolysis bio-oil derived from intermediate pyrolysis of Aegle marmelos de-oiled cake: study on performance and emission characteristics of C.I. engine fueled with Aegle marmelos pyrolysis oil-blends
(2018) *Environmental Science and Pollution Research*, 25 (33), pp. 33806-33819. Cited 28 times.

DOI: 10.1007/s11356-018-3319-x

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Abstract
The present research focuses on the analyzing the characteristics of bio-oil derived from intermediate pyrolysis of Aegle marmelos (AM) seed cake and its suitability for C.I. engine adaptation. Owing to the high volatile matter content of 73.69%, Aegle marmelos biomass was selected as the feedstock for this research. The intermediate pyrolysis was carried out at 600 °C in a 2-kg fixed bed type pyrolysis reactor at a heating rate of 10 °C/min and the obtained bio-oil was characterized by different analytical methods. As per American Society for Testing and Materials (ASTM) standards, physicochemical properties of the bio-oil were tested and it was observed that bio-oil is a highly viscous fluid with low calorific value. Analysis

of bio-oil through FT-IR and GC-MS examination confirmed the presence of phenol, esters, alkyl, and oxygenated compounds. The performance and emission testing of direct injection diesel engine were conducted with various bio-oil blends and the results were compared with baseline diesel fuel. The experimental results showed that the addition of bio-oil decreased BTE (%) while increasing the BSEC (MJ/kW-h). At the same time, increasing the bio-oil ratio with diesel decreases dangerous emissions such as carbon monoxide and oxides of nitrogen emissions in the engine exhaust. According to engine test result, it was suggested that up to 20% of AM bio-oil (F20) can be employed as engine fuel for better engine operating characteristics. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Aegle marmelos de-oiled cake; C.I. engine test; FT-IR; GC-MS; Pyrolysis bio-oil

ISSN: 09441344
CODEN: ESPLE
2-s2.0-85054511168

12) Jayageetha, J.[a] , Vasanthanayaki, C.[b]

Medical Image Quality Assessment Using CSO Based Deep Neural Network
(2018) *Journal of Medical Systems*, 42 (11), art. no. 224, . Cited 5 times.

DOI: 10.1007/s10916-018-1089-0

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Abstract
This manuscript proposed a hybrid method of Deep Neural Network (DNN) and Cuckoo Search Optimization (CSO) with No-Reference Image Quality Assessment (NR-IQA) for achieving high accuracy, low computational complexity, flexibility and etc. of a medical image. NR-IQA is proposed due to till now there is no perfect reference image for finding the quality of real time medical imaging. It is an effective method for assessing the real-world medical images. The proposed method takes the distorted image as an input and estimate the quality of the image without the assistance of reference image. The techniques CSO and DNN with NR-IQA produces the quality of the image with high quality score and low Mean Square Error (MSE). Also, the proposed method is used to improve the quality score thereby improving the quality of the image. So that the resultant image has good visual properties which is useful for the analysis of further medical proceedings. The simulation result shows that the proposed system improves the quality score by 8% when compared to the other existing systems. The SROCC value can be increased as 6%, 14%, 6 and 2% for the different existing methods such as NR-BIQA, SBVQP-ML, PTQL/PTVC and NR-SIQA (3D) respectively. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Cuckoo search optimization (CSO); Deep neural network; No-reference image quality assessment (NR-IQA); Regression

ISSN: 01485598
CODEN: JMSYD
2-s2.0-85054428098

13) Manikandan, V.[a] , Petrila, I.[b] , Vigneselvan, S.[c] , Dharmavarapu, R.[d] , Juodkazis, S.[d] , Kavita, S.[e] , Chandrasekaran, J.[f]

Efficient humidity-sensitive electrical response of annealed lithium substituted nickel ferrite (Li–NiFe2O4) nanoparticles under ideal, real and corrosive environments
(2018) *Journal of Materials Science: Materials in Electronics*, 29 (21), pp. 18660-18667. Cited 20 times.

DOI: 10.1007/s10854-018-9987-y

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Abstract
The Li–NiFe2O4 nanoparticles have been prepared via simple cost effective chemical co-precipitation method. X-ray diffraction analysis affirms the cubic spinel structure and particle size is ~ 32 nm. SEM and TEM analysis were revealed the needle shape of nanoparticles with agglomeration. XPS and FT-IR spectrum confirmed composition and usual behaviour of spinel ferrites. Band gap energy of material is 3.62 eV that imply semiconducting nature. Humidity sensor analysis is carried out three different environments in order to test the influence of medium stress factors on sensors parameters. Under these environments, Li–NiFe2O4 nanoparticles exhibit well sensing nature. Besides, the material displays high sensitivity at ideal environments and good stability in real environments. The results also show interesting characteristics of the maturing and aging process of humidity sensors. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

ISSN: 09574522
2-s2.0-85053381950

14) Narasimman, S.[a] , Mahararana, K.[b] , Kokila, S.K.[b] , Balakrishnan, L.[c] , Alex, Z.C.[a]

Al2O3-MgO nanocomposite based fiber optic temperature sensor
(2018) *Materials Research Express*, 5 (11), art. no. 115014, . Cited 7 times.

DOI: 10.1088/2053-1591/aadd41

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Abstract
Fabrication and characterization of fiber optic temperature sensors using Al2O3-MgO nanocomposite as cladding material have been reported. Co-precipitation route was adopted to synthesize Al2O3, MgO and their composites of different composition. The synthesized Al2O3-MgO nanocomposites (25%-75%, 50%-50% and 75%-25%) of different mole concentrations have been characterized by x-ray diffraction (XRD), scanning electron microscopy (SEM), energy dispersive spectroscopy (EDS), Fourier transform infrared spectroscopy and UV-Visible spectroscopy to investigate the structural, morphological, elemental and optical properties. The temperature sensing probe was fabricated by coating Al2O3-MgO nanocomposites over the unclad portion of an optical fiber. The response of the sensors has been studied in the temperature range of 35 °C-80 °C. Further, the experimental result depicts an exorbitant temperature sensitivity of ~10.8 towards Al2O3-MgO nanocomposites (50%-50%) than other composites, pristine Al2O3 and MgO. In addition the sensor exhibits an ultrahigh sensitivity of 0.62%/°C with a better linear regression coefficient of 95%. Therefore, the proposed fiber optic sensor is capable of measuring dynamic temperatures in relentless environment. © 2018 IOP Publishing Ltd.

Author Keywords
Al2O3-MgO; cladding modification technology; fiber optic sensor; nanocomposite; temperature sensor

ISSN: 20531591
2-s2.0-85053289973

15) Manikandan, V.[a] , Singh, M.[b] , Yadav, B.C.[b] , Vigneselvan, S.[c]

Room-Temperature Gas Sensing Properties of Nanocrystalline-Structured Indium-Substituted Copper Ferrite Thin Film
(2018) *Journal of Electronic Materials*, 47 (11), pp. 6366-6372. Cited 17 times.

DOI: 10.1007/s11664-018-6543-8

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Abstract
Nanocrystalline indium-substituted copper ferrite thin film has been prepared by a chemical coprecipitation method and characterized by x-ray diffraction (XRD) analysis, scanning electron microscopy (SEM), transmission electron microscopy (TEM), Fourier-transform infrared (FTIR) spectroscopy, ultraviolet–visible (UV–Vis) spectroscopy, and gas sensing measurements. XRD and SEM analyses revealed heterogeneous particle formation with cubic structure. Fourier-transform infrared (FTIR) spectroscopy revealed normal behavior for ferrite materials. The bandgap of the material was found to lie in the range of 1.54 eV, implying semiconducting nature. Gas sensor analysis revealed excellent sensing behavior at room temperature. The material showed fast detection response for liquefied petroleum gas (LPG) at low concentration, with enhanced sensitivity at increased LPG concentration. The thin-film sensor showed repeatability nature with reproducibility of ~ 96%. © 2018, The Minerals, Metals & Materials Society.

Author Keywords
Ferrite materials; gas sensor; nanostructured material; thin film

ISSN: 03615235
CODEN: JECMA
2-s2.0-85051534196

16) Nithya, R.[a] , Sivasankari, C.[b] , Thirunavukkarasu, A.[a] , Selvasembian, R.[c]

Novel adsorbent prepared from bio-hydrometallurgical leachate from waste printed circuit board used for the removal of methylene blue from aqueous solution
(2018) *Microchemical Journal*, 142, pp. 321-328. Cited 36 times.

DOI: 10.1016/j.microc.2018.07.009

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Abstract
In the present study, the copper oxide nanoparticles (gCON) were synthesized from the extract of Prosopis juliflora (Sw.) leaves using copper nitrate, a leachate product of the waste printed circuit boards mediated through the bio-hydrometallurgical process. The synthesized gCON was characterized through the UV–Vis, Raman, FT-IR, zeta potential, XRD, BET model and SEM. Methylene blue (MB) adsorption onto gCON tested in batch trials by varying the pH, initial adsorbate concentration and contact time. The chemical kinetics of MB adsorption followed the pseudo-second-order and chemisorptive Elovich models with a high degree of linearity (r2 > 0.99) and marginal error values. Further, the isotherm data suggested the monolayer coverage of MB as the experimental data aligns well with the Langmuir model (r2 > 0.99) and the maximum dye adsorption capacity (qm) of gCON was computed as 163.93 mg/g. The magnitude of thermodynamic functions identified the chemisorptive removal of MB as spontaneous and endothermic. The mass transfer analysis verified that both intra-particle and liquid film diffusion limits the adsorption process. Desorption results showed that gCON can be regenerated for a maximum of three cycles. The present study demonstrated that gCON can be used as an unconventional adsorbent for the removal of MB from aqueous solutions. © 2018 Elsevier B.V.

Author Keywords
Bio-hydrometallurgical process; Green copper oxide nanoparticle; Methylene blue; Printed circuit board; Prosopis juliflora

ISSN: 0026265X
CODEN: MICJA
2-s2.0-85049802067

17)

Manikandan, V.[a] , Denardin, J.C.[b c] , Vigniselvan, S.[d] , Mane, R.S.[e]

Structural, dielectric and enhanced soft magnetic properties of lithium (Li) substituted nickel ferrite (NiFe2O4)nanoparticles
(2018) *Journal of Magnetism and Magnetic Materials*, 465, pp. 634-639. Cited 32 times.

DOI: 10.1016/j.jmmm.2018.06.059

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Abstract
Li-NiFe2O4 NPs have been prepared by a simple chemical co-precipitation method. The structural analysis of Li-NiFe2O4 nanoparticles with 2–31 nm demonstrates a face centered cubic spinel phase. The scanning electron microscopy and high resolution transmission electron microscopy images highlight moderate good nanocrystalline nature as compared to x = 0.4 concentration. The dielectric analysis shows that Li-NiFe2O4 NPs has a high dielectric constant at x = 0.2 concentration and then reduced with respect to annealing temperature and concentration. The magnetization curves demonstrate soft magnetic nature where, the saturation and remnant magnetization increases and then coercivity decreases due to increase of annealing temperature and concentration. © 2018 Elsevier B.V.

Author Keywords
Dielectric properties; Ferrite nanoparticles; Magnetic properties; Structural properties

ISSN: 03048853
CODEN: JMMMD
2-s2.0-85048895576

18) Gilbert, E.P.K.[a] , Kaliaperumal, B.[b] , Rajsingh, E.B.[a] , Lydia, M.[c]

Trust based data prediction, aggregation and reconstruction using compressed sensing for clustered wireless sensor networks
(2018) *Computers and Electrical Engineering*, 72, pp. 894-909. Cited 63 times.

DOI: 10.1016/j.compeleceng.2018.01.013

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Abstract
Sensing and relaying are the primary tasks of sensor nodes in a Wireless Sensor Network (WSN). Hence the recent research focus has been to devise secure, energy efficient ways to predict, aggregate and recover sensor data. In this paper, a novel method for secure data prediction in WSN has been proposed by using a Time Series Trust Model (TSTM) based on Toeplitz matrix and a Trust based Auto Regressive (TAR) process. The impact of the proposed trust model in data prediction and Compressed Sensing (CS) based aggregation and reconstruction is validated using various performance metrics and different attack models. The TAR model for prediction is evaluated against three different attack models. The proposed TSTM model outperformed existing trust model for varying percentage of compromised nodes. TSTM based data reconstruction using the Basis Pursuit (BP) algorithm registers best performance when the percentage of compromised nodes varies between 10% and 40% due to bad mouthing attack. © 2018 Elsevier Ltd

Author Keywords
Aggregation; Autoregressive model; Compressed sensing; Prediction; Reconstruction; Trust

ISSN: 00457906
CODEN: CPEEB
2-s2.0-85040598948

19) Gopika, N., Meena Kowshalaya, A.E.A.

Correlation Based Feature Selection Algorithm for Machine Learning
(2018) *Proceedings of the 3rd International Conference on Communication and Electronics Systems, ICCES 2018*, art. no. 8723980, pp. 692-695. Cited 62 times.

DOI: 10.1109/CESYS.2018.8723980

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Abstract
Feature selection is an effective strategy to reduce dimensionality, remove irrelevant data and increase learning accuracy. The curse of dimensionality of data poses a severe challenge to many existing feature selection methods with respect to efficiency and effectiveness. In this paper, we use three feature selection algorithms namely Fast Correlation Based Feature Selection (FCBF), a variation of FCBF called Fast Correlation Based Feature Selection # (FCBF#) and Fast Correlation Based Feature Selection in Pieces (FCFBiP). The three feature selections are compared and experimental results prove that the FCFBiP is efficient compared to FCBF and FCBF#. © 2018 IEEE.

Author Keywords
Fast Correlation Based Feature Selection (FCBF); FCBF#; FCFBiP; filter methods; Wrapper methods

ISBN: 9781538647653
2-s2.0-85067509155

20) Gnana Amala Nancy, J., Kumar, K.

Content Popularity Prediction Methods - A Survey
(2018) *Proceedings of the 3rd International Conference on Communication and Electronics Systems, ICCES 2018*, art. no. 8724022, pp. 749-753. Cited 2 times.

DOI: 10.1109/CESYS.2018.8724022

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Abstract
Prediction or the forecasting is the way of describing the future event in an efficient manner. Prediction can be used in actuarial science, marketing, child protection, financial services, travel, insurance, telecommunications, retail, mobility, healthcare, pharmaceuticals, capacity planning and other fields. One of the most widely used areas is social networking.So, Social media has an explosive growth of information allowing more users to become content creators and distributors of the web content. So, there exists an online competition, since a few items are getting popular and the remaining items are getting unpopular.Predicting the popularity is very useful in network dimensioning such as caching and replication. In this paper, we present a survey about content popularity methods in various network architectures with various functionalities and present the features that have good forecasting capacity. © 2018 IEEE.

Author Keywords
Information-Centric Networking; Prediction; Web content

ISBN: 9781538647653
2-s2.0-85067447879

21) Jothin, R.[a] , Vasanthanayaki, C.[b]

High Performance Modified Static Segment Approximate Multiplier based on Significance Probability
(2018) *Journal of Electronic Testing: Theory and Applications (JETTA)*, 34 (5), pp. 607-614. Cited 8 times.

DOI: 10.1007/s10836-018-5748-3

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Abstract
Achieving high accuracy has become a key design objective in high quantity digital data computing devices. To enhance the accuracy, a high performance Modified Static Segment approximate Multiplier (MSSM) is proposed in this paper. It increases the accuracy based on the negating lower order significant information of input operands using Significance Estimator Logic Circuit (SELC). The performance of proposed MSSM is compared with the existing approximate multipliers such as a Dynamic Segment approximate Multiplier (DSM) and Static Segment approximate Multiplier (SSM) for all input combinations. These multipliers are implemented and simulated using Xilinx 14.2 ISE. In MSSM method, 99% of average computational accuracy can be achieved for a 16-bit multiplication even with an 8 × 8-bit multiplier from all combinations of input operands instead of 95% of average computational accuracy from 61% of input operand pair in the existing SSM method. The proposed 16-bit MSSM offers a savings of 83.45% LUTs, 38.78% power and it exhibits 24.40% less delay, 0.6% less computational accuracy than the existing DSM. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Computational accuracy; Defect detection; Image processing; MSSM; SELC; Significance probability

ISSN: 09238174
CODEN: JTTAE
2-s2.0-85053415462

22) Ramakrishnan, P.[a b] , Kasimani, R.[c] , Peer, M.S.[d]

Optimization in the performance and emission parameters of a DI diesel engine fuelled with pentanol added Calophyllum inophyllum/diesel blends using response surface methodology
(2018) *Environmental Science and Pollution Research*, 25 (29), pp. 29115-29128. Cited 21 times.

DOI: 10.1007/s11356-018-2867-4

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Abstract
The primary objective of this work was to enhance the performance and emission of the computerized variable compression ratio (VCR) diesel engine fuelled with pentanol/Calophyllum inophyllum (CI)/diesel fuel blends. Based on the prerequisite for the current research, response surface methodology (RSM), an optimization technique, was adopted for the process parameters compression ratio (CR), load and fuel blends, and the optimized responses like brake thermal efficiency (BTE), brake specific fuel consumption (BSFC), oxides of nitrogen (NOx), carbon monoxide (CO), carbon dioxide (CO2), hydrocarbon (HC), and smoke were revealed with the help of Derringer's desirability approach. From the results, it is notified that pentanol-fuelled engine showed better performance and emissions at 17.5 CR, P20C20 (pentanol 20%+Calophyllum inophyllum 20%+diesel 60%) blend and 2.5 bmep (brake mean effective pressure) load conditions. The observed mathematical models and validation experiments show that the VCR diesel engine exhibits maximum efficiency and minimum emissions at the optimized input parameters. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords

Calophyllum inophyllum; Combustion; Compression ratio; Emission; Pentanol; Performance; Response surface methodology

ISSN: 09441344
CODEN: ESPLE
2-s2.0-85052052499

23) Selvakumar, R.[a] , Nirosha, B.[a] , Vairam, S.[a] , Premkumar, T.[b] , Govindarajan, S.[c]

Synthesis and crystal structure of [Ni(Amgu)2]X2 – Novel solid-state precursors for NiO nanoparticles
(2018) *Inorganica Chimica Acta*, 482, pp. 774-778. Cited 7 times.

DOI: 10.1016/j.ica.2018.07.021

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Abstract
Aminoguanidine (Amgu) nickel complexes containing nitrate and chloride with the formula [Ni(Amgu)2]X2 [X = NO3– (1) and Cl− (2)] were prepared and characterized by analytical, Fourier-transform infrared (FTIR) spectroscopic and single crystal X-ray diffraction studies. Compound 1 crystallized in the triclinic crystal system of space group P-1 with Z = 1, and compound 2 crystallized in the monoclinic crystal system of space group P21/n with Z = 2. Both compounds have square planar geometry with two neutral aminoguanidine ligands acting as trans N,N-chelators. The N-N stretching of aminoguanidine ligands was corroborated by the FTIR spectroscopic peak observed at 1139 cm−1. NiO nanoparticles were obtained by the decomposition of compounds 1 and 2, which were calcined at 400 °C for 4 h. The powder X-ray diffraction (PXRD) patterns confirmed that the prepared NiO nanoparticles had high purity and crystallinity. Therefore, these complexes may be used as solid-state precursors for the preparation of NiO nanoparticles owing to their low temperatures of decomposition. © 2018 Elsevier B.V.

Author Keywords
Aminoguanidine; Nanoparticles; Nickel complex; NiO; Single crystal X-ray diffraction

ISSN: 00201693
CODEN: ICHAA
2-s2.0-85050100773

24) Sivaranjani, S.[a] , Rajeswari, R.[b]

Internet of Things Based Industrial Automation Using Brushless DC Motor Application with Resilient Directed Neural Network Control FED Virtual Z-Source Multilevel Inverter Topology
(2018) *Wireless Personal Communications*, 102 (4), pp. 3239-3254. Cited 4 times.

DOI: 10.1007/s11277-018-5365-6

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Abstract
Internet of Things (IoT) is a high-speed communication technology which has carnal substances or devices entrenched with sensors, system connectivity, which allows to receive and interchange data. Industrial Monitoring and Control is required to assemble all the material information, statistics, and data related to the various industrial processes, motors, machines and devices employed in industrial premises. The technological improvements, remote control and monitoring via communication techniques such as wireless sensor network techniques have been widely used in Industries. Competitive advantages over AC motors make for DC motors to replace other electrical engines in applications stretching from high-speed automation to electric motorbikes. BLDC drives are very popular in many industries, at present automation are added standard, Virtual Z-source multilevel is a respectable optimal that can boost the output voltage of the drive. A novel soft

computing based Resilient Directed Neural network (RDNN) found Virtual Z-source multilevel inverter, for BLDC motor drive control to make the system balanced when the load is unbalanced and to reduce the electrical torque pulsation. In this work, the utilization of the RDNN to tackle the reduced harmonics issue in VZS-MLI converters is proposed. This strategy permits active voltage control of the crucial and besides concealment of a particular set of harmonics. The performance is evaluated in various emphasis levels of the different control models. The sensors monitor the technical motor parameters like greatest rise and fall time, topmost overextend and inaccuracy value of load current and voltage in BLDC machine. Then the measured values are sent to the processing unit, which will analyze and display the parameters, where the processing unit also communicates with Gateway module to send information to cloud database for remote monitoring. The system also presents the Automatic and manual control methods to stop or start the BLDC machine to avoid system failures. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Artificial intelligence; BLDC; Cloud database; Internet of things; Resilient Directed Neural network; Virtual Z-source multilevel inverter (VZS-MLI)

ISSN: 09296212
CODEN: WPCOF
2-s2.0-85045145961

25) Manivannan, T.S.[a] , Srinivasan, M.[b]

A 4-READ 2-WRITE Multi-Port Register File Design Using Pulsed-Latches
(2018) *Proceedings of the 2nd International Conference on Electronics, Communication and Aerospace Technology, ICECA 2018*, art. no. 8474898, pp. 262-267. Cited 4 times.

DOI: 10.1109/ICECA.2018.8474898

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Abstract
Pulsed-latches provide high performance with low power consumption by taking the advantages of both flip-flops and latches and thus, they are targeted in implementing different kinds of memory devices in various applications. One such memory device is the register files, which is traditionally being realized using SRAMs. In this paper, an area efficient and low power consumption design approach is proposed to perform the multi-read and multi-write operations in the pulsed-latches based multiport register files. These register files showed significant decrease in area as well as power consumption when compared to the SRAM based register files. An 8-BIT 4-READ and 2-WRITE (4R2W) pulsed-latches based multiport register file were designed and simulated in 180nm technology and its power-delay product was analyzed. © 2018 IEEE.

ISBN: 9781538609651
2-s2.0-85060892313

26) Jeyapriya, S.P.

Effect of bioclogging and biocementation on permeability and strength of soil
(2018) *Indian Journal of Ecology*, 45 (3), pp. 560-565. Cited 1 time.

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Abstract
Laboratory experiments were conducted to determine the permeability and strength of soil samples before and after bioclogging and biocementation processes. In bioclogging, the extracellular polymeric substance was applied as a thin layer over the surface of the soil placed in the permeameter in three dosages and the constant head permeability study was carried out for two different samples namely silty sand and well graded sand. SEM analysis was done in order to find the presence of Dextran particles filling the voids present in the soil. In biocementation, sand columns are formed and bacterial

and cementation solutions are poured to the layers and left for about 2 weeks. The results indicate that though exopolysaccharide was produced it was not penetrated into the soil and plug the voids and therefore no reduction in the permeability of soils was observed. However, unconfined compressive strength test indicates that biocementation resulted in an increase in the strength of soil.

Author Keywords
Bacterial solution; Biocementation; Bioclogging; Cementation solution; Dextran; Exopolysaccharide; Permeability

ISSN: 03045250
2-s2.0-85060286321

27) Sharmila, G.[a] , Muthukumaran, C.[a] , Sandiya, K.[a] , Santhiya, S.[a] , Pradeep, R.S.[a] , Kumar, N.M.[b] , Suriyanarayanan, N.[c] , Thirumarimurugan, M.[d]

Biosynthesis, characterization, and antibacterial activity of zinc oxide nanoparticles derived from Bauhinia tomentosa leaf extract
(2018) *Journal of Nanostructure in Chemistry*, 8 (3), pp. 293-299. Cited 117 times.

DOI: 10.1007/s40097-018-0271-8

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Abstract
Abstract: A facile, eco-friendly synthesis of zinc oxide nanoparticles (ZnO NPs) employing Bauhinia tomentosa leaf extract as bioreducing agent was reported. The green-synthesized ZnO NPs were characterized by UV–Vis, TEM, EDX, XRD, and FTIR analyses. The formation of ZnO NPs was confirmed by the appearance of characteristic SPR peak at 370 nm due to the collective oscillation of electrons in the conduction band in UV–Vis spectra. The hexagonal morphology exhibiting nanosized ZnO was observed from the TEM and XRD analyses. The chemical bonds present in the as-synthesized ZnO NPs were identified by FTIR analysis. ZnO NPs showed a significant antibacterial activity against Gram-negative bacteria P. aeruginosa and E. coli than Gram-positive bacteria. Results of this study demonstrated that B. tomentosa leaf extract containing phytochemicals such as alkaloids, terpenoids, flavonoids, tannins, carbohydrates, and sterols possess bioreducing property for ZnO synthesis and the obtained ZnO NPs could be employed effectively as a better bactericidal agent for biological applications. Graphical abstract: [Figure not available: see fulltext.]

Author Keywords
Antibacterial activity; Bauhinia tomentosa; Green synthesis; Nanoparticles; ZnO

ISSN: 20089244
2-s2.0-85058972529

28) Vijayalakshmi, N.[a] , Maruthupandi, P.[b]

An optimal low power digital controller for portable solar applications
(2018) *Journal of Renewable and Sustainable Energy*, 10 (5), art. no. 053702, . Cited 1 time.

DOI: 10.1063/1.5043500

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Abstract
The design of controllers for solar energy harvesting systems plays the key role in deciding the efficiency of the energy

utilized. In applications of energy scavenging, the harvested power is consumed for about 70% in the operation of the converter and controller blocks before being supplied to the load. The proposed optimal Field Programmable Gate Array based Load Predictive Maximum Power Point Tracking (LP-MPPT) Digital Controller is used for low power, speedy, and decisive energy scavenging systems for a long run in applications of wireless or remote sensing or portable. LP-MPPT helps to predict the need of the load and generate the converter output as buck/boost/buck-boost mode power in comparison to the input from solar panels for every clock cycle. The power consumption of the controller section is comparatively reduced as the buck-boost mode of operation utilizes the no operation state. The proposed methodology is simulated and implemented using Xilinx ISE Design Suite 12.1 which is supported by the family SPARTAN 3E. The simulation results thus obtained show an increase in efficiency (94.3%) with trade off factors, namely, speed and area. © 2018 Author(s).

ISSN: 19417012
2-s2.0-85054393096

29) Muralisankar, I.[a] , Agilan, S.[b] , Selvakumar, R.[c] , Vairam, S.[c]

Synthesis of Co3O4/graphene nanocomposite using paraffin wax for adsorption of methyl violet in water
(2018) *IET Nanobiotechnology*, 12 (6), pp. 787-794. Cited 4 times.

DOI: 10.1049/iet-nbt.2017.0181

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Abstract
This study discusses the use of Co3O4 impregnated graphene (CoOIG) as an efficient adsorbent for the removal of methyl violet (MV) dye from wastewater. CoOIG nanocomposites have been prepared by pyrolyzing paraffin wax with cobalt acetate. The synthesised nanocomposite was characterised by X-ray diffraction, field emission scanning electron microscope, transmission electron microscope, Fourier transform infrared spectroscope, Raman spectroscopy, and Brunauer-Emmett-Teller isotherm studies. The above studies indicate that the composites have cobalt oxide nanoparticles of size 51-58 nm embedded in the graphene nanoparticles. The adsorption studies were conducted with various parameters, pH, temperature and initial dye concentration, adsorbent dosage and contact time by the batch method. The adsorption of MV dye by the adsorbent CoOIG was about 90% initially at 15 min and 98% dye removal at pH 5. The data were fitted in Langmuir, Freundlich, Temkin, and Dubinin-Radushkevich and Sips isotherm models. Various thermodynamic parameters like Gibbs free energy, enthalpy, and entropy of the on-going adsorption process have also been calculated. © The Institution of Engineering and Technology 2018.

ISSN: 17518741
2-s2.0-85051563744

30) Meena Kowshalya, A.[a] , Valarmathi, M.L.[b]

Dynamic trust management for secure communications in social internet of things (SIoT)
(2018) *Sadhana - Academy Proceedings in Engineering Sciences*, 43 (9), art. no. 136, . Cited 30 times.

DOI: 10.1007/s12046-018-0885-z

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Abstract
The world has faced three Information and Communication Technology (ICT) revolutions and the third ICT wave led to Internet of Things, the notion of anything, everything, anytime and everywhere. Out of the many visions of IoT, one revolutionary concept is to make IoT sociable i.e., incorporating social networking within Internet of Things. This revolution has led to the notion of Social Internet of Things (SIoT). Establishing a SIoT network or community is not so simple and requires integration of heterogeneous technology and communication solutions. This paper focuses on establishing a

secure and reliable communication over nodes in SIoT by computing trust dynamically among neighboring nodes. Trust Management is an important area that has attracted numerous researchers over the past few years. The proposed DTrustInfer computes trust based on first hand observation, second hand observation, centrality and dependability factor of a node. Properties of trust such as honesty, cooperativeness, community interest and energy of a node are considered for computing trust. Also, this paper ensures secure communication among SIoT nodes through simple secret codes. Experimental results show that the proposed DTrustInfer outperforms the existing trust models significantly. © 2018, Indian Academy of Sciences.

Author Keywords
Internet of Things (IoT); secret codes; Social Internet of Things (SIoT); Social Networks (SN); trust

ISSN: 02562499
CODEN: SAPSE
2-s2.0-85049949130

31) Venugopal, P.[a] , Kasimani, R.[b] , Chinnasamy, S.[c]

Prediction and optimization of CI engine performance fuelled with Calophyllum inophyllum diesel blend using response surface methodology (RSM)
(2018) *Environmental Science and Pollution Research*, 25 (25), pp. 24829-24844. Cited 21 times.

DOI: 10.1007/s11356-018-2519-8

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Abstract
The transportation demand in India is increasing tremendously, which arouses the energy consumption by 4.1 to 6.1% increases each year from 2010 to 2050. In addition, the private vehicle ownership keeps on increasing almost 10% per year during the last decade and reaches 213 million tons of oil consumption in 2016. Thus, this makes India the third largest importer of crude oil in the world. Because of this problem, there is a need of promoting the alternative fuels (biodiesel) which are from different feedstocks for the transportation. This alternative fuel has better emission characteristics compared to neat diesel, hence the biodiesel can be used as direct alternative for diesel and it can also be blended with diesel to get better performance. However, the effect of compression ratio, injection timing, injection pressure, composition-blend ratio and air-fuel ratio, and the shape of the cylinder may affect the performance and emission characteristics of the diesel engine. This article deals with the effect of compression ratio in the performance of the engine while using Honne oil diesel blend and also to find out the optimum compression ratio. So the experimentations are conducted using Honne oil diesel blend-fueled CI engine at variable load conditions and at constant speed operations. In order to find out the optimum compression ratio, experiments are carried out on a single-cylinder, four-stroke variable compression ratio diesel engine, and it is found that 18:1 compression ratio gives better performance than the lower compression ratios. Engine performance tests were carried out at different compression ratio values. Using experimental data, regression model was developed and the values were predicted using response surface methodology. Then the predicted values were validated with the experimental results and a maximum error percentage of 6.057 with an average percentage of error as 3.57 were obtained. The optimum numeric factors for different responses were also selected using RSM. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Biofuel; Calophyllum inophyllum; Optimization; Prediction; Regression model; Response surface methodology; Variable compression ratio diesel engine

ISSN: 09441344
CODEN: ESPLE
2-s2.0-85048775770

32) Deepak, M.S., Shanthi, V.M.

Distortional Buckling-Moment Resistance Capacity of Hybrid Double-I-Box Beams
(2018) *Journal of Structural Engineering (United States)*, 144 (9), art. no. 04018132, . Cited 17 times.

DOI: 10.1061/(ASCE)ST.1943-541X.0002100

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Abstract
This paper presents a comprehensive experimental and numerical study on distortional buckling-moment resistance capacity of built-up cold-formed steel hybrid double-I-box beams (HDIBBs) under four-point bending. These built-up beams are fabricated by means of four press-braked channel sections that are fastened together using bolted connections. The cross section of this closed-form built-up beam resembles the shape of a double-I box. Three different parameters were considered: (1) a hybrid parameter ratio that is yield strengths of flange steel to web steel (øh=fyf/fyw); (2) ratio of breadth to the overall depth of the section (B/D); and (3) flange thickness (tf). All the tested beams failed in a sort of distortional buckling mode. The test results revealed that the use of higher-grade steel in the flanges had a significant influence on buckling failure modes and moment capacities of the built-up members. In the hybrid built-up beams, the use of thicker and stiffened flange plates enhanced the moment carrying capacity of HDIBBs. It was found that the flange plate slenderness (Λpf) plays a major part in reducing the member moment resistance capacity due to local and distortional buckling of flanges. Appropriate nonlinear finite-element (FE) models were developed using commercially available software, and numerical analysis was performed. The FE and actual test results were in good agreement in terms of ultimate moment capacities and buckling modes. Therefore, the FE models were verified. The results were compared with the predicted member buckling resistance capacities from a standard design rule, which was found to slightly overestimate in its results. © 2018 American Society of Civil Engineers.

Author Keywords
Built-up; Closed box; Cold-formed steel; Distortional buckling; Flange plate slenderness; Hybrid; Member moment resistance capacity

ISSN: 07339445
CODEN: JSEND
2-s2.0-85048761635

33) Murugeswari, T.[a] , Rathi, S.[b]

QOS distributed routing protocol for mobile ad-hoc wireless networks using intelligent packet carrying systems
(2018) *Design Automation for Embedded Systems*, 22 (3), pp. 201-213. Cited 1 time.

DOI: 10.1007/s10617-018-9204-5

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Abstract
The wireless network should provide high throughput and positive status and this paper suggest a system that supports real-time communications with excellence of service necessities for application based on wireless communications. In addition a hybrid network that interconnects both mobile networks and wireless networks. By inheriting the features of Solid Rocket Booster technology for mobile and wireless networks the race condition, and invalid condition problem has been solved. The number of packets received may vary based on the parameter like mobility, energy, memory, bandwidth, jamming and other parameter. In past years many algorithm has been proposed for increasing the probability of packet delivery but it's still a challenge. This paper uses an algorithm called intelligent packet carrying systems; it provides a tracking mechanism that tracks nodes in rural places. The effectives and reability has been calculated and the results are obtained using OPNET simulator. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Conditional tracking mechanism; Excellence of service; Hybrid networks; Intelligent packet carrying systems

ISSN: 09295585
CODEN: DAESF
2-s2.0-85046031185

34) Sathya, E., Maruthupandi, P.

Enhancement of Low Voltage Ride Through Capability for PMSG Based Wind Energy Conversion System with Super Capacitor
(2018) *Proceedings of the 4th International Conference on Electrical Energy Systems, ICEES 2018*, art. no. 8443259, pp. 57-60. Cited 4 times.

DOI: 10.1109/ICEES.2018.8443259

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Abstract
The permanent magnet synchronous generator is increasingly popular due to its advantage of small in size, higher energy density, lower maintenance cost and ease of control. In order to maintain the stability of the grid under fault conditions, an energy storage device becomes vital. Most of the works done for LVRT/FRT using crowbar protection or chopper resistor have been used for dissipating the excessive energy during voltage dips, which increase the temperature across the resistor. However, the proposed energy storage device, super capacitor can cope up with the rapid power fluctuations and stabilize the output power for several tens of minutes. The characteristic of LVRT is found to be enhanced with super capacitor when compared to chopper resistor. In addition to this, super capacitor can be accessed at any operating condition. Simulation results have been obtained using MATLAB-SIMULINK software and analyzed. It is observed that super capacitor based PMSG performs well. © 2018 IEEE.

Author Keywords
chopper resistor; LVRT/FRT; permanent magnet synchronous generator; super capacitor

ISBN: 9781538636954
2-s2.0-85053491889

35) Muthukumaran, C.[a] , Kanmani, B.R.[a] , Sharmila, G.[a] , N., M.K.[b] , Shanmugaprakash, M.[c]

Carboxymethylation of pectin: Optimization, characterization and in-vitro drug release studies
(2018) *Carbohydrate Polymers*, 194, pp. 311-318. Cited 28 times.

DOI: 10.1016/j.carbpol.2018.04.042

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Abstract
The sequential optimization of carboxymethylation of pectin by Plackett-Burman (PB) design and response surface methodology (RSM) was reported in this study. PB design was employed to screen the six process variables (ethanol concentration, liquid-polymer ratio, NaOH concentration, CAA concentration, temperature and time). Central composite design (CCD) was used to study the interaction effects of ethanol concentration, NaOH concentration, CAA concentration and time on degree of substitution (DS) in carboxymethylated pectin (CMP). Maximum DS value of 0.496 was predicted at ethanol concentration (80%), NaOH concentration (38%), CAA concentration (8.5%) and time (60 min). The synthesized CMP was characterized by FT-IR, XRD, TGA and viscometer. Results of FTIR, XRD and TGA confirmed the modification made in the pectin polymer and highly methylated. Faster release of 5-FU drug was observed with CMP-chitosan nanoparticles as compared to pectin-chitosan nanoparticles and the drug release followed zero order kinetics model. © 2018 Elsevier Ltd

Author Keywords
Carboxymethylation; Optimization; PBD; Pectin; RSM

ISSN: 01448617
CODEN: CAPOD

2-s2.0-85045726230

36) Sharmila, G.[a] , Sakthi Pradeep, R.[a] , Sandiya, K.[a] , Santhiya, S.[a] , Muthukumaran, C.[a] , Jeyanthi, J.[b] , Manoj Kumar, N.[c] , Thirumarimurugan, M.[d]

Biogenic synthesis of CuO nanoparticles using Bauhinia tomentosa leaves extract: Characterization and its antibacterial application
(2018) *Journal of Molecular Structure*, 1165, pp. 288-292. Cited 105 times.

DOI: 10.1016/j.molstruc.2018.04.011

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Abstract
An eco-friendly, biogenic synthesis of copper oxide nanoparticles (CuO NPs) using Bauhinia tomentosa leaf extract was reported. Characterization of the biosynthesized CuO NPs were performed by XRD, UV–Vis spectroscopy, TEM, EDAX and FTIR analysis. The formation of CuO NPs by bioreducing activity of B. tomentosa leaf extract was confirmed by the characteristic surface plasmon resonance peak observed at 384 nm in UV–visible spectroscopy analysis. The spherical shaped nanoscale CuO particles were observed in TEM analysis and EDX spectrum confirmed the presence of Cu in the synthesized NPs. In FTIR analysis, the chemical bonds corresponds to the phytochemicals responsible for bioreduction activity were identified. B. tomentosa leaf extract derived CuO NPs showed significant antibacterial action against E. coli (22 mm) and P. aeruginosa (17 mm). Results of this study revealed that B. tomentosa leaf extract was found to be a good bioreducing agent for CuO NPs synthesis. The antibacterial efficacy of the prepared CuO NPs can be utilized in biomedical applications. © 2018 Elsevier B.V.

Author Keywords
Antibacterial; Bauhinia tomentosa; CuO; Nanoparticles

ISSN: 00222860
CODEN: JMOSB
2-s2.0-85047567698

37) Sidhaarth, K.R.A.[a] , Jeyanthi, J.[b] , Baskar, S.[a] , Kumar, M.V.[a]

Adsorption of congo red dye using cobalt ferrite nanoparticles
(2018) *International Journal of Civil Engineering and Technology*, 9 (9), pp. 1335-1347. Cited 5 times.

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Abstract
The present study involves the applicability of cobalt ferrite Nanoparticles as an adsorbent for the removal of Congo red dye from the aqueous solution. The Nanoparticles were synthesized by co-precipitation method. X-Ray diffraction and Transmission electron microscope studies confirm the formation of single phase cobalt ferrite nanoparticle showing the size range of 16-60nm. The scanning electron microscope studies reveal that the structure were agglomerated. From the batch studies the removal was 99.9% at the optimum conditions. Further the results were subjected to isotherm and kinetic studies. © IAEME Publication.

Author Keywords
Cobalt Ferrite Nanoparticles; Transmission Electron Microscope; X-Ray Diffraction

ISSN: 09766308
2-s2.0-85054289381

38) Deepak, M.S.[a] , Shanthi, V.M.[b]

Section bending resistance of new Hybrid Double-I-Box Beams
(2018) *Advances in Structural Engineering*, 21 (11), pp. 1676-1695. Cited 14 times.

DOI: 10.1177/1369433217753938

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Abstract
This article contains original works of testing and numerical validation on section bending resistance of new innovative built-up thin-walled metal Hybrid Double-I-Box Beam sections when subjected to local buckling. The cross section of Hybrid Double-I-Box Beam section is distinctive, which has advantages of both an 'I' section and a closed-box section. A total of 24 sections in three series that includes 8 homogeneous sections and 16 hybrid sections were tested under four-point bending. The varying parameters considered in the test specimens were as follows: first, hybrid parameter ratio, that is, yield strengths of flange steel to web steel (Φh = fyf/fyw); second, the ratio of breadth to the overall depth (B/D) of the section; and third, the flange thickness (tf). The moment-resisting capacity of these built-up sections are high due to the presence of more material at the flanges. The closed box-web portion provides higher torsional rigidity. From the test results, it was found that the hybrid sections have higher bending resistance capacity than the homogeneous sections, so technically gains more strength to weight. The increase in B/D ratio gained the increase in both major and minor axis bending resistance. The intermediate flange stiffener which alters the flange plate slenderness (λpf) had a significant effect on the local buckling resistance of the flange plate. Verification of numerical models followed by a parametric study was undertaken using ABAQUS finite element analysis software. The test results obtained were compared with the predicted design moment of resistance (Mc,Rd) as per Eurocode design standards EN 1993-1-3: 2006-Design of Steel Structures for Cold-Formed Steel Members and Sheeting and the adequacy is confirmed. © The Author(s) 2018.

Author Keywords
Double-I-Box Beams; flange plate slenderness; intermediate flange stiffener; local buckling; metal hybrid sections; section bending resistance

ISSN: 13694332
CODEN: ASEDD
2-s2.0-85051106492

39) Rajeswari, B.[a] , Amirthagadeswaran, K.S.[b]

Study of machinability and parametric optimization of end milling on aluminium hybrid composites using multi-objective genetic algorithm
(2018) *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 40 (8), art. no. 377, . Cited 28 times.

DOI: 10.1007/s40430-018-1293-3

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Abstract
Metal matrix composites offer a substantial surety to meet the present and future demands spanning from automobiles to aerospace. Hybrid metal matrix composites are a new choice of materials involving several advantages over the single reinforcement. In this present study, three specimens possessing aluminium 7075 reinforced with particulates of silicon carbide (5, 10, 15% weight percentage) and alumina (5% weight percentage) were developed using stir casting. The purpose of the study was to investigate the effect of reinforcement particles of silicon carbide on the machinability of hybrid metal matrix composites. These materials are engineered to match the requirements of optimal output responses such as low surface roughness, less tool wear, a less cutting force with the high rate of material removal under a set of practical

machining constraints. Multi-objective parametric optimization using genetic algorithm obtained optimal cutting responses. The spindle speed, feed rate, depth of cut and weight percentages of SiC were selected as the influencing parameters for meeting the output responses in end milling operation. Based on the Box–Behnken design in response surface methodology, 27 experimental runs were conducted and nonlinear regression models were developed to predict the objective function. The adequacy of the model was checked through ANOVA and was found to be significant. The optimum settings of the parameters were found using multi-objective genetic algorithm. The predicted optimal settings were verified through confirmatory experiments, and the results validated. © 2018, The Brazilian Society of Mechanical Sciences and Engineering.

Author Keywords
Composites; End milling; Genetic algorithm; Interaction effects; Multi-objective

ISSN: 16785878
2-s2.0-85050218704

40) Jothin, R.[a] , Vasanthanayaki, C.[b]

High Performance Static Segment On-Chip Memory for Image Processing Applications
(2018) *Journal of Electronic Testing: Theory and Applications (JETTA)*, 34 (4), pp. 389-404. Cited 2 times.

DOI: 10.1007/s10836-018-5742-9

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Abstract
The performance of the processor core depends on the configuration parameters and utilization of on-chip memory in multimedia applications such as image, video and audio processing. The design of the on-chip memory architecture is critical for power and area efficient design without compromising quality in data-intensive computing applications. This paper proposes a design of high speed, area, and energy efficient Static Segment On-Chip (SSOC) memory for error-tolerant applications. In this static segment method, n-bit data array is reduced by m-bit data array for significant value of input data to achieve balanced design metrics at the cost of accuracy. The proposed m-bit static segmentation algorithm is implemented and verified in Single Port Static Random Access Memory (SP SRAM) architecture for the approximate computing applications. From the overall simulation results, the proposed 4-bit SSOC SP SRAM design provides 49.02% area savings, 50.62% power reduction and 16.92% speed improvement at the cost of 0.64% Peak Signal to Noise Ratio (PSNR) and exhibits same visual quality in comparison with the existing 8-bit conventional on-chip SP SRAM design in the image processing applications. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Approximate; Area-efficient; High speed; Image processing; Low power; On-chip memory; SP SRAM; Static segment

ISSN: 09238174
CODEN: JTTAE
2-s2.0-85049911466

41) Devi, R., Shanmugalakshmi, R.

Trust model for cloud providers using Linear equations
(2018) *Proceedings of the 2018 International Conference on Recent Trends in Advanced Computing, ICRTAC-CPS 2018*, art. no. 8679108, pp. 7-13. Cited 1 time.

DOI: 10.1109/ICRTAC.2018.8679108

Department of IT, Government College of Technology, Anna University, Coimbatore, India

Abstract
Cloud computing is a vital environment for the real time business activities. Even though cloud booms up to high level in IT

industries, still its back end processing are threatening the cloud customers. This paper specifies the importance of trust in cloud computing. The cloud customers are not aware of the processing techniques through which the cloud providers provide services. As well as they do not know how the customer data are handled confidentially by the cloud providers. In this paper the quantitative and qualitative measures of the service providers are analysed and based on that the trust model is created, which makes the cloud customer to believe service providers. © 2018 IEEE.

Author Keywords
Cloud computing; Cloud customer; Linear equation; Service provider; Trust model

ISBN: 9781538658536
2-s2.0-85064713756

42) Deepa, S.N.[a] , Arulmozhi, N.[b] , Gobu, B.[a] , Kanimozhi, P.[c] , Jaikumar, S.[a] , Tangaradjou, A.A.V.[a]

Adaptive Regularized ELM and Improved VMD Method for Multi-step ahead Electricity Price Forecasting
(2018) *Proceedings - 17th IEEE International Conference on Machine Learning and Applications, ICMLA 2018*, art. no. 8614229, pp. 1255-1260. Cited 5 times.

DOI: 10.1109/ICMLA.2018.00204

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Abstract
This paper proposes a hybrid machine learning algorithm for multi-step ahead electricity price forecasting problem. The non-stationary time series data like electricity price, needs robust learning model for prediction of future market price to effective operation of the market based power system. In this research, an adaptive regularized extreme learning machine (ARELM) is proposed with adaptive weight updation in the hidden layers based on both structural risk minimization and empirical risk minimization. The Ant Colony Optimization (ACO) algorithm is applied for optimizing the initial weights and thresholds between input layer and hidden layer of ARELM model. To enhance the overall prediction accuracy of ARELM, a new improved Variational Mode Decomposition (IVMD) is employed to decompose the pricing data into several intermediate frequency modes thereby eradicate stochastic components. Two real-time electricity price series of Australia and India are adopted for multi-step ahead prediction and the results are compared with other learning models available in the literature. © 2018 IEEE.

Author Keywords
-Adaptive-Regularized-extreme-learning-machine-; -price-forecasting; Variational-mode-decomposition

ISBN: 9781538668047
2-s2.0-85062244902

43) Muniappan, K., Rajalingam, M.

TOPSIS-based parametric optimization of compression ignition engine performance and emission behavior with bael oil blends for different EGR and charge inlet temperature
(2018) *Environmental Science and Pollution Research*, 25 (19), pp. 19040-19053. Cited 10 times.

DOI: 10.1007/s11356-018-2048-5

Department of Mechanical Engineering, Government College of Technology, Coimbatore, Tamil Nadu 641013, India

Abstract
The demand for higher fuel energy and lesser exhaust emissions of diesel engines can be achieved by fuel being used and engine operating parameters. In the present work, effects of engine speed (RPM), injection timing (IT), injection pressure

(IP), and compression ratio (CR) on performance and emission characteristics of a compression ignition (CI) engine were investigated. The ternary test fuel of 65% diesel + 25% bael oil + 10% diethyl ether (DEE) was used in this work and test was conducted at different charge inlet temperature (CIT) and exhaust gas recirculation (EGR). All the experiments are conducted at the tradeoff engine load that is 75% engine load. When operating the diesel engine with 320 K CIT, brake thermal efficiency (BTE) is improved to 28.6%, and carbon monoxide (CO) and hydrocarbon (HC) emissions have been reduced to 0.025% and 12.5 ppm at 18 CR. The oxide of nitrogen (NOx) has been reduced to 240 ppm at 1500 rpm for 30% EGR mode. Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) method is frequently used in multi-factor selection and gray correlation analysis method is used to study uncertain of the systems. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Charge inlet temperature; Compression ratio; EGR; Injection system; Speed

ISSN: 09441344
CODEN: ESPLE
2-s2.0-85049429593

44) Meena Kowshalya, A.[a] , Valarmathi, M.L.[b]

Evaluating Twitter Data to Discover User's Perception About Social Internet of Things
(2018) *Wireless Personal Communications*, 101 (2), pp. 649-659. Cited 9 times.

DOI: 10.1007/s11277-018-5709-2

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Abstract
Social Internet of Things (SIoT) is a young paradigm that integrates Internet of Things and Social Networks. Social Internet of Things is defined as a social network of intelligent objects. SIoT has led to autonomous decision making and communication between object peers. SIoT has created and opened many research avenues in the recent years and it is vital to understand the impact of SIoT in the real world. In this paper, we have mined twitter to evaluate the user awareness and impact of SIoT among the public. We use R for mining twitter and perform extensive sentiment analysis using supervised and semi supervised algorithms to evaluate the user's perception about SIoT. Experimental results show that the proposed Fragment Vector model, a semi supervised classification algorithm is better when compared to supervised classification algorithms namely Improved Polarity Classifier (IPC) and SentiWordNet Classifier (SWNC). We also evaluate the combined performance of IPC and SWNC and propose a hybrid classifier (IPC + SWNC). Our analysis was challenged by limited number of tweets with respect to our study. Experimental results using R has produced evidences of its social influences. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Fragment Vector model; Improved Polarity Classifier; R; Sentiment analysis; SentiWordNet Classifier; Social Internet of Things

ISSN: 09296212
CODEN: WPCOF
2-s2.0-85045254672

45) Krishnamoorthi, M., Malayalamurthi, R.

Experimental investigation on the availability, performance, combustion and emission distinctiveness of bael oil/ diesel/ diethyl ether blends powered in a variable compression ratio diesel engine
(2018) *Heat and Mass Transfer/Waerme- und Stoffuebertragung*, 54 (7), pp. 2023-2044. Cited 18 times.

DOI: 10.1007/s00231-018-2283-9

Department of Mechanical Engineering, Government College of Technology, Coimbatore, Tamil Nadu 641013, India

Abstract
The present work aims at experimental investigation on the combined effect of injection timing (IT) and injection pressure (IP) on the performance and emissions characteristics, and exergy analysis of a compression-ignition (CI) engine powered with bael oil blends. The tests were conducted using ternary blends of bael oil, diethyl ether (DEE) and neat diesel (D) at various engine loads at a constant engine speed (1500 rpm). With B2 (60%D + 30%bael oil+10%DEE) fuel, the brake thermal efficiency (BTE) of the engine is augmented by 3.5%, reduction of 4.7% of oxides of nitrogen (NOx) emission has been observed at 100% engine load with 250 bar IP. B2 fuel exhibits 7% lower scale of HC emissions compared to that of diesel fuel at 100% engine load in 23 °bTDC IT. The increment in both cooling water and exhaust gas availabilities lead to increasing exergy efficiency with increasing load. The exergy efficiency of about 62.17% has been recorded by B2 fuel at an injection pressure of 230 IP bar with 100% load. On the whole, B2 fuel displays the best performance and combustion characteristics. It also exhibits better characteristics of emissions level in terms of lower HC, smoke opacity and NOx. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

ISSN: 09477411
CODEN: HMTRF
2-s2.0-85044936874

46) Yuvanarasimman, P.[a] , Malayalamurthi, R.[b]

Studies on Fractures of Friction Stir Welded Al Matrix SiC-B4C Reinforced Metal Composites
(2018) *Silicon*, 10 (4), pp. 1375-1383. Cited 12 times.

DOI: 10.1007/s12633-017-9614-1

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Abstract
Studies pertaining to joining of Al alloy metal matrix composites reinforced with B4C and SiC by solid state friction stir welding (FSW) are presented in this paper. FSW tool dimensions are designed and fabricated to suit the weld sample dimensions and subsequently, the implications of the tool pin profile on the weldability is investigated. Through experimental recordings, the heat generated during the friction stir joining process of composites is estimated by developing relative equations. Maintaining the tool traverse speed constant, the rate of rotation and its effects on the tensile strength at the joints are investigated which reveals reduced ductility. The study emphasizes that when the speed is maintained between 100–400 mm/min, the tensile strength is at its optimal maximum while speeds higher or lower than the optimal range indicate detrimental effects on the tensile strength. This is followed by fracture studies on samples welding with varying traverse speed and rate of welding. Traverse speed appears to govern the fracture modes while brittle fracture is predominantly noticed indicating the importance of feeding optimal heat input during joining. © 2017, Springer Science+Business Media B.V.

Author Keywords
B4C; Fractures; Heat generation; Metal matrix composites; Tool pin profile

ISSN: 1876990X
2-s2.0-85032509587

47) Nataraj, M.[a] , Balasubramanian, K.[b]

Experimental Investigations on Machinability Measures of LM6
(2018) *Journal of Scientific and Industrial Research*, 77 (6), pp. 318-324. Cited 7 times.

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[b] Anna University, Regional Campus Coimbatore, Tamil Nadu, India

Abstract
Aluminium alloy LM6 is used for manufacturing of components in automobile and marine applications. However, LM6 alloying elements pose challenges to manufacturing industry because they cause difficulty while machining, and rapid tool wear occurs due to the presence of high silicon content. Moreover LM6 strength falls down rapidly at elevated temperatures. In view of the above fact, engineers have focused their research on LM6 by adding suitable reinforcement particulates to develop metal matrix composites with LM6 as matrix. This research work discusses the method of optimising the technological data like machining-velocity, feed per revolution, machining-depth and insert nose radius in order to achieve better surface for LM6. It also investigates the influence of machining variables on surface roughness and the machinability measures such as resultant force, specific cutting pressure and co-efficient of friction between work-piece and tool. The study reveals that 0.8 mm nose radius insert gives better result and moreover interactions of feed per revolution and machining-depth have a noteworthy influence on surface finish. The optimal turning process variables are in close conformity with experimental results. The machinability measure analyses are useful in the prediction of machining performance as it more sensitive in reflecting the machining performance.

Author Keywords
CCRD; Coefficient of Friction; LM6; Optimization; Resultant Force; RSM; SCP

ISSN: 00224456
2-s2.0-85072010284

48) Saravanakumar, B.[a] , Thenmozhi, R.[b]

Comparison of behaviour between rebar and stud shear connectors under monotonic loading
(2018) *Journal of Structural Engineering (India)*, 45 (2), pp. 210-220.

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Abstract
In composite beams, shear connectors are commonly used to transfer longitudinal shear forces across the steel-concrete interface. The shear connectors also prevent relative displacement of concrete and steel elements at their interface and ensure composite action of the beam. Presently, the stud is the most widely used shear connector in composite constructions. However, the rebar can be used as a shear connector according to various international codes considering the fact that it can be fabricated to the required shape along with the reinforcement cage in the slab. This paper presents an experimental study of the behaviour of rebar shear connectors embedded in composite beam under monotonic load. Two different (8mm and 10mm) diameter rebar connectors of four different forms such as open link, closed stirrups, circular and rectangular spiral were used as shear connectors. Modified push-out tests were conducted to assess the ultimate strength, elastic stiffness, load-slip characteristics and failure pattern of the rebar shear connectors and the same are compared with conventional stud shear connectors. Rebar shear connector with circular spiral shows higher ultimate strength and superior ductile behaviour compared to conventional stud shear connector.

Author Keywords
Circular spiral rebar connectors; Composite structures; Load-slip characteristics; Push-out test; Rebar shear connector; Shear resistance

ISSN: 09700137
CODEN: JSENE
2-s2.0-85057117491

49) Mohan, D.G.[a] , Gopi, S.[a] , Rajasekar, V.[b]

Effect of induction heated friction stir welding on corrosive behaviour, mechanical properties and microstructure of AISI 410 stainless steel
(2018) *Indian Journal of Engineering and Materials Sciences*, 25 (3), pp. 203-208. Cited 11 times.

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Abstract
In the current scenario, the industry requires a joining or welding method, which does not produce any environmental hazards. Friction stir welding (FSW) is the future of all metal joining methods because FSW does not produce any harmful byproducts and it enhances the joining strength too. The main limitation of friction stir welding was the difficulty to weld hard metals. The tool damage is very high while welding hard metals. These problems happen while using FSW can be recovered by using an additional heating source such as induction heating, arc heating or resistance heating. The induction heating is the quickest heating method as well as an economic method compared to other heating methods. AISI 410 stainless steel (SS) plate is difficult to weld by conventional welding methods, due to the glassy surface and this glassy surface cause sputtering. AISI 410 SS is chosen for this work and welded by using induction heated friction stir welding method (IH-FSW). The tool used for welding AISI 410 SS is made by using tungsten carbide with a hexagonal profile. A sound joint is fabricated at a spindle speed of 1200 rpm, welding speed of 45 mm/min, plunge depth of 0.05 mm and an additional heat input by using the induction-heating coil is about 100°C at 50 W power respectively.

Author Keywords
Friction stir welding; Hybrid welding; Induction heating; Stainless steel

ISSN: 09714588
2-s2.0-85056768326

50) Yuvaraj, S.[a] , Malayalamurthi, R.[b] , Gokulprasath, S.[c] , Venkatesh Raja, K.[d]

Assessment of contact parameters of soft splined hemispherical finger-tip pressed against a concave profile
(2018) *Materials Research Express*, 5 (6), art. no. 065319, . Cited 2 times.

DOI: 10.1088/2053-1591/aac259

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Abstract
Soft material contact analysis plays an important role in the theory of non-linear contact mechanics on both macro and micro scales. Understanding the conforming nature of soft materials with various contact destinations is of considerable interest which involves design of mechanical components involving soft materials. This work presents a FEM based investigation on the contact parameters of a soft splined hemispherical finger-tip pressed against a rigid curved profile. The contact parameters viz., contact pressure, contact radius and vertical deformation for different loads are estimated by FEM based axis-symmetric model. The geometry of the splined portion on soft finger-tip is specified by the length, width and depth. The load-contact relationship for different splined profiles was completed and discussed. From the results, it is observed that the magnitude of vertical depression of splined fingertip is always greater than the normal rigid fingertip. The underlying physics behind this phenomenon is due to large lateral deformation in the splined profile. Then the magnitude of contact radius decreases with the increase in length of the spline. Also, the width of the spline plays an important role in the development of contact area. Moreover, additional grasping strength will be attained due to the vacuum generated in between the splines.

Author Keywords
anthropomorphic finger design; FEA; robotic gripper; soft finger contact

ISSN: 20531591
2-s2.0-85049495831

51) Subash Kumar, C.S.[a] , Gopalakrishnan, V.[b]

Digital implementation of modified phase locked loop based harmonic extraction for shunt active filter
(2018) *Journal of Vibroengineering*, 20 (4), pp. 1897-1906. Cited 1 time.

DOI: 10.21595/jve.2016.16679

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Abstract
This paper presents a digital implementation of modified synchronous reference frame in which the Phase Locked Loop (PLL) is customized to get the angle for the reference frames from the supply voltage by Enhanced Phase Locked Loop (EPLL). The extracted harmonics currents are given to an Artificial Neural Network based Space Vector Pulse Width Modulation (ANNSVPWM) which has better switching control and reduced stress on the switches to cancel the distortions at the Point of Common Coupling (PCC). The algorithm was modelled and simulated by Matlab/Simulink to validate the results. The experimental verification is carried on Field Programmable Gate Array (FPGA) Spartan board to check the effectiveness of the control strategy being implemented and the results conclude that the Total Harmonic Distortion (THD) values are below the required levels of power quality standards. © 2018 C. S. Subash Kumar, et al.

Author Keywords
ANNSVPWM; EPLL; FPGA spartan; THD

ISSN: 13928716
2-s2.0-85049370851

52) Mohamad Raffi, N.[a] , Srinivasan, V.[b] , Narender Singh, P.[b]

Optimization of wear parameters using the grey relational analysis
(2018) *Journal of Advanced Microscopy Research*, 13 (2), pp. 270-277.

DOI: 10.1166/jamr.2018.1389

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Abstract
This paper presents an effective approach for the optimization of various injection molding parameters on wear properties of ultra high molecular weight polyethylene (UHMWPE) with multiple performance characteristics based on the grey relational analysis. The injection molding parameters are melt temperature, injection velocity and compaction time. The wear properties like coefficient of friction and wear rate and hardness were obtained from the experimental results. Thirty experimental runs based on the response surface design were performed to determine the best factor level condition. The response table and response graph for each level of the wear parameters were obtained from the grey relational grade. In this study bovine serum was used as a lubricant. In addition, the hardness of the specimen also investigated as well. The results show that contact loads and melt temperature influenced the wear behaviour of UHMWPE. From the grey relational grade, it is found that level 2 of injection molding parameters have more effect rather than level 1 and level 3. Scanning Electron Microscope (SEM) was employed to study the worn out morphologies of UHMWPE. The dominant wear mechanisms that are dominated through our study are ironing, scratching, ploughing, plastic deformation and fatigue wear. Copyright © 2018 American Scientific Publishers.

Author Keywords
Grey Relational Analysis; Injection Molding Parameters; Optimization; UHMWPE; Wear; Wear Mechanism

ISSN: 21567573
2-s2.0-85049241873

53) Rajamohan, S.[a b] , Kasimani, R.[c]

Studies on the effects of storage stability of bio-oil obtained from pyrolysis of Calophyllum inophyllum deoiled seed cake on the performance and emission characteristics of a direct-injection diesel engine
(2018) *Environmental Science and Pollution Research*, 25 (18), pp. 17749-17767. Cited 15 times.

DOI: 10.1007/s11356-018-1986-2

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Abstract
The highly unbalanced nature of bio-oil composition poses a serious threat in terms of storage and utilization of bio-oil as a viable fuel in engines. So it becomes inevitable to study the variations in physicochemical properties of the bio-oil during storage to value its chemical instability, for designing stabilization methodologies. The present study aims to investigate the effects of storage stability of bio-oil extracted from pyrolyzing Calophyllum inophyllum (CI) deoiled seed cake on the engine operating characteristics. The bio-oil is produced in a fixed bed reactor at 500 °C under the constant heating rate of 30 °C/min. All the stability analysis methods involve an accelerated aging procedure based on standards established by ASTM (D5304 and E2009) and European standard (EN 14112). Gas chromatography-mass spectrometry was employed to analytically characterize the unaged and aged bio-oil samples. The results clearly depict that stabilizing Calophyllum inophyllum bio-oil with 10% (w/w) methanol improved its stability than that of the unstabilized sample thereby reducing the aging rate of bio-oil to 0.04 and 0.13 cst/h for thermal and oxidative aging respectively. Engine testing of the bio-oil sample revealed that aged bio-oil samples deteriorated engine performance and increased emission levels at the exhaust. The oxidatively aged sample showed the lowest BTE (24.41%), the highest BSEC (20.14 MJ/kWh), CO (1.51%), HC (132 ppm), NOx (1098 ppm) and smoke opacity (34.8%). © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Calophyllum inophyllum; Emission; Methanol; Performance; Stability

ISSN: 09441344
CODEN: ESPLE
2-s2.0-85045631822

54) Pradeep, I.[a] , Ranjith Kumar, E.[b] , Suriyanaranan, N.[c] , Srinivas, C.[d] , Venkata Rao, N.[e]

Structural, optical and electrical properties of pure and Fe doped V2O5 nanoparticles for junction diode fabrications
(2018) *Journal of Materials Science: Materials in Electronics*, 29 (12), pp. 9840-9853. Cited 10 times.

DOI: 10.1007/s10854-018-9024-1

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Abstract
Structural, optical and electrical studies of V2O5 and FexV2O5 (x = 5%) nanostructures synthesized by a wet chemical method have been reported. The synthesized nanostructures were characterized by XRD, SEM–EDX, HRTEM, XPS, UV(DRS), FT-IR, PL, TG–DTA, AC and DC conductivity study's. The anorthic phase was observed in the XRD patterns of undoped and Fe doped samples which are prepared at low temperature. This anorthic phase was reduced with the heat treatment and gradually transformed into orthorhombic phase in the samples annealed at 600 °C for 1 h. The change in the surface morphology in the present samples from micro-rod to nanorods network seems to be dependent on the substitution

of Fe. As observed from the PL analysis that the ultraviolet (UV) emission intensity was found to be decreased and exhibited a blue shift with the increase of Fe concentration. The analysis of AC and DC conductivity measurements recorded at room temperature in the temperature range of 303–403 K, revealed that the activation energy is high for Fe doped V2O5 compared to undoped V2O5. The junction diodes of n-V2O5/p-Si and V2O5:Fe/p-Si was successfully prepared by the nebulizer spray pyrolysis method. The (I–V) characteristics of nonlinear and asymmetric nature revealed the Schottky diode based behavior for pure and doped samples. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

ISSN: 09574522
2-s2.0-85044930772

55) Banu, S.S.[a] , Baskaran, K.[b]

Hybrid FGWO Based FLCs Modeling for Performance Enhancement in Wireless Body Area Networks
(2018) *Wireless Personal Communications*, 100 (3), pp. 1163-1199. Cited 6 times.

DOI: 10.1007/s11277-018-5626-4

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Abstract
The progression over wireless technologies paves the way for the emergence of wireless body area networks (WBAN) towards several motivating applications. Specifically, in terms of health concern applications, both the performance and reliability is regarded as the essential elements of WBANs. Many of the soft computational methodologies employed the manual modeling of fuzzy logic controllers (FLCs) by evolutionary algorithms in WBAN. This existing model encodes the entire control parameters of “FLCs” membership functions. This leads to the degradation of network performance by maximizing the latency. In order to rectify this issue, here we propose a hybrid firefly grey wolf optimizer (hybrid FGWO) approach for the optimal modeling of “FLC”. The major goal behind our proposed work relays on the optimal selection of control parameters from the “FLCs” with hybrid FGWO. The modeling of “FLCs” is carried out with CLFB (cross-layer fuzzy logic dependent back-off controller) mechanism to control the frequent access of channels. The efficiency of the “FLCs” model is enhanced by utilizing the coding technique known as unrestricted coding scheme. The performance of our hybrid FGWO approach is contrasted with three conventional “EAs”. Two major modeling goals are established whereas, the initial goal aims for the modeling of “FLCs” on particular configuration of network and the second goal aims on the modeling of “FLCs” over multiple network configurations. The “FLCs” modeled by means of our proposed hybrid FGWO approach exhibits its performance in terms of throughput, latency and packet delivery ratio with some of the challenging algorithms. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
CLFB; Evolutionary algorithms; Fuzzy logic controllers; Hybrid FGWO; URCS; Wireless body area networks

ISSN: 09296212
CODEN: WPCOF
2-s2.0-85044049280

56) Sathiesh Kumar, S.[a] , Vairam, S.[b] , Neelakandeswari, N.[a] , Aruna, S.[c]

Effect of metal oxide charge transfer layers on the photovoltaic performance of carbon nanotube heterojunction solar cells
(2018) *Materials Letters*, 220, pp. 249-252. Cited 6 times.

DOI: 10.1016/j.matlet.2018.02.117

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Abstract

Despite the prominence of silicon solar cells, various alternative solar cell technologies have attracted the attention of researchers. Several attempts have been made to bring down the cost and complexities involved in the fabrication of solar cells. In this work, solar cells with TiO2 as absorber layer and Multi-Walled Carbon Nanotubes (MWCNT) as active charge generation layer have been fabricated by spin coating nano pastes of TiO2 and MWCNT over transparent conducting substrates. An efficiency of 0.40% was observed for TiO2-MWCNT solar cells, which was further enhanced to 1.03% and 1.27% by insertion of Co3O4 and Cu2O layers respectively, in between the MWCNT and the carbon electrode. This significant increase in efficiency is attributed to the effective hole extraction by the metal oxide layers, which resolves the work function mismatch between the MWCNT and carbon electrode. These demonstrations reveal the advantages of using metal oxide interfacial layers for effective hole extraction in carbon nanotube based solar cells. © 2018 Elsevier B.V.

Author Keywords
Carbon nanotube solar cells; Hole extraction; Metal oxide interfacial layers

ISSN: 0167577X
CODEN: MLETD
2-s2.0-85043366061

57) Priya, N.S.[a] , Kamala, S.S.P.[a] , Anbarasu, V.[b] , Azhagan, S.A.[c] , Saravanakumar, R.[d]

Characterization of CdS thin films and nanoparticles by a simple Chemical Bath Technique
(2018) *Materials Letters*, 220, pp. 161-164. Cited 28 times.

DOI: 10.1016/j.matlet.2018.03.009

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Abstract
Cadmium Sulfide (CdS) thin films and nanoparticles were prepared by using simple Chemical Bath Deposition technique. The thickness of the prepared thin films are in the range of 106–117 nm. Better transmittance behavior in the visible region along with an energy gap around 2.3 eV of as-prepared CdS thin films confirms the candidature for solar cell applications. The structural analysis of the prepared thin films and nanoparticles was carried out by Powder X-ray diffraction technique using CuKα radiation. The scanning electron micrographs reveal that all the compounds have uniform crystallite structure. The energy dispersive X-ray analysis confirms the formation of pure cadmium sulfide nanoparticles. The reverse magnetization behavior was identified in all the compounds which confirm the diamagnetic property of CdS nanoparticles. The resultant compounds confirm the competent candidature for solar cells, photodiodes, light emitting diodes, nonlinear optics and heterogeneous photo catalysis. © 2018 Elsevier B.V.

Author Keywords
CBD technique; CdS thin films; Optical studies; Solar cell applications

ISSN: 0167577X
CODEN: MLETD
2-s2.0-85042946184

58) Krishnamoorthi, M.[a] , Malayalamurthi, R.[a] , Mohamed Shameer, P.[b]

RSM based optimization of performance and emission characteristics of DI compression ignition engine fuelled with diesel/aegle marmelos oil/diethyl ether blends at varying compression ratio, injection pressure and injection timing
(2018) *Fuel*, 221, pp. 283-297. Cited 53 times.

DOI: 10.1016/j.fuel.2018.02.070

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Abstract
In the support of developing a substitute for diesel fuel automobiles, the research in renewable energy has been focused due to the hurly-burly situation for petroleum combat and environmental causes. The present study has been carried out in a naturally aspirated light-duty variable compression ratio (VCR) multi-fuel research engine. As input amends, three significant input parameters as injection pressure (IP), compression ratio (CR) and injection timing (IT) have been taken. In this test, the input parameters are taken as 210 bar, 230 bar, 250 bar for IP and 16, 17, 18 for CR and 21°, 23°, 25° before top dead center (bTDC) for IT. To outline the resulting output parameters like performance and emissions, the statistical tool like the design of experiments (DoE) have been used for planning the experimental trials. The lesser exhaust pollution and better performance are the desirable output factors by optimizing the input parameters via factorial design. For validating the models developed using response surface methodology (RSM), the confirmatory tests have been carried out to portray the combined effects of CR, IP and IT on the engine characteristics using all test fuels. Maximum Brake thermal efficiency of 30.05% was found for F(1) fuel at 230 bar IP and 18 CR with 23 °bTDC IT. Minimum carbon monoxide of 0.41% was observed at IP of 230 bar and CR of 18 with 25 °bTDC IT and oxides of nitrogen of 205.7 ppm was found at 250 bar IP and 16 CR with 25 °bTDC IT for F(1) fuel. © 2018 Elsevier Ltd

Author Keywords
Aegle marmelos oil; Compression ratio; Diethyl ether; Injection pressure; Injection timing; Optimization

ISSN: 00162361
CODEN: FUELA
2-s2.0-85042389253

59) Sathiesh Kumar, S.[a] , Vairam, S.[b] , Neelakandeswari, N.[a] , Aruna, S.[c]

New heterojunction solar cells using copper oxide ingrained MWCNT: Fabrication and performance analysis
(2018) *Solar Energy*, 166, pp. 195-202. Cited 3 times.

DOI: 10.1016/j.solener.2018.03.060

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Abstract
Despite the development of new technologies, cost and methods of fabricating the solar cells are complex. In this work, new heterojunction solar cells have been developed by facile methods using nano CuO/Cu2O ingrained multi-walled carbon nanotubes as the active absorber layer and zinc oxide as the transparent window layer. Nano pastes were formulated by ball milling and casted on fluorine doped tin oxide substrates using spin coating process. Solar cells, having copper oxides as absorber layers, exhibited an efficiency of 0.03–0.19%, while the copper oxide ingrained multi-walled carbon nanotube layers boosted up the efficiency of solar cells to a maximum of 2.32% by synergistic action. Fine-tuning of the thickness of MWCNT nanocomposite layer further enhanced the efficiency of the champion solar cell to 4.08%. Even though more optimization of the fabrication parameters is required for achieving higher photon conversion efficiencies and meeting up the commercial standards, this work successfully demonstrated a simplistic approach for the fabrication of low cost solar cells. © 2018

Author Keywords
Carbon nanotube nanocomposite; Heterojunction solar cells; Hole extraction

ISSN: 0038092X
CODEN: SRENA
2-s2.0-85044475777

60) Chintam, J.R., Geetha, V., Mary, D.

Magnetotactic bacteria moment migration optimization algorithm for generators real-power rescheduling in

deregulated power system
(2018) *Journal of Computational and Theoretical Nanoscience*, 15 (5), pp. 1461-1470. Cited 1 time.

DOI: 10.1166/jctn.2018.7378

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Abstract
In deregulated competitive electricity scenario, the transmission network congestion is the most important challenging issue to control and operate the transmission network within reliable limits. This work introduces a novel approach to magnetotactic bacteria moment migration optimization algorithm (MBMMOA) for real-power rescheduling of generators with congestion management (CM). The MBMMOA is a kind of new bionic optimization algorithm with moments of magnetosomes along the magnetic field of lines of the earth as a base. The suggested algorithm effectively applied on small as well as large IEEE-bus Network Topologies. In this work, voltage, line and loading limits considered for transmission network safety. The proposed techniques give superior results compared than the other techniques such as SA, RSM, PSO, SA etc. for the optimal power flow issues. © 2018 American Scientific Publishers.

Author Keywords
Congestion Management; Deregulation; Generator Rescheduling; Magnetotactic Bacteria Moment Migration; Optimal Power Flow

ISSN: 15461955
2-s2.0-85055060456

61) Sabarish, R.[a] , Suriyanarayanan, N.[a] , Kalita, J.M.[b] , Sarma, M.P.[b] , Wary, G.[b]

Investigation on growth, structural, optical, electrical and X-ray sensing properties of chemically deposited zinc bismuth sulfide (ZnxBi2-xS3) thin films
(2018) *Materials Research Express*, 5 (5), art. no. 056402, . Cited 5 times.

DOI: 10.1088/2053-1591/aac1dc

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Abstract
In the present work, ZnxBi2-xS3 films were synthesized (x =0.2 M) by a chemical bath deposition (CBD) technique at different bath temperatures (60 °C, 70 °C and 80 °C). The role of bath temperature on the formation of the films has been examined. The crystalline nature, structural parameters and surface morphology of the films were ascertained using x-ray diffraction (XRD), Raman spectroscopy and scanning electron microscope (SEM) and energy dispersive x-ray spectroscopy (EDS) respectively. These studies confirmed the formation of crystalline Zn0.2Bi1.8S3 films with uniform distribution of homogenous grains. The characterization results revealed that the film deposited at 70 °C has the good crystalline quality than the films deposited at 60 and 80 °C. Further, the optical absorption spectra showed that the bandgap (E g) of the film deposited at 70 °C was about 2.39 eV which was found to be less than the same film deposited at 60 and 80 °C. The Current-Voltage (I-V) characteristics of all the films were measured under dark condition. This showed that the electrical conductivity of the film deposited at 70 °C was 1.61 ×10-5 S cm-1 which is ten times higher than other films. Further, the I-V characteristics of the film deposited at 70 °C was studied under x-ray radiation. The current under the x-ray radiation was significantly higher compared to the dark current. The x-ray detection sensitivity of the film was found to be maximum at 0.7 V and gradually decreases with increase of bias voltage. This analysis reveals that the film deposited at 70 °C can be used as an x-ray sensor. © 2018 IOP Publishing Ltd.

Author Keywords
chemical bath deposition; sensor; thin film; x-ray

ISSN: 20531591
2-s2.0-85047871241

62) Krishnamoorthi, M., Malayalamurthi, R.

Effect of exhaust gas recirculation and charge inlet temperature on performance, combustion, and emission characteristics of diesel engine with bael oil blends
(2018) *Energy and Environment*, 29 (3), pp. 372-391. Cited 6 times.

DOI: 10.1177/0958305X17748888

Department of Mechanical Engineering, Government College of Technology, Coimbatore, India

Abstract
The threat of fossil fuel depletion and augmented environmental pollution caused by diesel fleets can be curbed by adopting suitable fuel and engine modifications. In the present work, effects of engine speed (r/min), injection timing, injection pressure and compression ratio on performance and emission characteristics of a compression ignition engine were investigated. The ternary test fuel of 65% diesel + 25% bael oil + 10% diethyl ether has been used, where the tests have been conducted at different charge inlet temperature and exhaust gas recirculation. All the experiments were conducted at the trade-off engine load that is 75% engine load. When the diesel engine operating with 320 K charge inlet temperature, brake thermal efficiency has been improved to 28.6%. Meanwhile reduced emission levels of carbon monoxide (0.025%) and hydrocarbon (12.3 ppm) were observed during the engine operation with 320 K charge inlet temperature and compression ratio of 18:1. The oxides of nitrogen have been reduced to 226 ppm at 16:1 compression ratio with 30% exhaust gas recirculation mode. © 2018, © The Author(s) 2018.

Author Keywords
Charge inlet temperature; compression ratio; exhaust gas recirculation; injection system; speed

ISSN: 0958305X
CODEN: EENVE
2-s2.0-85046828030

63) Ramakrishnan, P.[a b] , Kasimani, R.[c] , Peer, M.S.[d] , Rajamohan, S.[a]

Assessment of n-pentanol/Calophyllum inophyllum/diesel blends on the performance, emission, and combustion characteristics of a constant-speed variable compression ratio direct injection diesel engine
(2018) *Environmental Science and Pollution Research*, 25 (14), pp. 13731-13744. Cited 23 times.

DOI: 10.1007/s11356-018-1566-5

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Abstract
Alcohol is used as an additive for a long time with the petroleum-based fuels. In this study, the higher alcohol, n-pentanol, was used as an additive to Calophyllum inophyllum (CI) biodiesel/diesel blends at 10, 15, and 20% by volume. In all blends, the ratio of CI was maintained at 20% by volume. The engine characteristics of the pentanol fuel blends were compared with the diesel and CI20 (Calophyllum inophyllum 20% and diesel 80%) biodiesel blend. The nitrogen oxide (NO) emission of the pentanol fuel blends showed an increased value than CI20 and neat diesel fuel. The carbon dioxide (CO2) also increased with increase in pentanol addition with the fuel blends than CI20 fuel blend and diesel. The carbon monoxide (CO) and hydrocarbon (HC) emissions were decreased with increase in pentanol proportion in the blend than the CI20 fuel and diesel. The smoke emission was reduced and the combustion characteristics of the engine were also improved by using pentanol blended fuels. From this investigation, it is suggested that 20% pentanol addition with the biodiesel/diesel fuel is suitable for improved performance and combustion characteristics of a diesel engine without any engine modifications, whereas CO2 and NO emissions increased with addition of pentanol due to effective combustion. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Calophyllum inophyllum; Combustion; Compression ratio; Emission; Pentanol; Performance

ISSN: 09441344
CODEN: ESPLE
2-s2.0-85045137348

64) Sriharipriya, K.C.[a] , Baskaran, K.[b]

Optimal Number of Cooperators in the Cooperative Spectrum Sensing Schemes
(2018) *Circuits, Systems, and Signal Processing*, 37 (5), pp. 1988-2000. Cited 4 times.

DOI: 10.1007/s00034-017-0649-8

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Abstract
In this paper, considering a cognitive radio (CR) network, we propose a hard combining cooperative sensing scheme that embeds a solution of finding optimal number of users who can participate in user cooperation. The solution to our scheme includes two cases, one when single antenna is used at the CR receiver, and the other, when multiple antennas are employed. Moreover, we have derived the closed-form expression for Bayes risk, which is a measure of probability of error. Bayes risk constitutes false alarm and missed detection probabilities. We have found optimum number of users, who can participate in the fusion scheme, by minimising the probability of error. Our simulation results show the improvement in receiver operating characteristics curve, when optimum number of users are allowed to participate in the fusion scheme. © 2017, Springer Science+Business Media, LLC.

Author Keywords
Cognitive radio; Energy detection; Fusion centre; Hard combining

ISSN: 0278081X
CODEN: CSSPE
2-s2.0-85044283380

65) Jayalakshmi, R., Jeyanthi, J.

Synthesis and Structural Characterization of Polymer-Based Cobalt Ferrite Nanocomposite with Core–Shell Structure
(2018) *Journal of Inorganic and Organometallic Polymers and Materials*, 28 (3), pp. 1286-1293. Cited 20 times.

DOI: 10.1007/s10904-018-0821-z

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Abstract
Polymer hybrids have become a major area of research and development owing to the remarkable properties and multifunctional behaviour deriving from their nanocomposite/nanohybrid structure. In this class, magnetic polymer nanocomposite are of special interest because of the combination of excellent magnetic properties, high specific area, surface active sites, high chemical stability and good biocompatibility. The present communication primarily concentrates on the investigation of structural characterization of alginate–cobalt ferrite nanocomposite (CoFe2O4–ANa NC) prepared by ex situ polymerization method. The structural and morphological properties of CoFe2O4–ANa NC were analysed using X-ray diffraction, scanning electron microscopy (SEM), transmission electron microscopy (TEM) and dynamic light scattering. The specific surface area of the nanocomposite was analysed using BET surface area analysis. The functional group and the thermal stability were examined using FTIR and TGA/DTA respectively. The characterization results have pointed out the successful role of sodium alginate in stabilizing cobalt ferrite nanoparticles (CoFe2O4 NP). The SEM and TEM images revealed the well interspersed state of cobalt ferrite with sodium alginate. It is obvious to note the increased size and the specific surface area for CoFe2O4 nanocomposite. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

Author Keywords
Alginate–cobalt ferrite nanocomposite; BET; Core–shell structure; Polymer nanocomposite; SEM; TEM

ISSN: 15741443
2-s2.0-85043369713

66) Veerasamy, V.[a] , Ramachandran, R.[b] , Thirumeni, M.[a] , Madasamy, B.[c]

Load flow analysis using generalised Hopfield neural network
(2018) *IET Generation, Transmission and Distribution*, 12 (8), pp. 1765-1773. Cited 18 times.

DOI: 10.1049/iet-gtd.2017.1211

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Abstract
This study proposes a generalised Hopfield neural network (GHNN) for solving non-linear load flow equations. The proposed method was formulated with appropriate energy function for performing load flow analysis of n-bus system. The intended method has the advantages of simple to use, more general application, faster convergence and better optimal solution over the conventional method of load flow using Newton-Raphson (NR) technique. The proposed method of GHNN has been used to solve the power flow equation by calculating the power mismatches and this constraint is used to formulate the energy function of Hopfield neural network (HNN). This energy function is used to derive the weights and bias values of the network. The optimal solution can be found, based on the minimisation of the energy function of continuous HNN. The suggested method was tested in a typical 3-bus and 5-bus power system. The mathematical equation of the proposed method was coded using Matlab/R2014a software. The simulation results obtained have shown that the proposed method is more efficient than NR method in terms of reduction in computational complexity and convergence time with minimum number of iterations. © The Institution of Engineering and Technology 2018.

ISSN: 17518687
2-s2.0-85045936619

67) Pradeep, I.[a] , Ranjith Kumar, E.[b] , Suriyanarayanan, N.[c] , Srinivas, C.[d] , Mehar, M.V.K.[e]

Effects of doping concentration on structural, morphological, optical and electrical properties of tungsten doped V2O5 nanorods
(2018) *Ceramics International*, 44 (6), pp. 7098-7109. Cited 16 times.

DOI: 10.1016/j.ceramint.2018.01.149

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Abstract
Pure and tungsten-doped V2O5 (WxV2O5; x = 5%, 10% and 15%) nanorods were produced by the wet chemical method followed by annealing at 60 °C for 12 h and 600 °C for 1 h. The influence of dopant concentration on the structural, morphological, optical and electrical properties of V2O5 nanorods were investigated through XRD, SEM-EDS, TEM, PL and DC conductivity studies. XRD pattern analysis reveals that the pure and tungsten doped samples are annealed at 60 °C exhibits anorthic phase and annealed at 600 °C, the anorthic is phase disappeared and emerged as an orthorhombic phase. Also, structural analysis shows that the WxV2O5 (x = 15%) lattice is found to be secondary phase. The gradual morphological transformation of nanostructures due to the incorporation of tungsten is depicted through SEM/TEM characterizations. The relative differential structure of tungsten-doped V2O5 nanorods is promptly registered by SEM

analysis. EDS result confirms the presence of tungsten and also oxygen vacancies in doped V2O5. The PL quenching was observed with doping is due to the absorption of energy from the defect emission in the V5+ lattice by W6+ ions. DC conductivity of WxV2O5 with respect to different temperatures is explained by the presence of defects. Further, the colloidal form of pure and n-WxV2O5 is used to deposit on p-Si substrate for formation of p-n junction by the nebulizer spray technique and the properties of fabricated diodes are investigated under dark and illumination conditions. Also, the Norde's method is used to evaluate the series resistance and barrier height of the Schottky contact. Further, the transient photocurrent measurements were carried out to analyze the photoresponse of the developed diodes.

Author Keywords
Chemical synthesis; Doping effects; Electrical properties; Junction diodes; Phase changes

ISSN: 02728842
CODEN: CINND
2-s2.0-85040780558

68) Senophiyah-Mary, J.[a] , Loganath, R.[b] , Shameer, P.M.[c]

Deterioration of cross linked polymers of thermoset plastics of e-waste as a side part of bioleaching process
(2018) *Journal of Environmental Chemical Engineering*, 6 (2), pp. 3185-3191. Cited 10 times.

DOI: 10.1016/j.jece.2018.04.061

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Abstract
Bioleaching is a process of metal extraction which requires very low energy and less emission of toxic gases. The polymers that are left out after bioleaching were very hard to degrade as they are thermoset or cross linked polymers. But studies revealed that the polymers could be deteriorated with the help of various environmental factors like sunlight, UV etc. This characteristic feature was an important parameter for the construction of an electronic device. An attempt has been done to find out the ability of microbes to deteriorate plastics after metal recovery from WPCB. A. niger was used to leach out copper in this experiment as it holds nearly 75% of the metallic fraction present on the surface of WPCB and also according to the resource recovery efficiency copper was known to have larger profit than that of the rest of the metals present in it. A period of 21 days was given for bioleaching after which the bioleachate was drained. The set up was set aside for 45 days to know the strength of the microorganisms to degrade the cross linked polymers with the help of the enzymes they produce. Thus it was found that the microbes used for bioleaching turned to be potent to deteriorate plastics. It was confirmed with the help of SEM analysis. The degradation ability was tested before and after bioleaching with the help of Thermo-Gravimetric-Differential Thermal Analyser (TG-DTA) and the change in molecular group was studied with the help of Fourier Transform Infrared Spectrometer (FTIR).

Author Keywords
Bioleaching; e-waste; Epoxy coating; FT-IR; Polymer deterioration; TG-DTA

ISSN: 22133437
2-s2.0-85046531655

69) Indhu, S., Muthukumaran, K.

Removal and recovery of reactive yellow 84 dye from wastewater and regeneration of functionalised Borassus flabellifer activated carbon
(2018) *Journal of Environmental Chemical Engineering*, 6 (2), pp. 3111-3121. Cited 20 times.

DOI: 10.1016/j.jece.2018.04.027

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Abstract
This study demonstrates the performance and characterisation of Borassus Flabellifer shell derived Nano Composite (BNC) in the adsorption process for the removal of reactive diazo dyes. Borassus flabellifer shell, an agricultural waste material, is evaluated and subjected to activation under CO2 atmosphere to obtain Borassus Flabellifer shell derived activated carbon (BAC). The resulted BAC is modified as BNC using magnetite nanoparticles by precipitation method. The texture and composition of BAC and BNC are observed by various analytical determinations like pHpZc, FTIR, powder-XRD, BET surface area, FE-SEM, EDX and VSM analysis. The batch study is conducted by varying pH, dosage, initial concentration and equilibration time. The experimental studies are carried out using the optimised data and the maximum removal capacity of BNC for the adsorption of reactive yellow 84 (RY84) is found to be 40 mg/g. The Langmuir equation suits the best-fit equilibrium adsorption isotherm model, which predicts the monolayer adsorption of RY84. The reaction kinetics of the adsorption process is best expressed by pseudo-second order model equation. The thermodynamic parameters attribute the spontaneous and endothermic processes involved in the adsorption mechanism. The recovery of BAC and BNC are attempted and examined, while the regeneration of BNC is successful up to four cycles.

Author Keywords
Adsorption isotherms; Borassus flabellifer shell; Diazo dye; Magnetite; Nanocomposite; Thermodynamic

ISSN: 22133437
2-s2.0-85046402545

70) Sridevi, A.[a] , Lakshmiprabha, V.[b]

DLWUC: Distance and load weight updated clustering-based clock distribution for SOC architecture
(2018) *Tehnicki Vjesnik*, 25 (2), pp. 358-367.

DOI: 10.17559/TV-20160802143634

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Abstract
High-clock skew variations and degradation of driving ability of buffers lead to an additional power dissipation in Clock Distribution Network (CDN) that increases the dimensionality of buffers and coordination among flip-flops. The manual threshold level to predict the Region of Interest (ROI) is not applicable in clustering process due to the complexities of excessive wire length and critical delay. This paper proposes the Distance and Load Weight Updated Clustering (DLWUC) to determine the suitable position of logical components. Initially, the DLWUC utilizes the Hybrid Weighted Distance (HWD) to estimate the distance and construct the distance matrix. The weight value extracted from the sorted distance matrix facilitates the projection of buffers. The updated weight value serves as the base for clustering with labeled outputs. The placement of buffer at the suitable place from load weight updated clustering provides the necessary trade-off between clock provision and load balance. The DLWUC discussed in this paper reduces the size of buffers, skew, power and latency compared to the existing topologies.

Author Keywords
Buffers placement; Clock Distribution Network (CDN); Clock mesh; Clustering; Flip Flop (FF); Tree based CDN

ISSN: 13303651
2-s2.0-85045934040

71) Krishnamoorthi, M., Malayalamurthi, R.

The influence of charge air temperature and exhaust gas recirculation on the availability analysis, performance and emission behavior of diesel - bael oil - diethyl ether blend operated diesel engine
(2018) *Journal of Mechanical Science and Technology*, 32 (4), pp. 1835-1847. Cited 15 times.

DOI: 10.1007/s12206-018-0340-4

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Abstract
In this work, the first and second laws of thermodynamic analyses were carried out on Kirloskar direct injection, variable compression ratio (VCR) engine at four different charge air temperatures (CAT) and exhaust gas recirculation (EGR) mode. Performance, emission and combustion characteristics along with exergy analysis of ternary test fuel of 60 % diesel + 30 % bael oil + 10 % diethyl ether (DEE) were performed. Various exergy components are identified and calculated individually with the percentage of engine load at 1500 rpm. When operating the diesel engine with 47 °C CAT, brake thermal efficiency (BTE) is improved to 29.33 %, carbon monoxide (CO), hydrocarbon (HC), and emissions have been reduced by 8.57 %, 4.28 % and 6.01 % at peak engine load. The oxides of nitrogen (NOx) have been reduced by 20.12 % at 100 % engine load for 30 % EGR mode. The maximum exergy efficiency of 54.61 % has been observed at full engine load for the 47 °C CAT. © 2018, The Korean Society of Mechanical Engineers and Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Bael oil; Charge air temperature; Diethyl ether; EGR; Exergy

ISSN: 1738494X
2-s2.0-85045723759

72) Santhakumar, S.[a] , Palanivel, I.[b] , Venkatasubramanian, K.[c]

An experimental study on the rotational behaviour of a Savonius wind turbine for two-lane highway applications
(2018) *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 40 (4), art. no. 232, . Cited 7 times.

DOI: 10.1007/s40430-018-1158-9

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Abstract
The objective of this work is to understand the behaviour of a Savonius wind turbine (SWT) on two-lane highways located in Coimbatore district, India. Experiments were conducted by placing a Savonius wind turbine (SWT) on the sides of the highway during the south-west monsoon season in three different directional roads, i.e., south-west to north-east, south to north and west to east. Vehicles moving on the highway at varying speeds modify the velocity of air locally, which in turn results in varying the drag forces on the blades of SWT, setting it in motion. An economical SWT was designed, fabricated and tested in a wind tunnel and on the highways, and the angular rotational speeds were measured. Based on the data obtained, further analysis was done to understand the behavioural patterns of SWT. Data obtained from the experiments show a “negative drag force”, which is created in two-way lanes by the vehicles moving in opposite direction, affecting the rotational speed of SWT by a significant proportion. These conditions have been studied and the results have been discussed. © 2018, The Brazilian Society of Mechanical Sciences and Engineering.

Author Keywords
Highway applications; Low-rise wind; Monsoon; Savonius wind turbine; Wind behaviour

ISSN: 16785878
2-s2.0-85045078055

73) Rajamohan, S.[a b] , Kasimani, R.[c]

Analytical characterization of products obtained from slow pyrolysis of Calophyllum inophyllum seed cake: study on performance and emission characteristics of direct injection diesel engine fuelled with bio-oil blends
(2018) *Environmental Science and Pollution Research*, 25 (10), pp. 9523-9538. Cited 49 times.

DOI: 10.1007/s11356-018-1241-x

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Abstract
This paper aims to analyse the characteristics and properties of the fractions obtained from slow pyrolysis of non-edible seed cake of Calophyllum inophyllum (CI). The gas, bio-oil and biochar obtained from the pyrolysis carried out at 500 °C in a fixed bed batch type reactor at a heating rate of 30 °C/min were characterized by various analytical techniques. Owing to the high volatile content of CI biomass (72.61%), it was selected as the raw material in this present investigation. GC-MS and FT-IR analysis of bio-oil showed the presence of higher amount of oxygenated compounds, phenol derivatives, esters, acid and furans. The physicochemical properties of the bio-oil were tested as per ASTM norms which imply that bio-oil is a highly viscous liquid with lower heating value as compared to that of diesel fuel. The chemical composition of evolved gas was analysed by using GC testing which revealed the presence of combustible components. The FT-IR characterization of biochar showed the presence of aliphatic and aromatic hydrocarbons whereas the elevated amount of carbon in biochar indicates its potential to be used as solid fuel. The performance and emission characteristics of CI engine were assessed with different CI bio-oil blends and compared with baseline diesel fuel. The results showed that addition of bio-oil leads to decreased brake thermal efficiency and increased brake specific energy consumption. Meanwhile, increase in blend ratio reduces harmful pollutants such as oxides of nitrogen and smoke in the exhaust. From the engine testing, it is suggested to employ 20% of CI bio-oil blends in CI engine to obtain better operation. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature.

Author Keywords
Bio-oil; Calophyllum inophyllum; Emission; Engine; GC-MS; Pyrolysis

ISSN: 09441344
CODEN: ESPLE
2-s2.0-85040721854

74) Krishnamoorthi, M., Malayalamurthi, R.

Availability analysis, performance, combustion and emission behavior of bael oil - diesel - diethyl ether blends in a variable compression ratio diesel engine
(2018) *Renewable Energy*, 119, pp. 235-252. Cited 52 times.

DOI: 10.1016/j.renene.2017.12.015

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Abstract
The aim of the present work is to experimentally investigate the effect of injection pressure (IP) and injection timing (IT) on the performance, combustion, and emissions of a compression ignition (CI) engine with aegle marmelos oil (bael oil) blends. This work includes the exergy analysis of diesel engine to maximize the work availability. The tests were conducted on a constant speed direct injection diesel engine fueled with ternary blends of bael oil, diethyl ether (DEE) and neat diesel (D) at various engine loads. When the engine was operated with B2 blend (60%D+30%bael oil+10%DEE), there was an increase in brake thermal efficiency of 3.5% accompanied by a declination in oxides of nitrogen emissions by 4.7% at full load with 250bar IP. The B2 blend showed lower hydrocarbon emission by 7% as compared to that of neat diesel at full engine load with fuel IT of 23° before top dead center. With Increase in engine load, augmentation exhaust gas and cooling water availabilities lead to amplification of exergy efficiency with increasing load. The exergy efficiency of B2 fuel has found as 62.17% of fuel input at 230bar IP with 100% load. From results, B2 fuel exhibits the best performance and combustion characteristics. © 2017 Elsevier Ltd

Author Keywords
Bael oil; Diesel; Diethyl ether; Exergy; Injection pressure; Injection timing

ISSN: 09601481
2-s2.0-85037668290

75) Manoranjitham, R., Deepa, P.

Efficient invariant interest point detector using Bilateral-Harris corner detector for object recognition application
(2018) *Multimedia Tools and Applications*, 77 (8), pp. 9365-9378. Cited 6 times.

DOI: 10.1007/s11042-017-4982-5

Department of Electronics and Communication Engineering, Government College of Technology, Coimbatore, Tamil Nadu 641 013, India

Abstract
Interest point detection plays a significant role in computer vision applications. The most commonly used interest point detector algorithm is scale invariant feature transform (SIFT). The use of Gaussian filter in the SIFT algorithm fails to match interest points on the edge and it also causes blur annoyance in the rescaling process. To overcome this failure Bilateral-Harris Corner Detector (BHCD) has been proposed in this paper. In the proposed BHCD, a Bilateral filter preserves edges by smoothening and removing noise in an image. Accuracy in localization of interest points are improved by using the proposed dynamic blur metric calculation. The Harris corner has been added to get stable and reliable interest point detection. The proposed BHCD has been simulated for the evaluation criteria such as repeatability and matching score. Extensive experimental results show that the proposed method is more robust to illumination, scaling, rotation, compression and viewpoint changes. The experimental evaluation for BHCD has been carried for the object recognition benchmark datasets COIL-100, ZuBud, Caltech-101. The proposed BHCD achieves highest recognition rate compared to the other state-of-the-art methods. © 2017, Springer Science+Business Media, LLC.

Author Keywords
Bilateral filter; Bilateral-Harris corner interest point; Interest point detector; Scale invariant feature transform (SIFT)

ISSN: 13807501
CODEN: MTAPF
2-s2.0-85021699391

76) Kala, R., Deepa, P.

Adaptive hexagonal fuzzy hybrid filter for Rician noise removal in MRI images
(2018) *Neural Computing and Applications*, 29 (8), pp. 237-249. Cited 19 times.

DOI: 10.1007/s00521-017-2953-4

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Abstract
Magnetic resonance images (MRIs) are sensitive to redundant Rician noise. The proposed adaptive hexagonal fuzzy hybrid filtering technique adapts itself to remove Rician noise variances. The removal of noise variance is performed by constructing a hexagonal membership function along with local and nonlocal filters. The statistical feature such as local mean (μi) and global mean (μg) is determined to find fuzzy weights by constructing a hexagonal membership function for nonlocal filter to preserve the structural information and for local filter to preserve edges. The restoration is performed by multiplying its corresponding fuzzy weight with the restored image of local and nonlocal filter in order to improve the quality of an image. Detailed simulation is performed for Brain Web database and real MRI images at various noise levels using the proposed adaptive hexagonal fuzzy hybrid filtering algorithm and existing algorithms. The visual and diagnostic qualities of the denoised image are well preserved for the proposed adaptive hexagonal fuzzy hybrid filter both at low and high densities of Rician noise. © 2017, The Natural Computing Applications Forum.

Author Keywords
Fuzzy logic; Hybrid filter; Magnetic resonance imaging; Rician noise

ISSN: 09410643
2-s2.0-85016116298

77) Arul Jeya Kumar, A.[a] , Ashok Kumar, I.[b] , Srinivasan, V.[c] , Mohamad Raffi, N.[d]

Wear study on basalt, flax and hybrid fiber reinforced phenolic composites
(2018) *Journal of Advanced Microscopy Research*, 13 (1), pp. 65-71. Cited 1 time.

DOI: 10.1166/jamr.2018.1359

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Abstract
Fiber reinforced polymer composites exhibits excellent mechanical and tribological properties. Due to this reason they are used in many engineering applications such as transmission and brake systems. In the present study, the wear mechanism of flax and basalt fibers reinforced phenolic composites were studied by using a pin on disc wear tester. The sliding conditions such as sliding velocity and normal force are varied from 0.1 to 0.5 m/s and 9.81 N to 49.04 N respectively. The wear map of worn out specimens were analyzed using wear mechanism map developed by using Fuzzy Clustering Method. Scanning Electron microscopy photographs were examined and wear map is correlated. Different wear mechanisms that dominated a particular wear regime were discussed in this paper. Copyright © 2018 American Scientific Publishers All rights reserved.

Author Keywords
Basalt and Flax Reinforced Composites; Brake Pad Material; Fuzzy Clustering Method; Phenolic Resin Composites; Wear Mechanism Maps

ISSN: 21567573
2-s2.0-85049241108

78) Arul Jeya Kumar, A.[a] , Ashok Kumar, I.[b] , Srinivasan, V.[c] , Mohamad Raffi, N.[d]

Mechanical characteristics of chitosan dispersed poly lactic acid/basalt fiber hybrid composites
(2018) *Journal of Advanced Microscopy Research*, 13 (1), pp. 54-60.

DOI: 10.1166/jamr.2018.1357

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Abstract
This paper focus on mechanical characterization of Chitosan (CS) particles dispersed Poly lactic acid (PLA) reinforced basalt fiber (BF) hybrid composites. Hybrid composites with different weight percentage of PLA, BF and CS were prepared by solid state reaction blending (SSRB) in twin screw extruder and specimens were prepared by injection moulding technique. The properties of injected moulded composites were extensively examined by tensile test, flexural test, and impact test. It was found that the increased weight percentage of basalt fibers and chitosan particles in poly lactic acid exhibits good mechanical properties. It is demonstrated in this paper BF and CS were will incorporated and uniformly distributed using Scanning electron microscopy. The optimum weight percentage of BF and CS in PLA composites was found to be 25 wt% and 10 wt% respectively. Copyright © 2018 American Scientific Publishers All rights reserved.

Author Keywords
Injection Moulding; Mechanical Properties; PLA/Chitosan/Basalt Fiber Hybrid Composites; Scanning Electron Microscopy; Solid State Reaction Blending

ISSN: 21567573
2-s2.0-85049237956

79) Rajakumar, C.[a] , Jeyapriya, S.P.[b] , Meenambal, T.[b]

Characterization and effective utilization of coal ash with geosynthetics in pavement subgrade
(2018) *Indian Journal of Environmental Protection*, 38 (3), pp. 234-238. Cited 3 times.

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Abstract
Pavements on black cotton soils fail during adverse weather conditions due to swelling and shrinkage characteristics of such soils. Stabilization of black cotton soils, therefore, becomes mandatory. Geosynthetics are soil stabilization materials used to improve soil conditions in various applications. Coal ash is available at low cost and it is utilized for the stabilization of black cotton soils. The present study aims to utilize coal ash effectively in pavement subgrade. In phase I of the research, index and engineering properties of virgin soil is studied and the soil is classified under CH (clay of high compressibility) category. Coal ash is added to the soil by 10%, 20%, 30%, 40%, 50% replacements to the weight of soil. The shear strength of virgin soil is 90.60 kN/m2 at an optimum moisture content of 21% and maximum dry density of 1.6807g/cc. The California bearing ratio (CBR) values of the virgin soil under unsoaked and soaked conditions are 5.33% and 2.84%, respectively. This study shows that the shear strength, optimum moisture content, maximum dry density is maximum at an optimum of 10% addition of coal ash to the soil. Atterbergs limits and plasticity index decreases with the addition of coal ash. © 2018 - Kalpana Corporation.

Author Keywords
Black cotton soil; California bearing ratio (CBR); Geosynthetics; Maximum dry density; Optimum moisture content; Unconfined compressive strength; Waste coal ash

ISSN: 02537141
CODEN: IJEPD
2-s2.0-85047884251

80) Suthanthira, M.[a] , Balaraman, S.[b]

A novel control strategies to enhance the life cycle of the battery in a DC grid
(2018) *Journal of Renewable and Sustainable Energy*, 10 (2), art. no. 023501, .

DOI: 10.1063/1.5000887

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Abstract
This paper presents a unique control strategy for reducing the number of charge/discharge cycles of a battery in a standalone photovoltaic system with Direct Current (DC) loads. The fluctuation in both photovoltaic power and load power affects the DC bus voltage. Regulation of DC link voltage leads to a random and frequent charging/discharging profile for the battery, which in turn has a detrimental effect on the life of the battery. The proposed scheme involves a two layered voltage regulation for the DC voltage by incorporating a supercapacitor along with the battery. Two different control methods, namely, Integer order Proportional Integral Derivative (PID) and Fractional order PID, have been designed for the proposed system, and their performance has been discussed. Simulations of the proposed system with two different control methods are implemented in MATLAB for validating the proposed control algorithm, and its performance under various operating conditions of the load has been analyzed. © 2018 Author(s).

ISSN: 19417012
2-s2.0-85044421124

81) Tamil Selvi, P.[a] , Baskaran, K.[b]

Enhanced energy saving tree based clustering with multiple input and multiple output
(2018) *Journal of Computational and Theoretical Nanoscience*, 15 (3), pp. 773-780.

DOI: 10.1166/jctn.2018.7158

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Abstract
In Wireless sensor network is important factor in many applications, like robotics application. Sensor collects the data, transmitted to cluster head with suitable channel, transmitting data packet failure to receive because of overload occurred. For multiple input and multiple output with clustering perform multi task at same time, it cause many interference during communication time, each time data packets gets dropped. Propose Energy saving tree based clustering with multiple input and multiple output (ETCMIMO) algorithm, multi task is performed in efficient manner, to minimize node resource utilization in communication period. Cluster head node gather data packets from cluster member in tree format, all nodes enable to receive packets, so easy to receive data packets with different cluster nodes. It minimizes the packet loss and network overhead, because provide link between all communicating nodes in tree structure and enhance packet delivery ratio. Lot of energy is saved by using proposed energy saving method.

Author Keywords
Channel Allocation; Clustering with Multiple Input and Multiple Output; Energy Saving Tree Based Clustering

ISSN: 15461955
2-s2.0-85044418099

82) Sujitha, J.[a] , Baskaran, K.[b]

Genetic Grey Wolf Optimizer Based Channel Estimation in Wireless Communication System
(2018) *Wireless Personal Communications*, 99 (2), pp. 965-984. Cited 15 times.

DOI: 10.1007/s11277-017-5161-8

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Abstract
Various methods are available for channel estimation in the orthogonal frequency division multiplexing and orthogonal frequency and code division multiplexing (OFCDM) based wireless communication schemes. Along with this, the most utilized techniques are namely the minimum mean square error (MMSE) and least square (LS). The process of LS channel estimation method is simple but it occupies a very high mean square error. On the other hand, the performance of MMSE is better than LS in terms of SNR, though it shows high computational complexity. Compared to MMSE and LS based techniques, the combination of MMSE and LS techniques using evolutionary programming reduces the error significantly to receive exact signal. In this study, we propose a hybrid method namely GGWO that includes grey wolf optimization (GWO) and genetic algorithms (GA) for estimate the channel in MIMO–OFCDM schemes. At first, the best channel is estimated using GWO and afterwards, the MMSE and LS are hybridized through GA for calculating the best channel to decrease error. Overall, the GWO and GA contribute in fine tuning the obtained channel scheme so that the channel model is derived further to correlate with the ideal scheme. Our results demonstrate that the proposed scheme is superior to conventional MMSE and LS in terms of BER and SNR.

Author Keywords
Channel estimation; Genetic algorithm; Grey wolf optimizer; LS; MMSE; MSE; OFCDM; OFDM; SNR

ISSN: 09296212
CODEN: WPCOF
2-s2.0-85039552206

83) Jeyapriya, S.P., Shazli, L.

Study on the remediation of textile effluent contaminated soil using electrokinetic and biological methods
(2018) *Ecology, Environment and Conservation*, 24, pp. S202-S209.

Government College of Technology, Thadagam Main Road, Coimbatore, Tamil Nadu, 641 013, India

Abstract
Soil contamination is a major issue all around the globe due to improper disposal of wastes on the ground and the effluent discharged from the polluting industries. Controlling soil contamination or remediation of contaminated site has become a topic of interest of research in the recent past. In the present study, soil remediation by two different techniques namely Electrokinetic method and biological method were employed to remove the heavy metals from soil which was contaminated by the effluent discharged from a textile industry. In Electrokinetic method, three different electrolytic solutions were used namely tap water, EDTA and Citric acid for a selected retention time of 4 hours and 8 hours. Results showed that Citric acid is efficient in the removal of Cr, Cu and Pb whereas EDTA is effective in the removal of Zn. Use of Reactive peat moss barrier, a biological method was also used to study the mobility and sorption of heavy metals for varying periods such as 7 days, 14 days, 30 days and 60 days. Peat moss barrier due to its high organic content is capable of decontaminating the heavy metals. The barrier used in the experimental study removed 46% of Cr and 44% of Pb in a contact time of 60 days.

Author Keywords
Biological method; Contaminated soil; Electrokinetic method; Heavy metals; Retention time

ISSN: 0971765X
CODEN: EECOF
2-s2.0-85043981981

84) Saravanan, K.[a] , Purusothaman, T.[b] , Kavitha, K.V.N.[a]

Compressive sensing based image encryption scheme
(2018) *ARPN Journal of Engineering and Applied Sciences*, 13 (4), pp. 1381-1385. Cited 1 time.

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Abstract
On the basis of a compressive sensing technique, an encryption scheme is proposed in order to improve security for the image. In the proposed algorithm, Discrete Wavelet Transform is applied to the plain image in order to transform it into many wavelet coefficients and then those coefficients are in turn confused using zigzag confusion. Finally they are converted into a cipher image by applying the proposed compressive sensing technique. Randomly generated 256 bit key is used to calculate the skew tent map, which further forms the basis for creating the measurement matrix used in compressive sensing. Simulation results show good performance for the proposed algorithm over the existing algorithms.

Author Keywords
Compressive sensing; Cryptography; Steganography

ISSN: 18196608
2-s2.0-85042673536

85) Kevin Kumar, V.[a] , Rajnish, K.N.[a] , Muthukumaran, C.[b] , Manojkumar, N.[a]

Computational and functional analysis of an alkaline serine kinase gene (aprN) from the genome of Bacillus subtilis NRRL B -14196
(2018) *Research Journal of Biotechnology*, 13 (2), pp. 64-67.

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Abstract
The incidence of cardiovascular disease has been increasing in recent years. Medications used for treatment of stroke include enzymes such as streptokinase and tissue plasminogen activators. Due to the high medication cost and their side effects, research has been aimed at the development of fibrinolytic enzymes from microbial sources. Most of the fibrinolytic enzymes are serine kinases and so far, Bacillus sp is the choices for microbial sources. The present study attempts to describe the bioinformatics and experimental validation of a Bacillus subtilis strain that produces alkaline serine kinase In this study, a combination of in silico analysis and experimental validation of an alkaline serine kinase from Bacillus subtilis NRRL B-14196 was performed. The results of bioinformatics analyses were validated using experimental and literature references. We have analysed the Bacillus subtilis NRRL B-14196 genome which harbours a putative gene that is annotated as alkaline serine proteases. Conserved domain analysis predicted it to be a member of the serine protease family of peptidases. The predicted theoretical pI and aliphatic index values suggested AprN as a stable protein.

Author Keywords
Alkaline serine kinase; Bacillus subtilis; Conserved domain; Sequence alignment

ISSN: 09736263
2-s2.0-85041211183

86) Sakthivel, R.[a] , Ramesh, K.[b] , Purnachandran, R.[a] , Mohamed Shameer, P.[a]

A review on the properties, performance and emission aspects of the third generation biodiesels
(2018) *Renewable and Sustainable Energy Reviews*, 82, pp. 2970-2992. Cited 270 times.

DOI: 10.1016/j.rser.2017.10.037

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Abstract
In the effect of robust industrialization and rapid augmentation of a number of fleets, there has been a huge rise in the fossil fuel consumption. Tremendous increase in global warming threatens the ecological balance of the earth. Based on the recent sorts of hardship about the fuel, researchers are profoundly pondered over the field of renewability, environmentally friendly and economically doable. In recent decades biodiesel fuel becomes the center of attraction among researchers since it is renewable, bio degradable, non-noxious, eco-friendly and sustainable. This review paper highlights and reviews the properties of prosperous variety of the biodiesel fuels derived from non-edible feedstocks which are termed as third generation biodiesel and its effects on the performance and emissions of the diesel engines. It was observed that the physicochemical properties of the biodiesel differ based on the types of feedstocks and also have a considerable effect on the potential performance of engine and dynamic characteristics of emission level. Also, the usage of biodiesel commonly leads to a reduction in noxious pollutants like carbon monoxide, unburnt hydrocarbon and particulate matter with an obvious increase in fuel consumption and NOx emission. This review provides a prospective strategy for the researchers for enhancing the engine performance and emission characteristics by using the third generation biofuels and its blends with the productive marvelous outcomes. © 2017 Elsevier Ltd

Author Keywords
Algae; Animal fat; Biodiesel; Emission; Fish oil; Waste cooking oil

ISSN: 13640321
CODEN: RSERF
2-s2.0-85034991119

87) Athena, J.[a] , Sumathy, V.[b] , Kumar, K.[c]

An identity attribute–based encryption using elliptic curve digital signature for patient health record maintenance
(2018) *International Journal of Communication Systems*, 31 (2), art. no. e3439, . Cited 11 times.

DOI: 10.1002/dac.3439

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Abstract
Providing security to the data that stored in personal health record (PHR) is an emerging and critical task in recent years. For this purpose, some of the encryption and key generation techniques are developed in the traditional works. But it has the drawbacks such as lacks in access control policies, reduced security, and ineffective. So this work implemented the efficient techniques, namely, elliptic curve Diffie-Hellman for the secret key generation and identity attribute–based encryption for improving the security of the cloud data. Initially, the cloud user can request the patient's data to the PHR admin, and then they can generate the secret by using the elliptic curve Diffie-Hellman algorithm. The key that used for encryption and decryption is generated by using the identity attribute–based encryption technique. Then, the access control is provided to the users based on their roles. The requested data are encrypted by applying the advanced encryption standard technique. After that, the elliptic curve digital signature algorithm is used to generate the digital signature for the encrypted data. Furthermore, it is verified with the user's digital signature; if it matches, the data can be accessed by the user with the help of advanced encryption standard decryption mechanism. Finally, the authenticated user can able to access the patient's data from PHR. In experiments, the performance of the proposed encryption and key generation technique is evaluated and compared with the existing techniques for proving the effectiveness of the implemented system.

Author Keywords
cloud computing; decryption; Diffie-Hellman (DH); elliptic curve cryptography (ECC); encryption; key exchange; personal health record (PHR); security

ISSN: 10745351
CODEN: IJCYE
2-s2.0-85031704773

88) Sundaram, P.V.[a] , Singaram, J.[b] , Ashokan, T.[a]

Detoxification of food-waste hydrolysate to enhance lipid production in M. Pulcherrima - An alternative feedstock for biodiesel
(2018) *International Journal of Environment and Sustainable Development*, 17 (2-3), pp. 151-161. Cited 4 times.

DOI: 10.1504/IJESD.2018.094026

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Abstract
One of the alternative ways to produce biodiesel in a sustainable manner, without contending with food crops, is to use microbes. Microbial oil is a potential feedstock for the biodiesel industry. In this study, oleaginous yeast (Metschnikowia pulcherrima) was used to produce lipid from the carbon source obtained from food waste hydrolysate. Lime and activated charcoal were used to detoxify the hydrolysate and among these detoxifiers, activated charcoal increased the C/N ratio to 76. Fermentation was done in 5 L bioreactor and biomass yield of 12.8 g/L was derived after 96 hours of cultivation. The lipid content was 21.1% and lipid yield was 2.7 g/L with COD removal of 52%. The obtained lipid was analysed using Fourier transform infra-red (FTIR) and the result signifies that the lipid produced using the detoxified food waste hydrolysate could

be used as an effective feedstock for biodiesel production. Copyright © 2018 Inderscience Enterprises Ltd.

Author Keywords
C/N ratio; Detoxification; Food waste hydrolysate; FTIR; Lipid; Metschnikowia pulcherrima

ISSN: 14746778
CODEN: IJESG
2-s2.0-85115873301

89) Rama, M.[a] , Shanthi, V.M.[b]

EXPERIMENTAL STUDY on SEDIMENTATION REMOVAL of PERVIOUS CONCRETE [EKSPERYMENTALNE BADANIE DOTYCZĄCE USUWANIA BETONU JAMISTEGO NA DRODZE SEDYMENTACJI]
(2018) *Archives of Civil Engineering*, 64 (1), pp. 181-195. Cited 4 times.

DOI: 10.2478/acc-2018-0012

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Abstract
Pervious concrete is a unique and effective material used to tackle important environmental problems, to maintain green, sustainable growth, and to reduce storm water runoff and pollutants. Clogging of pervious concrete is an important potential issue in serviceability, considered one of the primary limitations of pervious concrete systems. The sediment deposition pattern of pervious concrete was determined using three clogging materials: clay, sand, and clayey silty sand. The clogged specimens were cleaned by pressure washing, vacuuming, and a combined method. In total, ten clogging and cleaning cycles were carried out on each sample to evaluate the draining capacity of the pervious concrete. The clogging test was assessed by measuring the infiltration rate during clogging and after cleaning, for each cycle. The experiment results showed that a reduction in permeability due to different types of sedimentation material as well as recovery in permeability was achieved after applying various cleaning methods. © 2018 Sciendo. All rights reserved.

Author Keywords
Clogging; Permeability; Pervious concrete; Sedimentation; Storm water

ISSN: 12302945
CODEN: ACIEE
2-s2.0-85115106146

90) Asokan, T.[a] , Singaram, J.[b] , Sundaram, P.V.[a]

Production of biodiesel feedstock - Microbial lipid from slaughterhouse wastewater
(2018) *International Journal of Environment and Sustainable Development*, 17 (2-3), pp. 113-123. Cited 2 times.

DOI: 10.1504/IJESD.2018.094035

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Abstract
Biodiesel is an alternative diesel fuel, which can be synthesised from renewable biological sources. Lipid production using carbon source in wastewater is an emerging process as it purely depends on waste source. In the present study, the ability of Yarrowia lipolytica to accumulate lipids using slaughterhouse wastewater as substrate was investigated. Using raw wastewater as substrate, maximum lipid content (0.43 g/L) and biomass (1.2 g/g) were obtained. Various pre-treatment methods like acid, alkaline, heat, activated carbon and sawdust treatment were performed and two-fold increase in C/N ratio was observed in combined pre-treatment of sawdust with KOH. Using pretreated wastewater, lipid accumulation was enhanced to 32% with lipid content of 0.64 g/L. Results of this study conclude that the pre-treated slaughterhouse wastewater can be employed as a better feedstock for lipid production using Yarrowia lipolytica. Copyright © 2018

Inderscience Enterprises Ltd.

Author Keywords
C/N ratio; Oleaginous microorganisms; Pre-treatment; Slaughterhouse wastewater; Yarrowia lipolytica

ISSN: 14746778
CODEN: IJESG
2-s2.0-85090674220

91) Gopinath, M.[a] , Pulla, R.H.[a] , Rajmohan, K.S.[a] , Vijay, P.[a] , Muthukumaran, C.[b] , Gurunathan, B.[c]

Bioremediation of Volatile Organic Compounds in Biofilters
(2018) *Energy, Environment, and Sustainability*, pp. 301-330. Cited 7 times.

DOI: 10.1007/978-981-10-7485-1_15

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Abstract
In India, 12 lakhs deaths per annum take place due to air pollution according to a report by Greenpeace organization. Volatile organic compounds are major air pollutants which are released into the environment through mobile sources, stationary sources, area sources, and natural sources. Stationary sources such as petrochemical and pharmaceutical industries release VOCs like toluene which is known to cause several health hazards including lung cancer. In addition to it, VOCs pollute air, soil, and water which are a growing environmental concern. Based on the concentration level of the VOCs, several removal techniques have been employed to combat VOCs. Non-biological methods such as ozonation, absorption, adsorption, incineration, catalytic oxidation, condensation, membrane separation are being employed. Several biological methods ranging from biotrickling filters to biofilters have been demonstrated, and they are found to be economical. The biofilters are simple to construct, easy to operate, and cost effective. Major advantage of this method is the pollutant is converted into biodegradable waste which can decompose within a moderate time frame, thus producing no secondary pollutants. In this chapter, biofilters, microorganisms, biofilter preparation and reaction mechanism are discussed. More emphasis was given on operation, processes, conditions, and stability of biofilters. The recent advancements in biofilters including application of foam for enhanced separation and the limitations of the biofiltration methods are also discussed. Future scope and summary of the chapter are given at the end of the chapter to provide an insight into biofilters research. © 2018, Springer Nature Singapore Pte Ltd.

Author Keywords
Biodegradation; Biofilters; Fungi; Lung cancer; Pollution; Reactors; Volatile organic compounds

ISSN: 25228366
2-s2.0-85083979175

92) Parvin, J.R.[a] , Vasanthanayaki, C.[b]

Memory efficient arbitrary tree architecture for wavelet packet transform
(2018) *Journal of Advanced Research in Dynamical and Control Systems*, 10 (11 Special Issue), pp. 723-730.

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Abstract
In this paper, a design strategy for obtaining memory efficient wavelet packet transform architecture has been derived. The proposed architecture has reduced the number of memory words, using convolution based architecture along with arbitrary tree structure. In traditional DWT architectures the hardware complexity was due to the use of frame buffer between levels

which is replaced by line buffer in the proposed architecture thereby reducing the memory complexity of the design. The proposed architecture is best suited for image compression to achieve higher compression ratio by using pipelining between decomposition levels. A detailed description of all the modules used in the proposed architecture is provided in this paper. The synthesis result about the complexity of the architecture has been discussed.

Author Keywords
Very Large Scale Integration (VLSI); Wavelet Packets; Wavelet Tree

ISSN: 1943023X
2-s2.0-85081575013

93) Kumar, N.M.[a] , Muthukumaran, C.[b] , Sharmila, G.[b] , Gurunathan, B.[c]

Genetically Modified Organisms and Its Impact on the Enhancement of Bioremediation
(2018) *Energy, Environment, and Sustainability*, pp. 53-76. Cited 48 times.

DOI: 10.1007/978-981-10-7485-1_4

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Abstract
Bioremediation is a process of degrading the environmental contaminants, that are introduced accidentally or purposely which cause hazardous effect on earth and harm the normal life process. The conversion of these contaminants into less toxic forms is the goal of bioremediation process that can be achieved by the use of microorganisms. The bioremediation approaches have more advantages when compared with the traditional methods, as it can be directly implemented at the targeted contaminant site. Even though some bacteria and fungus were employed to decompose the chemical compounds, but they have only limited ratio to metabolize the hydrocarbons on their own. The genetically modified organisms are applied nowadays in bioremediation process for effective removal of contaminants, where the indigenous microbes cannot degrade. Genetically modified microorganisms (GMOs) play an important role in remediating the industrial waste, reduce the toxicity of some hazardous compounds, and also help in removal of pollution by hydrocarbons and petrol discharges. A variety of molecular tools such as molecular cloning, horizontal transfer of DNA in bacteria, electroporation, protoplast transformation, biolistic transformation, conjugation and transformation of competent cells are available for the successful construction of GMOs. Transfer of gene into the bacteria makes it as a novel strain, for eliminating the hydrocarbon contaminants from the environment in minimal time. Similarly, removal of compounds such as xylene, toluene, octane, naphthalene and salicylate is coded on bacterial plasmids for successful degradation of the environment. This chapter represents the applications of genetically modified organisms in bioremediation processes, molecular tools used for construction of GMOs, pros and cons, ethical issues and laws governing the application of GMOs.

Author Keywords
Bioremediation; Electroporation; GMO; Molecular cloning; Protoplast transformation

ISSN: 25228366
2-s2.0-85076252343

94) Nigel, K.G.J.[a] , Rajeswari, R.[b] , Thomas, S.[a]

Smart control for low energy harvesting systems
(2018) *Journal of Advanced Research in Dynamical and Control Systems*, 10 (12), pp. 61-68.

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Abstract

In ever growing technology it has become an inevitable scenario of small gadgets usage for our daily needs. For such small applications the energy required for the gadgets can be generated form solar radiation, wind, vibration, etc., such generated energy have to be stored for an effective practise. This stored energy can be used for small devices garden lights, portable chargers, remote sensors, etc., Energy harvesting is becoming popular for low power electronic systems. Integrated Photovoltaic energy harvesting technology offers significant advantages over wired or solely battery-powered sensor solutions. Just like renewable sources, the associated power electronics circuits can also be controlled to achieve maximum power from these miniature systems. The main objective of this work is to develop a solar energy harvesting technique with an optimization scheme. An optimised energy harvesting scheme is proposed for the controlling the duty cycle of the converter according to varying maximum power point (MPP) to maximize the output power of the system.

Author Keywords
Buck converter; Duty cycle; Low power; Solar energy harvesting system

ISSN: 1943023X
2-s2.0-85063377800

95) Sugunadevi, M.[a] , Jeyapriya, S.P.[b]

Experimental study on piles with pile cap at varying position under different loading conditions
(2018) *International Journal of Engineering and Advanced Technology*, 8 (2), pp. 79-83. Cited 1 time.

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Abstract
High rise buildings and offshore structures are usually constructed over foundation which comprises of several number of piles connected together using pile cap. These piles and pile caps frequently are subjected to a mixture of lateral, vertical as well as twisting forces. Conventional method tends to emphasis predominantly on foundation resistance under vertical loading. The piles are essential subjected to horizontal loads along with vertical loads. Resistance to the vertical and the lateral loading is generally provided by base and side friction, pile-soil-pile cap interaction between pile and surrounding soil, position of the pile cap, number of piles and piles arrangement with respect to the loading direction. In this study, the piles are placed in the sand with pile cap i) above the soil surface at a height of 35mm ii) pile cap bottom resting on surface of soil medium iii) pile cap top placed at the surface of soil and iv) pile cap placed below soil surface to a depth of about 35mm. Experimental analysis were carried out for all the above cases under vertical, lateral and combined loading conditions. Parameters like position of the pile cap, quantity of piles and their arrangements were varied and analysed. The test results reveal that the pile cap placed below the soil surface increases lateral resistance capacity of the piles in the range of 56% to 66% compared with pile cap placed above the soil surface under both independent and combined loading conditions in cohesionless soil.

Author Keywords
Cohesion less soil; Lateral resistance capacity; Pile cap; Pile foundations; Pile-soil-pile cap interaction

ISSN: 22498958
2-s2.0-85062034922

96) Anbu Chudar Azhagan, S.[a] , Kathiravan, V.S.[a] , Sathiya Priya, N.[b]

Crystallization, habit modification and control of nucleation of glycine polymorphs from aqueous solutions doped with magnesium sulfate impurity
(2018) *Materials Science- Poland*, 36 (3), pp. 483-493. Cited 4 times.

DOI: 10.2478/msp-2018-0075

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Abstract
The influence of magnesium sulfate as an additive in the nucleation of α and γ-polymorphs of glycine crystallized from aqueous solutions has been explored for the first time. Based on crystallization experiments, it was concluded that lower concentration of magnesium sulfate, say less than 2 g/mL, favors α-nucleation sites, whereas the optimized concentration of magnesium sulfate impurity to yield γ-nucleation sites is 2 g/mL and above. The nucleation time span (in days), solubility and pH were measured for α- and γ-nucleation sites in the aqueous solutions doped with magnesium sulfate. The glycine polymorphs α- and γ-single crystals were grown by slow solvent evaporation technique at ambient temperature. Crystal habit of glycine polymorphs was investigated and analyzed using goniometry. The unit cell dimensions and space group of the as-grown crystal were identified by single crystal XRD analysis. Both α- and γ-polymorphs of glycine were characterized structurally by powder XRD studies. The percentage of magnesium present in the grown glycine crystals was estimated by inductively coupled plasma optical emission spectrometry elemental analysis (ICP-OES). The nonlinear optical properties of the γ-glycine crystals were examined by Q-switched high energy Nd:YAG laser. The second harmonic generation output efficiency of the as-grown gamma glycine single crystals was computed to be 1.31 times superior than that of the reference material potassium dihydrogen phosphate (KDP).

Author Keywords
Crystal morphology; Nucleation; Single crystal growth; Solubility; Solvents; X-ray diffraction

ISSN: 20831331
2-s2.0-85061403812

97) Anbarasan, T., Jayanthi, S., Ragina, Y.

Investigation on Synthesis of Biodiesel from Distillery Spent Wash using Oleaginous Yeast Metschnikowia Pulcherrima
(2018) *Materials Today: Proceedings*, 5 (11), pp. 23293-23301. Cited 10 times.

DOI: 10.1016/j.matpr.2018.11.063

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Abstract
The study was aimed at producing bio-diesel from lipids accumulated by micro-organisms grown in distillery wastewater. The raw waste was inoculated with Metschnikowia pulcherrima and was grown under varying conditions of pH, temperature, culture times etc. The raw wastewater had a COD of 86 g/l and total dissolved solids of 46.9 g/l. The conditions for maximum growth were analysed for the available C/N ratio of 11.4. The culture conditions for maximum growth were found to be pH 6.2, 300 C and 120 hours. The lipid extraction was done and lipids were used for Bio-diesel conversion. In-situ trans-esterification reaction was effected by base-catalysis using NaOH and methanol to form fatty acid methyl esters. The yield reached up to 1.4 g/l. © 2018 Elsevier Ltd.

Author Keywords
Bio-diesel; C/N ratio; Distillery spentwash; Microbial lipids

ISSN: 22147853
2-s2.0-85060889790

98) Krishnaraja, A.R.[a] , Kandasamy, S.[b] , Kowsalya, M.[a]

Influence of polymeric and non-polymeric fibers in hybrid engineered cementitious composites
(2018) *Revista Romana de Materiale/ Romanian Journal of Materials*, 48 (4), pp. 507-513. Cited 9 times.

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Abstract
In this study the mechanical performance of hybrid engineered cementitious composite using polymeric fibers and glass fibers are investigated. Nine different mixes are used in this study, in which three mixes with mono fiber and the remaining mixes are developed with hybrid fiber reinforcement. The hybridation with low and high modulus fibers are engaged to increase the mechanical performance of the engineered cementitious composite. This process has a notable achievement in the direct tensile strength and young's modulus of the ECC mix. The outcome revealed that, poly vinyl alcohol of volume fraction 0.65% and glass of volume fraction 1.35% displayed significant and reasonable characteristics than the other mixes.

Author Keywords
ECC; Glass fiber; Mechanical properties; Micro structural studies; Polymeric fibers

ISSN: 15833186
2-s2.0-85060529085

99) Kanthalakshmi, S.[a] , Annal, W.P.[b]

Real time implementation of adaptive sliding mode controller for a nonlinear system
(2018) *Studies in Informatics and Control*, 27 (4), pp. 395-402. Cited 4 times.

DOI: 10.24846/v27i4y201803

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Abstract
The objective of this work is to design a controller that may maintain the level of a conical tank which has nonlinear dynamics. Because of the nonlinearity present in the dynamics of the plant, the controller parameters have to be dynamic as well, so that the performance of the system may be enhanced. Hence sliding mode controller which is robust is designed with an adaptive mechanism, so that it could cope up with the varying dynamics of the system. In this paper, three different algorithms were used to study the system behaviour by using simulation. These algorithms were also implemented in real time. When its performance was observed in real time, the adaptive sliding mode controller proved to outperform when compared to reaching law and super twisting algorithm based sliding mode controllers.

Author Keywords
Adaptive control; Nonlinear systems; Pneumatic actuators; Robustness; Sliding mode control

ISSN: 12201766
2-s2.0-85059422297

100) Kasthuri, N.[a] , Muthukumaran, K.[b] , Vairam, S.[b] , Arulanantham, A.[c]

Ecological study on phosphorylated amberlite IRA 400 resin for the removal of Cd (II) from aqueous solutions
(2018) *Ekoloji*, 27 (106), pp. 223-231.

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Abstract
According to aquatic ecology, the modified resin prepared from Amberlite IRA 400, acts as an adsorbent for the removal of cadmium(II) from aqueous solutions. In batch ecological studies, the optimization of pH, contact time and resin dose on removal of metal were studied. P=O functional groups that exist on the resin material were used to remove the metal in the aqueous solution environment. The isotherm patterns of Langmuir and Freundlich were analyzed from the experimental data. The feasible, spontaneous and exothermic nature of adsorption was confirmed in this ecological study. The adsorption kinetics study follows the pseudo-second-order model and film diffusion process. © Foundation Environmental Protection &

Research-FEPR.

Author Keywords
Adsorption; Aquatic ecology; Cadmium (II); Film diffusion process; Isotherm; pH optimization

ISSN: 13001361
2-s2.0-85058426456

101) Narasimman, S.[a] , Balakrishnan, L.[b] , Meher, S.R.[c] , Sivacoumar, R.[d] , Rufus, E.[d] , Alex, Z.C.[d]

Wavelength Dependent Ammonia Sensing Characteristics of SnO2 based Fiber Optic Sensor
(2018) *IOP Conference Series: Materials Science and Engineering*, 360 (1), art. no. 012055, . Cited 3 times.

DOI: 10.1088/1757-899X/360/1/012055

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Abstract
SnO2 nanoparticles were synthesized by co-precipitation technique. The synthesized SnO2 nanoparticles were characterized by X-ray diffraction (XRD), scanning electron microscope (SEM) and UV-visible diffused reflectance spectrometer (DRS). The XRD results addressed that the SnO2 nanoparticles was crystallized in rutile tetragonal structure. The SEM analysis confirms that the prepared nanopowder is composed of nanoparticles. Analysis of the DRS UV-Vis spectrum showed that the band gap of the synthesized SnO2 is to be ~3.4 eV. The small cladding portion of the optical fiber was replaced with the synthesized nanoparticles. The ammonia sensing characteristics of the prepared SnO2 nanoparticles were analyzed for different wavelength ranges (red, yellow and blue) using polymethyl methacrylate fiber. It has been found that the synthesized SnO2 nanoparticles shows high sensitivity (~23) in yellow wavelength range compared with red and blue wavelength ranges at room temperature.

Author Keywords
Ammonia sensing; Fiber optic sensor; Nanopowder; SnO2; Wavelength dependent sensing

ISSN: 17578981
2-s2.0-85056669224

102) Anna Jacob, A.[a] , Balakrishnan, L.[b] , Meher, S.R.[c] , Sivacoumar, R.[d] , Shambavi, K.[e] , Alex, Z.C.[d]

Ammonia, acetone and ethanol gas sensing characteristics of CuO thin films grown by sputtering
(2018) *IOP Conference Series: Materials Science and Engineering*, 360 (1), art. no. 012062, . Cited 5 times.

DOI: 10.1088/1757-899X/360/1/012062

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Abstract
Here, we have reported the sensing characteristics of CuO thin films towards volatile gases like ammonia, acetone and ethanol. The CuO films were deposited on glass substrate by RF magnetron sputtering at 350 °C and 400 °C. The characteristics of CuO thin films grown at both temperatures were analyzed using X-ray diffractometer (XRD), UV-Vis

spectrometer, atomic force microscope (AFM), scanning electron microscope (SEM) and Fourier transform infrared spectrometer (FTIR). The thin films showed mesoporous morphology with average crystallite size of 78 nm and 36 nm for films grown at 350 °C and 400 °C, respectively. As the film grown at 400 °C showed better properties, it has been preferred for the gas sensing analysis. Gas sensing properties of the film towards different concentration (50-250 ppm) of ammonia, acetone and ethanol were studied in chemi-resistive mode. As expected, an increase in resistance with concentration of gases was observed due to the p-type nature of CuO thin films. Further, the film showed comparatively better sensitivity towards ethanol than other gases.

Author Keywords
CuO; Ethanol sensing; Gas sensor; sputtering; Thin film

ISSN: 17578981
2-s2.0-85056637432

103) Chintam, J.R., Daniel, M.

Real-power rescheduling of generators for congestion management using a novel satin bowerbird optimization algorithm
(2018) *Energies*, 11 (1), art. no. 183, . Cited 51 times.

DOI: 10.3390/en11010183

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Abstract
In this paper, an efficient meta-heuristic satin bowerbird optimization (SBO) algorithm is presented for congestion management (CM) in the deregulated power system. The main objective of CM is to relieve congestion in the transmission lines using a generation rescheduling-based approach, while satisfying all the constraints with minimum congestion cost. The SBO is a nature-inspired algorithm, developed based on the 'male-Attracts-The-female for breeding' principle of the specialized stick structure mechanism of satin birds. The proposed approach is effectively tested on small and large test systems, namely, modified IEEE 30-bus, modified IEEE 57-bus, and IEEE 118-bus test systems. The constraints like line loading, line limits, generator limits, and bus voltage impact, etc., are incorporated into this study. The proposed technique gives superior results with regards to congestion cost and losses compared with various recent optimization algorithms. © 2018 by the authors. Licensee MDPI, Basel, Switzerland.

Author Keywords
Congestion management; Deregulation; Generator rescheduling; Optimal power flow; Satin bowerbird optimizer

ISSN: 19961073
2-s2.0-85055112379

104) Yuvaraj, S.[a] , Malayalamurthi, R.[b] , Raja, K.V.[c] , Prabhu, M.[a] , Kumar, V.P.[a] , Pandiyan, B.[a] , Rahul, G.[a]

Assessment of contact characteristics of soft fingertip applied for multi-profile grasping
(2018) *IOP Conference Series: Materials Science and Engineering*, 402 (1), art. no. 012118, . Cited 3 times.

DOI: 10.1088/1757-899X/402/1/012118

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Abstract
This paper presents experimental study of contact parameters for soft hemispherical fingertip pressed against target profiles. In design and development of soft robotic fingertips, in-depth knowledge of realistic contact parameter is required. Soft fingers are easily conformed to the geometry of the target profiles like human finger. In this work, fingertip is pressed against convex, concave and flat profiles experimentally with numerical validation. The magnitude of contact radius is

calculated and compared for different profiles. From close observation it is observed that contact radius is higher for curved profiles when compared with a flat profile for a particular combination.

Author Keywords
Conformal contact; Contact mechanics; Grasping; Soft finger

ISSN: 17578981
2-s2.0-85054275398

105) Balakrishnan, S., Rajeswari, B.

Optimization of process parameters of Al-B4C hybrid composites using response surface methodology
(2018) *IOP Conference Series: Materials Science and Engineering*, 402 (1), art. no. 012147, .

DOI: 10.1088/1757-899X/402/1/012147

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Abstract
In this contemporary work, particulates of coconut shell ash and boron carbide were reinforced with an atomized aluminium powder hybrid composites was prepared by the powder metallurgy process. The process parameters in powder metallurgy influence the various material properties. Compaction pressure, sintering temperature and weight percentage of coconut shell ash were selected as influencing parameters. An empirical relationship has been formulated using response surface methodology. The properties such as hardness, relative density and percentage of porosity are considered a response. Variance of analysis was employed to determine the significance of process parameters on the responses and to determine the optimal combination of parameters. High harness value of 165.1 HV, maximum density of 0.819 g/cc and minimal porosity of 8.15 % was obtained for the optimum condition. © Published under licence by IOP Publishing Ltd.

Author Keywords
Coconut shell ash; Powder metallurgy; Response surface methodology

ISSN: 17578981
2-s2.0-85054250357

106) Vedhanayaki, S.[a] , Madavan, R.[b] , Balaraman, S.[a] , Saroja, S.[c] , Ramesh, S.[b] , Valarmathi, K.[b]

Fuzzy logic-based decision making for selection of optimized liquid insulation blend
(2018) *Advances in Intelligent Systems and Computing*, 758, pp. 547-555.

DOI: 10.1007/978-981-13-0514-6_53

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Abstract
The introduction of ester oils replaces existing liquid insulation system (mineral oil) in transformers. Since ester oils are eco-friendly and biodegradable in nature. In this work, mineral oil and rapeseed oil are used as base fluids. Further, MO and RO are blended together at various ratios from 10 to 90%. The important characteristics like breakdown voltage, acidity, and dielectric loss of the oil samples are analyzed. Using fuzzy logic method, best optimistic liquid insulation sample is identified.

Author Keywords
Ester oil; Fuzzy logic; Liquid insulation; Mixed insulating liquids; Optimistic sample; Transformer

ISSN: 21945357
2-s2.0-85052970269

107) Sivaranjani, T.[a] , Mahendran, V.S.[a] , Dhiviyalakshmi, L.[a] , Aisvarya, S.[a] , Aiswarya, P.[a] , Manju, R.[a] , Baskaran, K.[b] , Hari Narayanan, P.[c]

Fabrication of PLLA nanofibers as synthetic grafts for anterior cruciate ligament reconstruction
(2018) *Materials Today: Proceedings*, 5 (8), pp. 16585-16591. Cited 3 times.

DOI: 10.1016/j.matpr.2018.06.015

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Abstract
Hypertension and flexion in knee will cause anterior cruciate ligament (ACL) injury resulting in rotational instability of the knee. Synthetic grafts made from Polylactice acid are efficient in terms of biomechanical compatibility and easy manufacturing method makes PLLA suitable for ACL replacement. PLLA nanofibre is synthesized by mixing the polymer with chloroform in 8:100 proportions and the fibres are drawn using electro spinning technique. Mechanical and Characterization testing's such as AFM, XRD and FTIR where done on the fibre. Polymer concentrations of 5- 10 wt% are the appropriate range to produce bead free fibres. The Needle-to-collector tip distance of 12.5cm, electro spinning voltage of 18kV and the concentration 8wt% should be maintained to synthesis fibres with desired characteristics. Tensile strength (40.68 ± 2.99MPa)and flexion strength (91 ± 3.55 MPa) of the PLLA nanofibre closely matches the natural ACL. Atomic Force Microscopy examination of the fibre shows smooth morphology with no bead formation and the length obtained is in the range of 3.4μm-3.8μm. XRD results shows 2 degree intensity drop which dictates that the fibre is devoid of crystals which is necessary for tissue engineering applications. the absorbance peaks in the FTIR shows the wavelength corresponding to of three main functional groups namely Carbonyl group (C=O), Alkenes (C=C), Hydroxyl group (-OH). The PLLA polymer when mixed with chloroform, the hydroxyl group gets added to the ring structure of the polymer. The integrity of the fiber also depends on the interatomic bonding between the solvent and the PLLA polymer. © 2017 Elsevier Ltd.

Author Keywords
AFM; Anterior Cruciate Ligament(ACL); Electro spinning; XRD

ISSN: 22147853
2-s2.0-85052917663

108) Deepak, M.S., Shanthi, V.M.

Member distortional buckling behaviour of hybrid double-i-box beams
(2018) *Canadian Journal of Civil Engineering*, 45 (8), pp. 605-622. Cited 7 times.

DOI: 10.1139/cjce-2017-0506

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Abstract
This paper compiles the experimental and finite-element parametric study on member distortional buckling behaviour of new built-up metal hybrid double-I-box beams (HDIBBs). The cross-section of this built-up beam is unique and looks similar to the shape of a double-I-box fabricated using four channel sections. The flange plates were provided with an intermediate stiffener. In these built-up beams there is more material in the flange portions far away from the horizontal centroidal axis of their cross-section. Hence, there is an increase in the flexural rigidity that enhances the moment capacity of the beam, under major axis bending. The geometry consists of torsionally rigid closed-box web portion that provides high resistance to minor axis lateral-buckling. The varying parameters considered were the ratio of yield stresses of the flange to the web steel plates, the ratio of breadth to the depth of the section, and the flange plate thickness. In the experimental programme, all the HDIBB members failed due to kinds of distortional buckling which was identified by web buckling and flange twist along edges. The results revealed that when flange plate slenderness increases there is a drop in the moment resistance capacity of the beams. The numerical study was performed using ABAQUS software. In comparison, there was good agreement

between experimental and numerical results. The validated finite element models were further extended to perform parametric studies on ideal HDIBB models. Both the experimental and parametric study results were compared with the predicted strengths using effective width method equations specified in the Euro code standards EN 3-1-3. It was found that the current Euro code design rules slightly over-estimate the distortional buckling resistance capacity of closed form built-up cold-formed steel members. A new design equation was formulated and recommended for estimating the reduction in distortional buckling moment resistance capacity for HDIBBs.

Author Keywords
Built-up; Cold-formed steel; Distortional buckling behaviour; Effective width method; Flange plate slenderness; Metal hybrid

ISSN: 03151468
CODEN: CJCEB
2-s2.0-85051106001

109) Nataraj, M.[a] , Balasubramanian, K.[a] , Palanisamy, D.[b]

Optimization of Machining Parameters for CNC Turning of Al/Al2O3 MMC Using RSM Approach
(2018) *Materials Today: Proceedings*, 5 (6), pp. 14265-14272. Cited 12 times.

DOI: 10.1016/j.matpr.2018.03.008

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Abstract
This paper discusses the influence of cutting variables such as feed, cutting speed and depth of cut at work-tool interface zone temperature and surface finish while machining aluminium alloy LM6 reinforced with Al2O3 metal matrix composites. Response surface methodology with central composite rotatable design matrix was employed to optimise and analyse the cutting variables. Second order regression models were developed for predicting the output responses and the adequacy of the developed model was tested using analysis of variance (ANOVA). ANOVA results revealed that the feed and depth of cut were the major influencing parameters for the work-tool interface temperature and cutting speed and feed were prominent influential parameters in surface roughness. The optimal parameters for multiple responses were arrived for the specified range of input parameters using overall desirability index.

Author Keywords
Design of Experiments; Desirability index; LM6; Metal matrix composites; RSM; Work-Tool interface temperature

ISSN: 22147853
2-s2.0-85049600005

110) Sanjai, M.[a] , Periyasamy, S.[b]

Production inventory model with reworking of imperfect items and integrates cost reduction delivery policy
(2018) *International Journal of Operational Research*, 32 (3), pp. 329-349. Cited 6 times.

DOI: 10.1504/IJOR.2018.092738

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Abstract
The classical EPQ model assumes that all items manufactured are of perfect quality. However, in real life production systems, due to various controllable and/or uncontrollable factors, the generation of defective items during a production run seems to be inevitable they should be reworked. A portion of non-conforming items produced is considered to be scrap, while the rest reworked in each cycle. This paper integrates cost reduction delivery policy into production inventory model with defective items with scrap and rework and finished items can only be delivered to customers at a fixed interval of time

during production downtime with the purpose of reducing holding cost. A suitable mathematical model is developed and the optimal production lot size which minimises the total cost is derived. An illustrative example is provided and numerically verified. The validation of result in this model was coded in Microsoft Visual Basic 6.0. Copyright © 2018 Inderscience Enterprises Ltd.

Author Keywords
Defective items; Delivery policy; Demand; Inventory; Production; Rework; Scrap

ISSN: 17457645
2-s2.0-85049591336

111) Nataraj, M.[a] , Balasubramanian, K.[a] , Palanisamy, D.[b]

Influence of Process Parameters on CNC Turning of Aluminium Hybrid Metal Matrix Composites
(2018) *Materials Today: Proceedings*, 5 (6), pp. 14499-14506. Cited 9 times.

DOI: 10.1016/j.matpr.2018.03.037

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Abstract
An effort has been made in this investigation to find the influence of turning process parameters on the machinability of hybrid metal matrix composite comprising alumina (Al2O3) and molybdenum disulphide (MoS2) particulates dispersed on aluminium casting alloy LM6 in turning process. Design of Experiments approach was used to plan the experiments and the acquired data were analysed using design expert software associated with response surface method (RSM). In this paper work cutting speed, feed and depth of cut were considered as input process parameters and the resultant force of cutting forces in three directions, Specific Cutting Pressure (SCP) and surface roughness Ra were considered as responses. Statistical analyses were carried out to estimate the performance of machining parameters. The influence of input parameters on machining-force, SCP and the surface roughness Ra were analysed using surface response graphs. The experimental study revealed that cutting speed and feed were the most influencing parameter that affects the machining force and SCP. © 2017 Elsevier Ltd.

Author Keywords
Machining-Force; RSM; SCP; Surface plot; Surface roughness

ISSN: 22147853
2-s2.0-85049590822

112) Srinivasan, V.P.[a] , Palani, P.K.[b] , Selvarajan, L.[c]

Experimental investigation on electrical discharge machining of ceramic composites (Si3N4-TiN) using RSM
(2018) *International Journal of Computational Materials Science and Surface Engineering*, 7 (2), pp. 104-115. Cited 19 times.

DOI: 10.1504/IJCMSSE.2018.092541

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Abstract
In this work, electrical discharge machining (EDM) of silicon nitride-titanium nitride (Si3N4-TiN) composites which have wide application in heat exchangers, wear-resistant parts, and gas turbines were carried out. Si3N4-TiN composites are fabricated by hot pressing and spark plasma sintering (SPS) process. Selection of appropriate machining parameters in

EDM is one of the most important aspects taken into consideration as these conditions to determine the important characteristics such as material removal rate (MRR) and electrode wear rate (EWR) among others. The main machining parameters such as gap voltage (V), current (I) and pulse-on time (Ton) were chosen to determine listed technological characteristics. The characteristic features of the EDM process are explored through response surface methodology (RSM) based on design of experiments (DOE). Moreover, L18 orthogonal array based on DOE to conduct of series of experiments has been adopted. From the results, it is evident that the current is the most significant factor as it influences both MRR and EWR. The high current increases the MRR and the less gap voltage reduces the EWR. The square profile machined with the voltage - 50 volts, current - 5 amps and pulse-on time - 500 µsec exhibits high MRR. Copyright © 2018 Inderscience Enterprises Ltd.

Author Keywords
Design of experiments; DOE; EDM; Electrical discharge machining; Electrode wear rate; EWR; Material removal rate; MRR; Response surface methodology; RSM; Si3N4-TiN; Silicon nitride-titanium nitride

ISSN: 17533465
2-s2.0-85049059023

113) Rajakumar, C.[a] , Jeyapriya, S.P.[b] , Meenambal, T.[b]

Stabilization of expansive subgrade soil with bagasse ash and geosynthetic reinforcement
(2018) *Indian Journal of Environmental Protection*, 38 (1), pp. 29-35. Cited 3 times.

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Abstract
Expansive soil deposits are problematic to structures built over them because of their tendency to swell on wetting and shrink on drying. To overcome this, properties of soil must be improved by artificial means known as 'soil stabilization'. Soil stabilization with the objective of improving or controlling its volume stability, strength and durability is needed. The project is proceeded with an objective to study the effect on replacement of clay with bagasse ash as stabilizing agent in varying proportions and to determine the optimum content of the same. In this phase, the engineering properties of clay, such as particle size distribution, Atterberg's limits, optimum moisture content, maximum dry density, unconfined compressive strength and California bearing ratio are determined. Based on the results, the clay is classified as clay of high compressibility (CH) as per BIS. Bagasse ash was added to clay in varying proportions from 0% to 20% and all the geotechnical properties are studied. The study highlights the significant increase in properties of clay obtained at 10% replacement of bagasse ash. © 2018 Kalpana Corporation.

Author Keywords
Atterbergs limit; California bearing ratio.; Expansive subgrade; Maximum dry density; Optimum moisture content; Unconfined compressive strength; Waste bagasse ash

ISSN: 02537141
CODEN: IJEPD
2-s2.0-85047799239

114) Babu, B.R.[a] , Thenmozhi, R.[b]

An investigation of the mechanical properties of Sintered Fly Ash Lightweight Aggregate Concrete (SFLWAC) with steel fibers
(2018) *Archives of Civil Engineering*, 64 (1), pp. 73-85. Cited 9 times.

DOI: 10.2478/ace-2018-0005

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Abstract
this study investigates the fresh and mechanical performance of concrete incorporating sintered fly ash lightweight aggregates (SFLWA) both with and without steel fibers. Comparative assessments of natural aggregates with sintered fly ash aggregates were evaluated. Mix design was obtained by the IS method for M30 grade concrete, and within the natural aggregates were replaced with 20%, 40%, and 60% amounts of SFLWA. The addition of SFLWA shows an increase in the workability of the concrete. Replacement with SFLWA increases with an increase in slump value, and decreases in strength parameters. Compressive strength of 42.6 MPa was achieved with a 40% replacement of SFLWA with steel fibers. The mechanical properties such as compressive strength, split tensile strength, flexural strength, elastic modulus, and structural efficiency of SFLWAC were examined, both with and without fibers. The incorporation of fibers drastically improved the mechanical properties of the mix. © Polish Academy of Sciences 2018.

Author Keywords
compressive strength; elastic modulus; flexural strength; Sintered fly ash aggregates; slump; split tensile strength; structural efficiency

ISSN: 12302945
CODEN: ACIEE
2-s2.0-85047652738

115) Narasimman, S.[a] , Balakrishnan, L.[b] , Alex, Z.C.[a]

Fiber optic magnetic field sensor using Co doped ZnO nanorods as cladding
(2018) *RSC Advances*, 8 (33), pp. 18243-18251. Cited 39 times.

DOI: 10.1039/c8ra01803k

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Abstract
A fiber optic magnetic field sensor is proposed and experimentally demonstrated. Pristine and Co doped ZnO nanorods of different Co concentrations (5, 10, 15 and 20 at%) were synthesized using a hydrothermal method. The synthesized nanorods were subjected to various characterization methods like X-ray diffraction (XRD), optical absorption, scanning electron microscopy, energy dispersive X-ray spectroscopy, Fourier transform infrared spectroscopy, vibrating sample magnetometry and X-ray photoelectron spectroscopy (XPS). XRD and XPS analysis confirms that the Co ions were successfully incorporated into the Zn site of the wurtzite ZnO lattice without altering the structure. The pristine and Co doped ZnO nanorods showed remarkable changes in the M-H loop where the diamagnetic behavior of ZnO changes to paramagnetic when doped with Co. The sensor structure is composed of cladding modified fiber coated with Co doped ZnO nanorods as a sensing material. The modified cladding is proportionally sensitive to the ambient magnetic field because of the magneto-optic effect. Experimental results revealed that the sensor has an operating magnetic field range from 17 mT to 180 mT and shows a maximum sensitivity of ~18% for 15 at% Co doped ZnO nanorods. The proposed magnetic field sensor would be attractive due to its low cost fabrication, simplicity of the sensor head preparation, high sensitivity and reproducibility. © 2018 The Royal Society of Chemistry.

ISSN: 20462069
CODEN: RSCAC
2-s2.0-85047484974

116) Padmapriya, S.[a] , Lakshmi Prabha, V.[b]

An optimized architecture for dynamic reconfigurable fir filter in speech processing
(2018) *Malaysian Journal of Computer Science*, 31 (2), pp. 155-174.

DOI: 10.22452/mjcs.vol31no2.5

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Abstract
In this paper, we have proposed a Dynamic Reconfiguration Scheme (DRS) for the FIR filter in which the existing multiplier of the FIR filter is replaced by the proposed Estimation Distribution Multiplier Blocks (EDMB). The important aspect of the proposed DRS is that it provides an efficient area and power optimization while implementing in hardware. To ensure the versatility of the proposed method and to further evaluate the performance and correctness of the structure in terms of area and power consumption, we have implemented the hardware in Xilinx Virtex 7 Field Programmable Gate Array (FPGA) device and synthesized with Cadence RTL Compiler using TSMC 180 nm standard cell library. The experimental analysis of the proposed reconfigurable design approach takes speech signal as the benchmark input. The analysis shows that the proposed technique is better when compared to the existing reconfiguration techniques with 43.60% power savings and 6.34% area reduction. © 2018, Faculty of Computer Science and Information Technology.

Author Keywords
Area optimization; Digital signal processing; Finite impulse response filter; Low power design; Reconfigurable design; Speech signal processing

ISSN: 01279084
2-s2.0-85047375828

117) Kalilasam, R.K.[a] , Mani, V.[b]

FPGA based quasi Z-source cascaded multilevel inverter using multicarrier PWM techniques
(2018) *Journal of Vibroengineering*, 20 (3), pp. 1544-1553. Cited 9 times.

DOI: 10.21595/jve.2017.18180

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Abstract
FPGA based Quasi Z-Source Cascaded Multilevel Inverter (Quasi Zs-CMLI) using multicarrier PluseWidth Modulation (PWM) techniques are presented in this paper. Multicarrier based PWM techniques have been proposed for seven level Quasi Zs-CMLI and implemented using Field Programmable Gate Array (FPGA). For generating gating pulses to the inverter switches, Phase Disposition (PD), Inverted Phase Disposition (IPD), Phase Opposition Disposition (POD) and Alternative Phase Opposition Disposition (APOD) techniques are programmed on FPGA. In the proposed system, three solar PV emulator modules are used. These are acting as input source to the inverter. Finally, THD comparison made between different carrier based modulation with shoot through and non-shoot through the states. The proposed quasi Zs-CMLI and PWM techniques are verified through MATLAB/Simulink. For confirmation of simulation results, A laboratory prototype model have been implemented using FPGA. The capture hardware results are matched with simulation results. © 2018 Ranjith Kumar Kalilasam, et al.

Author Keywords
Multicarrier PWM techniques; Quasi Z-source MLI; Shoot through control and FPGA control; Solar PV emulator

ISSN: 13928716
2-s2.0-85047160330

118) Elamurugan, P.[a] , VinothBresnav, K.[a] , Abirami, D.[b] , Suhirdham, K.G.[c]

Automatic material segregation using PLC
(2018) *International Journal of Engineering and Technology(UAE)*, 7 (2), pp. 376-380. Cited 1 time.

DOI: 10.14419/ijet.v7i2.24.12088

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Abstract
At the present timeunusedghettoizationindications a vivaciousstarring protagonist in discardedsupervision system. The inappropriateapartheid of variegatedsurplus that split ends up in landfills sort out not fadingas it ought to be. This red-top grants knowledge of ghettoizing the substantial inevitably concluded the assistance of programmable logic controller (PLC). This treasure troveobliging to moderate the manual maneuver in the progression of reconditioning the alienatedquantifiable such in place ofpewter, cut-glass, malleable and supplementary devises crumpled consuming the air-filled piston. The dissimilar capacitive, proximity sensors etc. devours engaged in the process. The reprocessed product which partakes per received mutable byproduct. The sensible stirring on a conveyer belt intuited by the relevant sensors segregated into poles apartcontainers using a gearing contrivance. The entire component partakes organized by a programmable logic controller (PLC) staysencodedthroughPLC language by means of ladder logic. © 2018 Authors.

Author Keywords
Capacitive; Inductive; Photoelectric; PLC; Proximity Sensors

ISSN: 2227524X
2-s2.0-85046345531

119) Tamilselvan, R.[a] , Rameshbabu, R.[b] , Thirunavukkarasu, R.[c] , Periyasamy[c]

EFFECT of FUEL INJECTION TIMING on PERFORMANCE and EMISSION CHARACTERISTICS of CEIBA PENTANDRA BIODIESEL
(2018) *Materials Today: Proceedings*, 5 (2), pp. 6770-6779. Cited 10 times.

DOI: 10.1016/j.matpr.2017.11.336

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Abstract
Alternative fuels have received abundant attention thanks to the depletion of world fossil fuel reserves and magnified environmental issues. Within the gift paper experimental study is allotted on I.C. engine laboratory single cylinder, four-stroke tape recorder, direct injection internal-combustion engine to analyse the performance and emission characteristics of pure diesel and white silk-cotton tree blending fuels with varied blending rates. For internal-combustion engine, injection timing order arrangement is one altogether the foremost parameters that have a control on the engine performance and emissions. The measurements area unit recorded for the Injection timing order of 0°,3°,6°,9°,12°and 18°bTDC varied the load from idle to rated load of 3.5 kW. For this study, alkyl esters of Ceibapentandra Oil were intercalary to diesel by volume of 10% (B10), 20% (B20), 30% (B30) and 40% (B40). Engine performance parameters specifically specific fuel consumption, brake thermal, Indicated thermal efficiency and exhaust emissions of CO, HC, CO2, Nox were determined. The brake thermal efficiency at 100 percent load for white silk-cotton tree alkyl organic compound blends and diesel has been calculated and also the blend B10 is found to relinquish most thermal efficiency. The blends once used as fuel ends up in reduction of monoxide, organic compound and increase in chemical element oxides emissions. The engine performance and Emission parameters was found to be optimum once victimization B10 as fuel at Injection timing order 12°bTDC throughout full load condition. © 2017 Elsevier Ltd.

Author Keywords
Ceibapentandra; CO; CO2emission; Diesel engines; HC; Injection timing; NOx; performance; SFC

ISSN: 22147853
2-s2.0-85046004968

120) Thirunavukkarasu, R.[a] , Mahendran, M.[a] , Tamilselvan, R.[a] , Periyasamy, S.[b]

Investigation on Single, Four and Five Holes Fuel Injector Nozzle on Performance and Emission Characteristic of Diesel on A VCR Engine by Using Ceramic Coating Material on the Piston Crown

(2018) *Materials Today: Proceedings*, 5 (2), pp. 7577-7585. Cited 7 times.

DOI: 10.1016/j.matpr.2017.11.430

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Abstract
The Research Experimental investigation is carried out under different loading conditions during a one Cylinder VCR CI engine with its piston crown coated by thermal barrier ceramic coating (TBC) with used different injector nozzle holes on performance and emission characteristics. This ceramic material is preferred because the nominee material for coating the piston crown as a result of its fascinating properties like high constant of thermal enlargement, low thermal conductivity, high Poisson's ratio and stable part structure at higher Temperature conditions as well as this experimental study was conducted on a VCR Engine at single, four and five holes nozzle injectors to check its impact on performance and emission by diesel fuel at 9kg load. © 2017 Elsevier Ltd.

Author Keywords
Ceramic Coating; Injector Holes; Piston

ISSN: 22147853
2-s2.0-85045977076

121) Sabarish, R., Suriyanarayanan, N.

Chemically grown Zinc Bismuth Sulfide (ZnBi2S3) thin films for optoelectronic applications
(2018) *Optoelectronics and Advanced Materials, Rapid Communications*, 12 (1-2), pp. 90-94.

Department of Physics, Government college of Technology, Coimbatore, Tamil Nadu 641 013, India

Abstract
Zinc Bismuth Sulfide (ZnBi2S3) thin films are successfully deposited on a glass substrate by chemical bath deposition technique at different bath temperatures (60°C, 70°C, 80°C). The basic chemical bath contains bismuth nitrate, zinc nitrate and sodium thiosulphate as chemical reagents. The deposited films are characterized by XRD, FESEM, EDAX, UV Spectroscopy and PL for structural, morphological and optical properties. The formation of ZnBi2S3 is evidenced by the peaks in X-ray diffraction pattern. FESEM observation indicates the spherical grain shape of films at different temperatures. EDAX confirms the composition of ZnBi2S3. The bandgap energy obtained for deposited films is in the order of 2.31eV and depends on the film thickness. The PL spectrum reveals the green emission in the visible region.The Present work indicates the feasibility of ZnBi2S3 as a solar material. © 2018, National Institute of Optoelectronics. All rights reserved.

Author Keywords
Bandgap; Chemical bath deposition; Semiconductors; Solar energy material; Ternary compounds; Thinfilms

ISSN: 18426573
2-s2.0-85045635490

122) Indhu, S., Muthukumaran, K.

Decolourisation of emerging textile dyes from aqueous solution using PNS -nanocomposite
(2018) *Digest Journal of Nanomaterials and Biostructures*, 13 (1), pp. 201-213. Cited 1 time.

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Abstract
The objective of this work is to establish the performance of a potential adsorbent from palm-nut shell (PNS), an agricultural low-cost precursor for the removal of acidic dyes- Reactive red 195A (RR195A) and Reactive blue 160 (RB160). The modification of PNS-activated carbon was exhibited by precipitating the magnetite nanoparticles using co-precipitation

method resulting in enriched PNS-nanocomposite. The structural morphology of PNS-nanocomposite were characterised by using BET surface area (BET), X-ray diffraction analysis (XRD), Raman spectroscopy (RS), VSM data, High Resolution TEM (TEM) with SAED pattern. TEM pictures showed that the prepared nanocomposite was in pseudo-ball shaped. The microporous and mesoporous pore structures of the adsorbent were known to be obtained by t-plot and BJH respectively. The low retentive force value and saturation magnetisation (0.84 emu) value justify the magnetic separation from the aqueous solution. The best fit of pseudo-second order kinetics model with the high coefficient value better describe the process of adsorption of Reactive red 195A and Reactive blue 160 onto the adsorbent. The monolayer Langmuir isotherm (23.8 mg/g - RR195A & 62.5 mg/g - RB160) pictured the better fit. Thermodynamic parameter values (ΔS1, ΔH1, ΔG1) confirm the dependency of temperature by the adsorption reaction process between adsorbent and adsorbate and their spontaneous and endothermic nature was also justified. The result of this work will be useful for future studies in the degradation of azo dyes using affordable precursor PNS. These studies confirm the eligibility of the adsorbents indicating their valuable application such as high adsorption capacity, excellent separation nature in the field of adsorption process for the clean-up of wastewater.

Author Keywords
Microporous & mesoporous structures; Nanocomposite; Palm nut-shell; Reactive dyes; TEM analysis

ISSN: 18423582
2-s2.0-85044781090

123) Pradeep, I.[a] , Ranjith Kumar, E.[b] , Suriyanarayanan, N.[c] , Mohanraj, K.[d] , Srinivas, C.[e] , Mehar, M.V.K.[f]

Effect of Al doping concentration on the structural, optical, morphological and electrical properties of V2O5 nanostructures
(2018) *New Journal of Chemistry*, 42 (6), pp. 4278-4288. Cited 17 times.

DOI: 10.1039/c7nj03607h

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Abstract
Study on the optoelectronic characteristics of a cation-substituted nanostructure is a specific area of recent interest for a wide range of photonic applications. In the present work, AlxV2O5 (where x = 0, 5, 10 and 15%) nanoparticles were synthesized by a wet chemical-calcination process. X-ray diffraction study revealed the orthorhombic phase of 600 °C heat-treated pure and Al3+ substituted samples. The shifting of the XRD lines with the substitution of V2O5 suggests that Al3+ was successfully introduced into the V2O5 host lattice. The SEM and TEM images show that the pure and Al3+ doped V2O5 hierarchical architectures are formed of one-dimensional nanorods. Photoluminescence spectra demonstrated the increment in deformities revealed by the immensely enhanced green emission. DC conductivity studies were performed in the temperature range 30-130 °C and it was found that the activation energy (Ea) is higher for AlxV2O5 than for the undoped sample. The inherent current (I)-voltage (V) characteristics of pure V2O5 and AlxV2O5 junction diodes showed a nonlinear diode-like behavior. The transient photocurrent under illumination is higher than the dark current, indicating that the fabricated diodes behave as a photodiode.

ISSN: 11440546
CODEN: NJCHE
2-s2.0-85043599012

124) Saranya, M.[a] , Ayyappan, S.[a] , Nithya, R.[a] , Sangeetha, R.K.[b] , Gokila, A.[b]

Molecular structure, NBO and HOMO-LUMO analysis of quercetin on single layer graphene by density functional theory
(2018) *Digest Journal of Nanomaterials and Biostructures*, 13 (1), pp. 97-105. Cited 52 times.

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Abstract
Quercetin (3,5,7,3',4'-pentahydroxyflavone) is a member of flavonoids. Density functional theory has been employed to study the adsorption of quercetin on single layer graphene (QCT-SLG) was investigated with the basis set of 6-21G. The total density of states and partial density states of the titled molecules were performed at density functional theory method. The molecular electrostatic potential (MEP) mapping shows the binding interactions of quercetin with single graphene layer. Dipole moment, hyperpolarizability and quantum chemical parameters have been calculated by Hartree Fock (HF) approximation approach. The natural bonding orbital analyses (NBO) calculation confined that the occurrence of intramolecular charge transfer takes place within the molecules. From DFT, highest occupied molecular orbital (HOMO) and lowest unoccupied molecular orbital (LUMO) energy levels of frontier orbital were obtained.

Author Keywords
Density functional theory; Hartree fock; HOMO-LUMO; Molecular electrostatic potential; Natural bonding orbital; QCT-SLG

ISSN: 18423582
2-s2.0-85041033893

125) Mohan, D.G.[a] , Gopi, S.[a] , Rajasekar, V.[b]

Mechanical and corrosion-resistant properties of hybrid-welded stainless steel
(2018) *Materials Performance*, 57 (1), pp. 53-56. Cited 11 times.

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Abstract
AISI Type 410 stainless steel (SS) (UNS S41000) plate, 3-mm thick, is typically welded by using the induction heated-friction stir welding method. The tool used for welding Type 410 SS is made with tungsten carbide (CW), with a 2-mm pin length, 3-mm pin diameter, and a 12-mm shoulder diameter with a hexagonal profle. A sound joint is fabricated at a spindle speed of 1,200 rpm, welding speed of 45 mm/min, plunge depth of 0.05 mm, and an additional heat input of ~1,000 °C at 50 W power through an induction heating coil.

ISSN: 00941492
CODEN: MTPFB
2-s2.0-85039749175

126) Radhika, V.[a] , Baskaran, K.[b]

Block-random access memory-based digital pulse modulator architecture for DC–DC converters
(2018) *Lecture Notes in Electrical Engineering*, 446, pp. 35-45.

DOI: 10.1007/978-981-10-4852-4_4

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Abstract
This paper proposes a new digital pulse-width modulation (DPWM) and digital frequency modulation (DPFM) architecture using block RAM (BRAM) present in the field-programmable gate arrays (FPGAs). In Xilinx FPGAs, Block RAM (BRAM) elements are available only with a synchronous reset. As the synchronous reset is used in this code, the synthesis tool implemented the code in a single BRAM element. This minimizes the decoding logic and reduces the area. Block RAM available in FPGA is used to store the desired pattern to derive the variable duty cycle and variable-frequency pulses. This DPWM/DPFM architecture can be used with switching type of DC–DC converters under both light- and heavy-load conditions. Architecture is developed with Verilog hardware language for three different control bits (4 bit, 5 bit, and 6 bit), synthesized, and implemented with Xilinx PlanAhead 14.2 tool. This proposed architecture provides higher resolution without any requirement for higher clock frequency and larger logic resources which ultimately wits the small change in output voltage produced at the output of power converter. Maximum operating frequency of 306 MHz can be achieved for 4-bit control input. For the 6-bit control input, 4096 different bit patterns are stored to derive the more precise pulses to control the DC–DC converters. © Springer Nature Singapore Pte Ltd. 2018.

Author Keywords
BRAM; DPFM; DPWM; Higher resolution; Spartan 3A FPGA

ISSN: 18761100
ISBN: 9789811048517
2-s2.0-85039437303

127) Arulraj, M.[a] , Palani, P.K.[b]

Parametric optimization for improving impact strength of squeeze cast of hybrid metal matrix (LM24–SiCp–coconut shell ash) composite
(2018) *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 40 (1), art. no. 2, . Cited 52 times.

DOI: 10.1007/s40430-017-0925-3

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Abstract
This paper mainly focuses on parametric optimization of squeeze cast hybrid (LM24–SiCp–coconut shell ash) composite through Taguchi method and genetic algorithm. The composite samples have been cast through squeeze casting for each experimental trial based on L9(3)4 orthogonal array. From analysis of variance, it has been found that reinforcement and squeeze pressure were the casting parameters making significant improvement in the impact strength. A mathematical model representing the process was developed using nonlinear regression analysis. The optimum casting conditions were obtained through Taguchi method and genetic algorithm and checked through the confirmation experiments. In this study, it was confirmed that the castings obtained for the optimum squeeze casting conditions exhibited nearly 20% improvement in impact strength compared to the gravity die casting condition. © 2017, The Brazilian Society of Mechanical Sciences and Engineering.

Author Keywords
Coconut shell ash; Genetic algorithm; LM24 aluminum alloy; Silicon carbide; Squeeze casting; Taguchi method

ISSN: 16785878
2-s2.0-85039057925

128) Narasimman, S.[a] , Balakrishnan, L.[b] , Alex, Z.C.[c]

Fiber-optic ammonia sensor based on amine functionalized ZnO nanoflakes
(2018) *IEEE Sensors Journal*, 18 (1), pp. 201-208. Cited 29 times.

DOI: 10.1109/JSEN.2017.2769718

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Abstract
Pristine and amine functionalized ZnO nanoflakesbased fiber-optic sensors were investigated towards different volatile compounds (VCs) for environmental monitoring applications. The ZnO nanoflakes synthesized through co-precipitation method was subjected to X-ray diffraction, scanning electron microscope, energy dispersive X-ray spectrometer, and optical absorption studies to examine the structural, morphological, elemental, and optical properties. The analysis confirms the formation of ZnO nanoflakes with wurtzite structure. The spectral response of the ZnO and amine functionalized ZnO nanoflakes-based fiber-optic gas sensors were studied at ambient temperature for various concentrations (0C300 ppm) of acetone, ammonia, ethanol, methanol, hexane, and chloroform in clad modification technology. The analysis revealed that the pristine ZnO nanoflakes have selectivity towards acetone and amine functionalized nanoflakes have enhanced sensitivity towards all VCs and high selectivity (~ four times) toward ammonia with fast response and recovery. Further, the pristine ZnO-based sensor shows selectivity towards acetone above 150 ppm with the response and recovery time of 19 s and 23 s, whereas the sensor based on amine functionalized ZnO shows enhanced selectivity towards ammonia above 50 ppm with fast response and recovery time of 14 s and 17 s, respectively. © 2017 IEEE.

Author Keywords
Co-precipitation; Fiber-optic sensor; Functionalization; Nanostructure; VC sensing; ZnO

ISSN: 1530437X
2-s2.0-85033728363

129) Jagatheesan, K.[a] , Anand, B.[b] , Baskaran, K.[c] , Dey, N.[d] , Ashour, A.S.[e] , Balas, V.E.[f]

Effect of nonlinearity and boiler dynamics in automatic generation control of multi-area thermal power system with proportional-integral-derivative and ant colony optimization technique
(2018) *Studies in Systems, Decision and Control*, 109, pp. 89-110. Cited 9 times.

DOI: 10.1007/978-3-319-58996-1_5

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Abstract
This work presents the automatic generation control (AGC) of a multiarea interconnected power system. The investigated multiarea power system is prepared with three equal reheat thermal power systems with suitable governor unit, turbine unit, generator unit, speed regulator unit, tie-line in each unit, and secondary proportional-integral-derivative (PID) controller. During nominal loading conditions, the power generating unit offers good quality of power to consumers. Nevertheless, the occurrence of sudden load disturbance in the interconnected power generating unit affects the entire performance (consistency in system frequency and voltage) and system stability. In order to moderate this big pose, the PID controller is introduced as a secondary controller. Jointly with the proper selection of the controller parameters (proportional gain (KP), integral gain (KI), and derivative gain (KD)) a good quality of power supply is crucial in a power system for generating. An artificial intelligence (AI) based ant colony optimization (ACO) technique is considered for tuning the control parameters. Further, in the current chapter, nonlinearity and boiler dynamics effects are considered to evaluate the performance of the investigated power system. The nonlinearities are generation rate constraints (GRC) and governor dead band (GDB). The drum-type oil-fired boiler system is considered in this work. The nonlinearity effect and boiler dynamics in the investigated power systems are derived by considering different scenarios: (a) GRC in all areas and two percent step load perturbation (2% SLP) in area 1, (b) GDB in all areas and two percent step load perturbation (2% SLP) in area 1 (c) GRC and GDB in all areas and two percent step load perturbation (2% SLP) in area 1 and (d) GRC, GDB, and boiler dynamics (BD) in all areas and two-percent step load perturbation (2% SLP) in area 1. Time-domain specification analysis is used for the evaluation of nonlinearity and boiler dynamics effect. © Springer International Publishing AG 2018.

Author Keywords
Ant colony optimization; Artificial intelligence; Automatic generation control; Nonlinearity; Time domain specification

ISSN: 21984182
2-s2.0-85029129955

130) Kiruba, M., Sumathy, V.

Register Pre-Allocation based Folded Discrete Tchebichef Transformation Technique for Image Compression
(2018) *Integration, the VLSI Journal*, 60, pp. 13-24. Cited 7 times.

DOI: 10.1016/j.vlsi.2017.07.003

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Abstract
Recently, the large size data, power and real-time processing abilities are major issues in Digital Signal Processing/multimedia applications which require an adaptable architecture. The tool used for computing data decorrelation in the image processing applications refers Discrete Tchebichef Transform (DTT) which offers better performance than the DCT due to its bitstream coding capabilities. This paper proposes a novel model of Discrete Tchebichef Transform (DTT) architecture with Register Pre-allocation based Folded Architecture (RPFA) for image compression. Through the cross-connection of folded architecture, the number of register usage is reduced. A Partial Cross Split Vedic Multiplier (PCSVM) method is introduced in the proposed DTT architecture. This multiplier design involves the cross function of the Vedic multiplier with the split pattern of multiplication binary stream. The optimal design of DTT architecture yields a minimum amount of FlipFlop (FF) counts, a latency and power consumption. The proposed PCSVM achieves higher Peak Signal to Noise Ratio (PSNR), better Structural Similarity Index (SSIM), lower delay, area, power consumption, Power-Delay Product (PDP), Mean Square Error (MSE) than the existing multiplier architectures. The proposed RPF-DTT architecture achieves a significant reduction in the resource consumption than the exact and approximate DTT architectures. © 2017 Elsevier B.V.

Author Keywords
Discrete Cosine Transform (DCT); Discrete Tchebichef Transform (DTT); Floating Point Processing Element (FPPE); Image Compression; Partial Cross Split Vedic Multiplier (PCSVM); Register Pre-allocation Folded Architecture (RPFA)

ISSN: 01679260
CODEN: IVJOD
2-s2.0-85028915851

131) Shameer, P.M., Ramesh, K.

Assessment on the consequences of injection timing and injection pressure on combustion characteristics of sustainable biodiesel fuelled engine
(2018) *Renewable and Sustainable Energy Reviews*, 81, pp. 45-61. Cited 106 times.

DOI: 10.1016/j.rser.2017.07.048

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Abstract
In the rapidly growing global energy consumption, diesel engines play the key role. Usage of diesel fuel contributes to harmful air pollution exhausted from combustion chamber. To overcome these serious issues, the biodiesel extracted from many feedstocks have been studied and implemented for the past few decades. The combustion characteristics of diesel are not same as the biodiesel blends due to the discrepancy in physio-chemical properties of biodiesel. Enormous studies have been focused on inadequate combustion profiles of biodiesel in compression ignition engines. This review paper analyzes the previous researches concerning the consequences of proposed effective strategies including the variation in engine operating parameters like fuel injection timing and injection pressure for enhancing combustion characteristics of biodiesel implementation. This study focuses its light on the advancement and retardation methods of injection timing and injection pressure to treat the engine combustion indicators such as in-cylinder pressure, peak cylinder pressure, heat

release rate, ignition delay period and combustion duration, finally a comparative evaluation has been developed and the relevant reasons for the variation of combustion characteristics have been conversed. The review concludes that the advancement in injection timing and higher injection pressure are best in amplifying the combustion phenomena of biodiesel fuelling. © 2017 Elsevier Ltd

Author Keywords
Biodiesel; Combustion; Engine; Injection pressure; Injection timing

ISSN: 13640321
CODEN: RSERF
2-s2.0-85024912850

132) Thiripurasundari, C.[a] , Sumathy, V.[b] , Thiruvengadam, C.[c]

An FPGA implementation of novel smart antenna algorithm in tracking systems for smart cities
(2018) *Computers and Electrical Engineering*, 65, pp. 59-66. Cited 6 times.

DOI: 10.1016/j.compeleceng.2017.06.009

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Abstract
The area of digital signal processing (DSP) faces a great challenge in suppressing the noise and interference in the transmitting signal. A huge number of applications are in need of such control methods for good audio communication, etc., and the most widespread method for achieving this is through COordinate Rotation DIgital Computer (CORDIC) based on QRD-RLS. However, this method requires several iterations for its calculations, and therefore in order to reduce the complexity of the calculations and for faster calculation with a minimum number of iterations, a modified CORDIC based on the QRD-RLS algorithm for the purpose of beamforming is proposed in this paper and named mixed scaling rotation coordinate rotation digital computer (MSR-CORDIC). In this work, beamforming and direction of arrival (DOA) estimation will be achieved using the MSR-CORDIC and MUSIC algorithms respectively. The proposed algorithm is developed using Verilog HDL and implemented using the Xilinx field-programmable gate array (FPGA). In all cases, the proposed algorithm shows remarkable improvement compared with the conventional SCC (space code correlator) beamforming algorithm. © 2017 Elsevier Ltd

Author Keywords
Beamforming; DOA; MSR-CORDIC; MUSIC; RLS

ISSN: 00457906
CODEN: CPEEB
2-s2.0-85020818795